Impact of Mergers and Acquisitions on Business Performance: A Two-Step Cluster Analysis

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Abstract

Background: Mergers and acquisitions are widely used to accelerate growth in the information-technology sector, yet their post-acquisition outcomes remain heterogeneous. The quality of cooperation between a parent company and its subsidiary, together with pricing and inventory practices, may explain part of this variation. **Objectives:** This study identifies post-M&A organisational profiles among European IT subsidiaries and examines whether these profiles differ in business performance measured by the Balanced Scorecard. **Methods/Approach:** Survey data from 98 subsidiaries were analysed using two-step cluster analysis based on eight cooperation and operational variables. Cluster differences were assessed through analysis of variance and a chi-square test. **Results:** A three-cluster solution of fair quality emerged. The high-integration cluster reported substantially stronger financial, market, innovation, and process performance than the moderate and weak-integration clusters. Price setting and inventory management were the strongest cluster discriminators, whereas firm size was unrelated to cluster membership. **Conclusions:** Post-M&A performance is associated with coherent configurations of relational integration and operational alignment rather than with company size alone.

Keywords: mergers and acquisitions; post-acquisition integration; business performance; two-step cluster analysis; IT sector; Balanced Scorecard; parent-subsidiary cooperation

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Introduction

Mergers and acquisitions (M&As) are a central instrument of corporate growth, strategic renewal, and access to resources that would be slow or costly to build internally. They are especially prominent in information technology, where product life cycles are short, technological trajectories are uncertain, and competitive advantage depends on rapid access to knowledge, intellectual property, specialised employees, distribution channels, and complementary platforms. Technology-oriented acquisitions can shorten time to market and expand the acquirer's knowledge base, but they can also disrupt routines, weaken incentives, and trigger the departure of key employees. Consequently, the economic logic of a transaction does not guarantee value realisation after closing (Ahuja & Katila, 2001; Bena & Li, 2014; Cloodt et al., 2006; Hitt et al., 2024).

The persistent discrepancy between the volume of M&A activity and the mixed evidence on post-acquisition performance is one of the most durable problems in the field. Target shareholders commonly benefit at announcement, whereas the performance of acquiring firms is often insignificant, heterogeneous, or negative over longer horizons (Agrawal & Jaffe, 2000; Andrade et al., 2001; King et al., 2004). These findings have shifted attention from the transaction itself toward the mechanisms through which expected synergies are implemented. Strategic fit, technological relatedness, prior acquisition experience, cultural compatibility, autonomy, communication, and the quality of post-acquisition integration all influence whether resources can be transferred and combined without destroying the capabilities that motivated the deal (Birkinshaw et al., 2000; Haleblian et al., 2009; Puranam et al., 2003; Renneboog & Vansteenkiste, 2019).

Within multinational and multi-unit organisations, the relationship between the parent company and the acquired subsidiary is a particularly important locus of value creation. Post-acquisition integration is not simply an administrative exercise. It requires decisions about the allocation of authority, information sharing, common goals, resource complementarity, trust, and the balance between central coordination and local autonomy. Excessive separation may prevent synergies, whereas excessive integration may erode local knowledge and flexibility. The appropriate configuration depends on the nature of the acquired capabilities and the extent to which their transfer requires close interaction (Ambroselli, 2021; Manolopoulos et al., 2021; Meyer et al., 2020; Tarba et al., 2019).

Operational coordination is equally important. In the IT distribution and wholesale context, subsidiaries operate with volatile demand, rapid obsolescence, diverse revenue models, and complex combinations of direct sales, reseller arrangements, services, and hardware. Pricing decisions affect demand, margins, channel conflict, and the speed at which products move through the supply chain. Inventory decisions affect availability, working capital, obsolescence, service levels, and responsiveness. If parent-subsidiary cooperation does not translate into aligned pricing and inventory practices, the expected strategic benefits of an acquisition may remain disconnected from daily operations (Chopra & Meindl, 2019; Ingenbleek & Van der Lans, 2013; Karadağ, 2018; Manocha & Srai, 2020).

A second challenge concerns the measurement of post-M&A performance. Most studies rely on accounting ratios, abnormal returns, or a narrow set of operational indicators. Such measures are important but incomplete in a high-tech setting, because value creation may first appear in customer relationships, process quality, organisational learning, or innovation capacity before it is reflected in financial statements. The Balanced Scorecard (BSC) provides a multidimensional framework

that combines financial performance with market outcomes, internal processes, and learning and innovation. Its use therefore supports a broader assessment of whether an acquired subsidiary is merely financially viable or is also developing the capabilities needed for sustainable performance (Antunes et al., 2025; Hou, 2016; Pejić Bach et al., 2023; Zairbani et al., 2024).

The present study develops an exploratory, configurational view of post-M&A performance. Instead of estimating only the average effect of one variable on another, it asks whether subsidiaries form distinct profiles based on the quality of cooperation with the parent company and the efficiency of price and inventory management. Two-step cluster analysis is used to identify internally coherent groups and to compare their BSC performance. This approach is appropriate because post-acquisition outcomes may reflect combinations of relational and operational conditions rather than a single isolated determinant. It also gives managers recognisable profiles they can use for diagnosis and intervention.

The study addresses three research questions. First, what distinct post-M&A profiles of European IT subsidiaries emerge from cooperation, trust, price management, and inventory management variables? Second, do the identified profiles differ in financial, market, learning and innovation, and process performance? Third, is cluster membership associated with company size? The analysis is based on a cross-sectional survey of 98 European IT subsidiaries. The term impact in the title refers to performance differences associated with post-M&A organisational configurations; the design does not estimate a pre- versus post-transaction causal effect. This distinction is maintained throughout the interpretation.

Theoretical Background

M&A Performance and Post-Acquisition Integration

M&As are undertaken to gain market share, enter new markets, acquire technologies, achieve economies of scale and scope, reduce duplicated costs, and combine complementary resources. In high-tech industries, they are additionally used as substitutes or complements to internal research and development. An established firm may acquire a younger company to obtain a product platform, patents, technical teams, or knowledge that is difficult to codify. The attractiveness of this route is speed: an acquisition can provide immediate control over a resource base that would otherwise require years of uncertain development (Chaudhuri & Tabrizi, 1999; Dezi et al., 2018; Gantumur & Stephan, 2012; Koolmann et al., 2024).

The same characteristics that make technology firms attractive acquisition targets make integration difficult. Their value is often concentrated in intangible assets, routines, social networks, and key employees. These assets cannot be transferred in the same way as physical equipment. Full structural integration may improve coordination, but it can also disrupt the autonomy and incentive systems that supported innovation. Conversely, preserving the acquired company as an autonomous unit may protect its knowledge base but prevent the acquirer from realising cross-selling, shared infrastructure, or joint-development opportunities. The integration problem is therefore a coordination-autonomy trade-off rather than a choice between complete absorption and complete independence (Puranam et al., 2006; Rossi et al., 2013).

Birkinshaw et al. (2000) distinguish task integration from human integration. Task integration focuses on identifying and implementing operational synergies, while human integration focuses on creating positive attitudes and constructive relationships among employees of the two organisations. Concentrating exclusively

on tasks may produce cost savings at the expense of motivation and retention. Concentrating only on social harmony may produce satisfied employees without operational synergies. Acquisition success requires progress on both dimensions, although the pace and sequence may differ. This distinction is directly relevant to the present study because the clustering variables combine relational characteristics, such as trust and goal congruence, with operational practices, such as pricing and inventory management.

The broader empirical literature confirms that acquisition performance is highly heterogeneous. Strategic relatedness and complementary knowledge can enhance innovation, but too much similarity may limit learning and too much dissimilarity may make knowledge transfer difficult (Cloodt et al., 2006; Makri et al., 2010). Prior experience can improve the acquirer's ability to select targets and manage integration, but superficial analogies with earlier deals can also produce inappropriate routines (Finkelstein & Haleblian, 2002; Haleblian & Finkelstein, 1999). Organisational culture, autonomy, and retaining key employees shape whether synergy potential translates into performance (Tarba et al., 2019). These findings support an analysis that searches for combinations of conditions rather than assuming that all acquired subsidiaries follow the same post-deal trajectory.

Parent-Subsidiary Cooperation as a Relational Configuration

The parent-subsidiary relationship shapes how strategic intent becomes coordinated action. The parent company generally provides capital, corporate policies, brand resources, market access, technology, and governance. The subsidiary contributes local market knowledge, customer relationships, operational flexibility, and specialised capabilities. The relationship is effective when these contributions are complementary and when coordination does not eliminate the subsidiary's ability to respond to local conditions. Research on subsidiary autonomy therefore emphasises allocating authority based on where relevant knowledge resides and on the interdependence of activities (Ambroselli, 2021; Meyer et al., 2020; Raziq et al., 2023).

The dissertation operationalises cooperation through five dimensions: cooperation agreements, complementary resources and capabilities, goal congruence, trust-credibility, and trust-benevolence. Cooperation agreements capture joint action in areas such as distribution, marketing, projects, planning, and exploitation of opportunities. Complementary resources and capabilities indicate whether each party contributes assets and competences that the other lacks. Goal congruence captures alignment of objectives, strategies, values, and business philosophies. Trust-credibility concerns reliability, competence, transparency, and fulfilment of promises. Trust-benevolence concerns whether the parent company is perceived as sincerely concerned with the subsidiary's interests and willing to provide support when difficulties arise.

These dimensions are conceptually related but not interchangeable. Formal agreements may establish roles without generating trust. Resource complementarity may create potential synergy without common goals. Credibility may facilitate information exchange, while benevolence reduces the perceived risk that one party will exploit the other. When these elements are mutually reinforcing, the subsidiary can coordinate decisions with the parent company while retaining confidence that local information will be taken seriously. Such a configuration should facilitate knowledge transfer, align commercial policies, and enable rapid resolution of operational problems. When the dimensions are weak or inconsistent, coordination costs increase and the acquired unit may remain organizationally isolated even if it is legally integrated.

A configurational perspective is especially suitable for post-M&A relationships because a high score on one dimension may not compensate for severe weakness on another. For example, formal cooperation may be ineffective if the parent company is not credible, while trust may not produce performance if goals and operational routines remain misaligned. Cluster analysis can reveal whether respondents form groups characterised by uniformly high integration, uniformly weak integration, or intermediate patterns in which relational alignment is stronger than operational implementation.

Price and Inventory Management in Post-M&A Operations

Pricing and inventory management connect strategic integration to daily business performance. Pricing is not only a financial calculation; it is a cross-functional process that incorporates customer value, competitor behaviour, market structure, cost information, channel relationships, and product positioning. In a parent-subsidiary system, decisions must also reconcile global policies with local demand and competitive conditions. A subsidiary that cannot adjust prices when market conditions change may lose sales or accumulate obsolete stock, while uncontrolled local pricing may create channel conflict, undermine brand positioning, or reduce group margins (Ingenbleek & Van der Lans, 2013).

The study distinguishes price management strategy from price-setting practices. Price management strategy captures the importance and flexibility of pricing at the local level, including the ability to react quickly to sales performance. Price setting captures the extent to which actual prices reflect customer value, competitors, market competition, cost structure, and price-quality considerations. The distinction is useful because a company may formally regard pricing as important but still use a limited or inconsistent set of information when setting prices. Conversely, a subsidiary may have sophisticated price-setting routines but insufficient authority to respond quickly.

Inventory management is particularly consequential in the IT sector. Hardware and related products may become obsolete rapidly, supply can be disrupted, and demand can fluctuate with technological releases and project cycles. Inventory practices therefore need to balance availability against working-capital costs and obsolescence risk. Relevant practices include monitoring turnover and stock levels, adjusting inventory to sales, using budgets and benchmarks, and maintaining enough flexibility to respond to market changes. Karadağ (2018) links cash, receivables, and inventory practices with financial performance and competitiveness, while broader supply-chain research emphasises the performance benefits of information sharing and coordinated planning.

Pricing and inventory decisions are interdependent. Price changes affect demand and the speed at which stock is sold; inventory conditions affect the need for discounts, promotions, or differentiated pricing. In a post-M&A setting, these decisions may be distributed across the parent company, regional units, and local subsidiaries. Misalignment can create slow-moving inventory, stockouts, inconsistent offers, and unclear accountability. Effective cooperation should improve the quality and speed of information used in both decisions, enabling the subsidiary to align commercial objectives with operational constraints (Chopra & Meindl, 2019; Gaur & Kesavan, 2015; Manocha & Srai, 2020).

Business Performance Through the Balanced Scorecard

Post-acquisition performance is a multidimensional construct. Financial indicators show whether the company is generating profits and returns, but they are backwards-

looking and may not reveal whether the organisation is building capabilities for future performance. The BSC addresses this problem by combining financial outcomes with customer or market measures, internal processes, and learning and growth. In the present study, the four dimensions are financial performance (FIN), market performance (MAR), learning and innovation (INNO), and process performance (PROC). Respondents compare the subsidiary with its competitors on each dimension.

The financial dimension covers realised profit, profitability, reinvestment, and overall financial success. The market dimension captures customer satisfaction, product availability, and breadth of the offer. The process dimension assesses the efficiency and updating of internal processes and the extent of direct customer interaction. The learning and innovation dimension captures employee competence, education, adoption of new technologies, and the ability to use knowledge for competitive advantage. Together, these dimensions reflect both realised outcomes and the organisational conditions that sustain them.

The BSC has been applied in technology and information-intensive settings because it links strategic objectives to operational measures and gives greater visibility to intangible capabilities (Hou, 2016; Llorach & Ottosson, 2016). Research also indicates that supply-chain maturity and balanced performance are connected (Pejić Bach et al., 2023). In an M&A context, a BSC perspective is useful because an acquisition may initially improve market access or innovation while financial returns remain delayed, or it may generate short-term savings while weakening learning and customer relationships. Comparing clusters across all four dimensions therefore provides a more discriminating test than relying on a single performance measure.

The theoretical expectation underlying the exploratory analysis is that subsidiaries with stronger and more coherent cooperation, pricing, and inventory configurations will display superior performance across the BSC. However, the analysis does not impose a predetermined number or structure of groups. The clusters are derived empirically, and performance variables are not used to construct them. This separation is important because it allows BSC differences to serve as an external validation of the organisational profiles.

Methodology

Research Design, Population, and Sample

The empirical research used a cross-sectional survey of subsidiaries operating in the European IT sector. Companies were identified through NACE codes covering the wholesale of information and communication technology equipment, computer equipment, electronic and telecommunications equipment and parts, and related machinery and devices. The Amadeus database was used as the sampling frame because it contains standardised company information across European countries. A systematic random sample of 200 companies was selected from an alphabetically ordered list. A random starting point was used, and every k-th company was included, reducing the risk that the final sample would be concentrated in a particular country or sub-industry.

Ninety-eight companies completed the survey, yielding a response rate of 49%. The participating firms were predominantly small and medium-sized enterprises: 33 companies had 11-50 employees, 61 had 51-250 employees, and four had more than 250 employees. The country distribution was broad but concentrated in Central and Eastern Europe; Croatia, Poland, Slovenia, and the Czech Republic accounted for the largest shares. Most key respondents were experienced professionals: 42.9% had five to ten years of work experience, and 45.9% had more than ten years. These

characteristics support the informational quality of the responses, although the geographical composition limits generalisation to the entire European IT sector.

We collected data through a structured online questionnaire. The research design targeted two key informants within each company. Inventory managers answered questions on price and inventory management, while chief executive officers assessed cooperation with the parent company and business performance. This division was intended to match questions with the respondents most knowledgeable about the relevant domain and to reduce common-method bias. A preliminary survey evaluated clarity and comprehensibility, after which the final questionnaire was refined and distributed. All substantive variables were measured on seven-point Likert scales ranging from 1 (strongly disagree) to 7 (strongly agree).

Measures

The cluster solution was based on eight average variables. Five described the efficiency of cooperation with the parent company: Cooperation Agreements (CA), Complementary Resources and Capabilities (CR), Goal Congruence (GC), Trust-Credibility (CRE), and Trust-Benevolence (BEN). Two described price management: Price Management Strategy (PME) and Price Settings (PS). Inventory Management Strategy (IME) represented inventory efficiency. The external performance criteria were the four BSC dimensions: financial performance, market performance, learning and innovation, and process performance. The underlying scales and their operational meanings are summarised in Table 1.

Table 1
Constructs Used in the Cluster and Performance Analysis

Role	Variable	Operational content	Items/source
Cluster input	CA	Joint activities, projects, planning, distribution, marketing, and opportunity exploitation	7 items; dissertation scale based on Vázquez et al. (2005)
Cluster input	CR	Complementarity of resources and capabilities contributed by parent and subsidiary	3 items; dissertation scale based on Vázquez et al. (2005)
Cluster input	GC	Compatibility of goals, strategies, values, and business philosophy	7 items; dissertation scale based on Vázquez et al. (2005)
Cluster input	CRE	Reliability, competence, transparency, and fulfilment of commitments	6 items; dissertation scale based on Vázquez et al. (2005)
Cluster input	BEN	Concern for subsidiary interests, support, sincerity, and willingness to make sacrifices	6 items; dissertation scale based on Vázquez et al. (2005)
Cluster input	PME	Importance, flexibility, and responsiveness of local price management	4 items; Ingenbleek and Van der Lans (2013)
Cluster input	PS	Use of customer value, competition, cost, market structure, and price-quality information	9 items; Ingenbleek and Van der Lans (2013)
Cluster input	IME	Stock levels, turnover monitoring, responsiveness to sales, budgets, and flexibility	10 items; Karadağ (2018)
Performance	FIN	Profit, profitability, reinvestment, and financial success relative to competitors	4 items; BSC-based scale
Performance	MAR	Customer satisfaction, product availability, and product range relative to competitors	4 items; BSC-based scale

Performance	INNO	Employee competence, education, technology adoption, and innovation	4 items; BSC-based scale
Performance	PROC	Efficiency, updating of internal processes, and direct customer interaction	4 items; BSC-based scale

Source: Author's work

Analytical Procedure

The analysis proceeded in three stages. First, descriptive statistics were calculated for the eight cluster inputs and four performance dimensions. Second, a two-step cluster analysis was conducted using the eight input variables. Two-step clustering first pre-clusters cases and then groups the resulting sub-clusters through a hierarchical procedure. The method is designed to identify naturally occurring profiles and provides automatic criteria for selecting the number of clusters. Schwarz's Bayesian Information Criterion (BIC) and the ratio of distance measures were used to evaluate alternative solutions. Cluster cohesion and separation were assessed with the silhouette measure, where values near zero indicate overlapping clusters and higher positive values indicate better separation (Chiu et al., 2001; Schwarz, 1978).

The clustering variables were averages of their underlying items and were measured on the same seven-point scale, which reduced problems caused by incompatible units. Business-performance variables were excluded from cluster construction and were used only after the solution had been selected. Predictor-importance output was examined to determine which inputs contributed most strongly to the differentiation of clusters. Cluster sizes and profiles were then interpreted substantively rather than relying only on the automatic labels produced by the software.

Third, cluster validity was examined through external comparisons. One-way analysis of variance tested differences in FIN, MAR, INNO, and PROC. The reported F statistics were supplemented in this article with eta-squared estimates calculated from the ANOVA results to indicate the magnitude of between-cluster differences. A chi-square test examined the relationship between cluster membership and company size. Because the sample is cross-sectional and the clusters are descriptive, the analysis identifies association and configuration rather than causal effects.

Results

Descriptive Profile of the Variables

Table 2 presents the average values of the cluster inputs and BSC dimensions. Cooperation variables were evaluated more positively than business performance. Complementary Resources and Capabilities had the highest mean (4.80), followed by Cooperation Agreements (4.71) and Goal Congruence (4.70). Trust-Credibility averaged 4.40 and Trust-Benevolence 4.19. Price Management Strategy was also moderate (4.23), whereas Price Settings (3.32) and Inventory Management Strategy (3.72) were lower and more variable. All four BSC means were below 2.50, suggesting that many respondents assessed their subsidiaries as weaker than competitors on financial, market, innovation, and process outcomes.

The pattern indicates an implementation gap. Respondents generally recognised agreements, complementary resources, and aligned goals, but these relational strengths did not translate uniformly into sophisticated price-setting and inventory practices. The dispersion of PS and IME is especially important because it signals substantial heterogeneity among subsidiaries. That heterogeneity provides a

substantive basis for cluster analysis: average results conceal groups that differ markedly in their ability to operationalise cooperation.

Table 2
Descriptive Statistics of Cluster Inputs and Business Performance

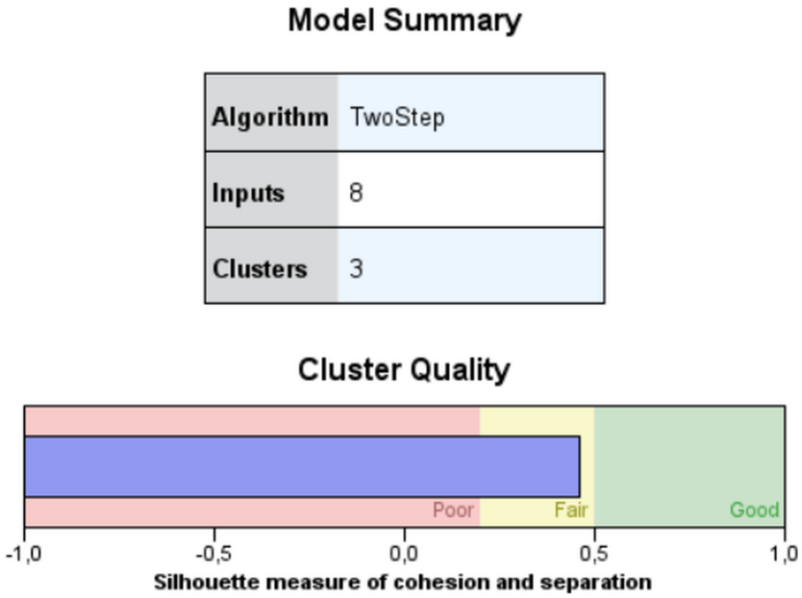
Variable	N	Minimum	Maximum	Mean	Std. dev.
Cooperation Agreements (CA)	98	1.14	7.00	4.71	1.336
Complementary Resources and Capabilities (CR)	98	2.00	7.00	4.80	1.238
Goal Congruence (GC)	98	2.00	7.00	4.70	1.201
Trust-Credibility (CRE)	98	1.50	7.00	4.40	1.179
Trust-Benevolence (BEN)	98	1.83	7.00	4.19	1.229
Price Management Strategy (PME)	98	1.00	7.00	4.23	1.263
Price Settings (PS)	98	1.00	7.00	3.32	1.772
Inventory Management Strategy (IME)	98	1.00	7.00	3.72	1.553
Financial Performance (FIN)	98	1.00	6.50	2.48	1.374
Market Performance (MAR)	98	1.00	6.25	2.33	1.283
Learning and Innovation (INNO)	98	1.00	6.50	2.43	1.349
Process Performance (PROC)	98	1.00	6.50	2.49	1.464

Source: Author's work

Selection and Quality of the Cluster Solution

The two-step procedure identified three clusters from the eight input variables. The model summary in Figure 1 reports eight inputs and a three-cluster solution. The silhouette measure is in the fair range, at approximately 0.45. This value does not indicate complete separation, but it is adequate for an exploratory organizational typology in which adjacent profiles are expected to overlap.

Figure 1
Model Summary of the Two-Step Cluster Analysis



Source: Author's work

The auto-clustering statistics in Table 3 support the three-cluster solution. BIC fell sharply from 612.777 for one cluster to 532.194 for two clusters and then reached its minimum of 521.256 for three clusters. Adding a fourth cluster increased BIC to 549.702, indicating a deterioration in parsimony-adjusted fit. The ratio of distance measures was also highest for the transition to the three-cluster solution (1.877) among the first alternatives. Taken together with interpretability and cluster size, these results justify retaining three groups.

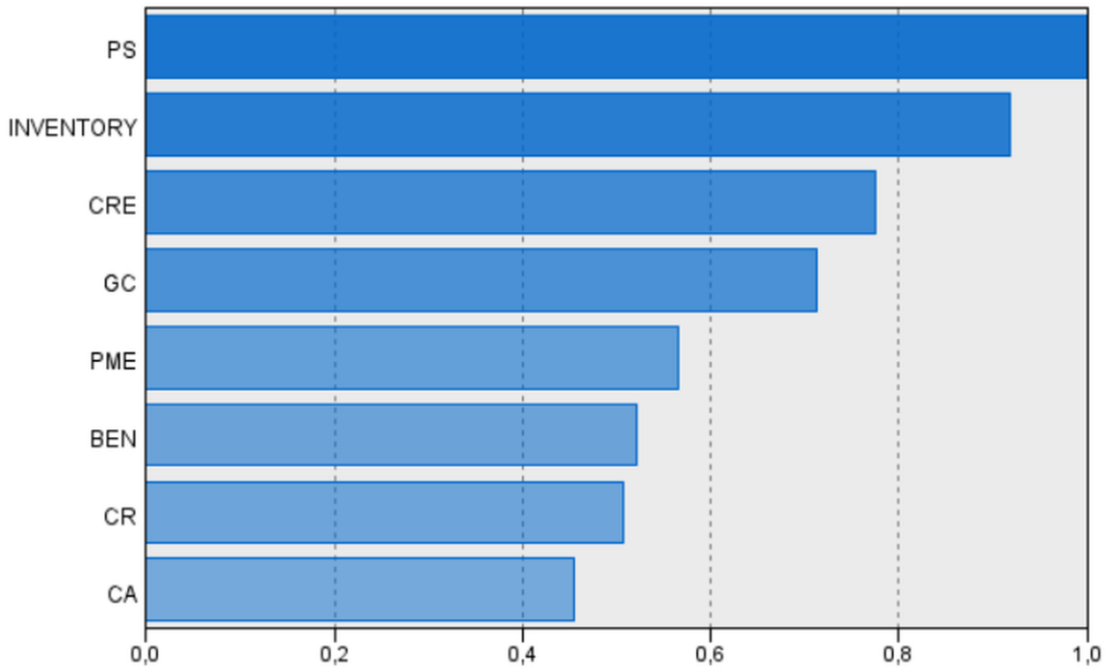
Table 3
Auto-Clustering Criteria for the Retained Solution

No. of clusters	BIC	BIC change	Ratio of BIC changes	Ratio of distance measures
1	612.777			
2	532.194	-80.582	1	1.826
3	521.256	-10.938	0.136	1.877
4	549.702	28.446	-0.353	1.946
5	599.979	50.276	-0.624	1.127

Source: Author's work
Note: The dissertation reports solutions up to 15 clusters; the table is condensed to the relevant alternatives

The predictor-importance plot in Figure 2 shows that Price Settings was the strongest discriminator, followed by Inventory Management Strategy, Trust-Credibility, Goal Congruence, and Price Management Strategy. Trust-Benevolence, Complementary Resources and Capabilities, and Cooperation Agreements contributed less to separation. The ordering indicates that basic relational structures were relatively common across the sample, whereas actual commercial and operational implementation differentiated subsidiaries more strongly. The accompanying narrative in the dissertation labels PME as the leading predictor, but the plotted output clearly assigns the maximum importance to PS; the figure-based ordering is used here.

Figure 2
Relative Importance of the Cluster Inputs

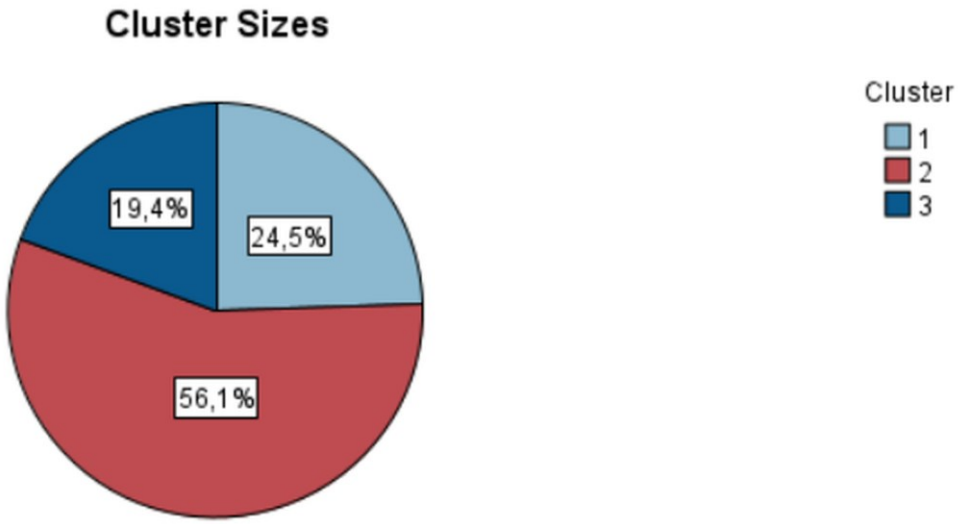


Source: Author's work

Cluster Sizes and Organisational Profiles

Figure 3 shows the distribution of cases. Cluster 1 included 24 companies (24.5%), Cluster 2 included 55 companies (56.1%), and Cluster 3 included 19 companies (19.4%). No group was too small for interpretation, although the second cluster contained more than half of the sample. The clusters were named according to their mean patterns rather than by size.

Figure 3
Cluster Sizes and Distribution



Source: Author's work

Table 4 demonstrates statistically significant differences across all eight input variables.

Table 4
Mean Values of Cluster Inputs and ANOVA Results

Variable	C1 Mean	C1 SD	C2 Mean	C2 SD	C3 Mean	C3 SD	F
CA	5.79	0.661	4.75	1.179	3.23	1	32.257***
CR	5.72	0.753	4.93	1.042	3.28	0.811	37.079***
GC	5.82	0.638	4.76	0.941	3.12	0.522	59.455***
CRE	5.54	0.915	4.44	0.763	2.82	0.53	67.440***
BEN	5.22	1.015	4.25	0.965	2.74	0.619	38.468***
PME	5.46	0.779	4.19	1.012	2.83	0.817	43.038***
PS	5.85	0.877	2.64	1.043	2.11	1.08	100.907***
IME	5.78	0.715	3.32	1.003	2.25	0.944	87.792***

Source: Author's work
Note: *** $p < 0.01$

Cluster 1 recorded the highest means across all variables, including 5.79 for CA, 5.72 for CR, 5.82 for GC, 5.54 for CRE, 5.22 for BEN, 5.46 for PME, 5.85 for PS, and 5.78 for inventory management. This profile is integrated and operationally aligned. It combines strong relational integration with sophisticated commercial and inventory practices, indicating that cooperation has been translated into routines.

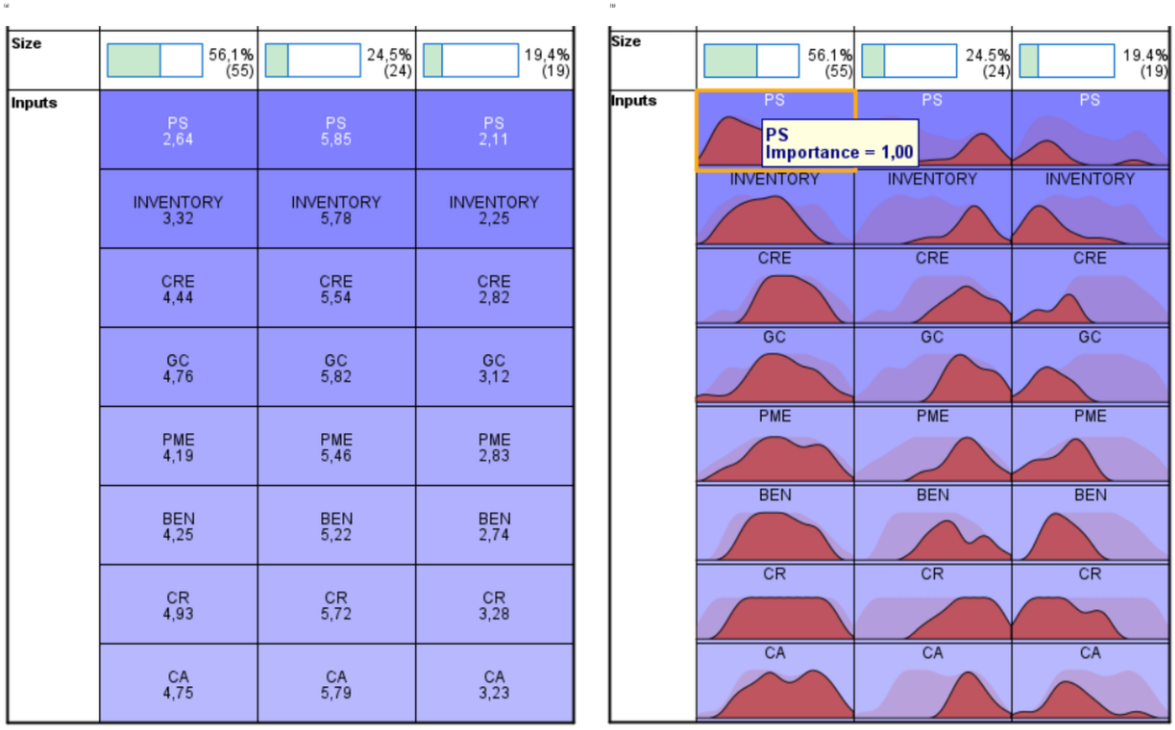
Cluster 2 showed an intermediate but uneven profile. Relational measures were moderately high: CA was 4.75, CR 4.93, GC 4.76, CRE 4.44, and BEN 4.25. PME was also

moderate at 4.19. However, PS fell to 2.64 and inventory management to 3.32. The group is therefore best interpreted as relationally established but operationally underdeveloped. Parent-subsidiary relations and strategic alignment exist, but local price-setting and inventory routines have not reached the same level of maturity.

Cluster 3 recorded the lowest mean on every input. Values ranged from 2.11 for PS to 3.28 for CR. This cluster is weakly integrated and operationally constrained. The combination of low trust, weak goal congruence, limited cooperation, and underdeveloped pricing and inventory practices suggests that the subsidiary remains poorly connected to the parent company and lacks the operating mechanisms needed to exploit potential synergies.

The visual profiles in Figure 4 reinforce this interpretation. Panel (a) presents the cluster means and dominant categories, while panel (b) shows the distributions of each input. The separation is largest for price settings and inventory management. The moderate cluster overlaps with the high cluster on some relational variables but moves decisively toward the weak cluster on operational implementation. This asymmetry is central to the substantive result: cooperation agreements and complementary resources are not sufficient unless they are converted into coordinated commercial decisions.

Figure 4
Graphical Representation of the Three Cluster Profiles



Source: Author's work

Company Size and Cluster Membership

The distribution by company size is presented in Table 5. Most companies in every cluster had 51-250 employees. The chi-square statistic was 3.208 with a p-value of 0.524, indicating no statistically significant association between cluster membership and size. High, moderate, and weak integration profiles therefore occurred across the represented size categories. The result rejects a simple structural explanation in which

larger subsidiaries automatically possess more developed cooperation and operational systems.

Table 5
Distribution of Clusters by Company Size

Number of employees	Cluster 1	Cluster 2	Cluster 3	Total
11-50	9	20	4	33
51-250	14	32	15	61
More than 250	1	3	0	4
Total	24	55	19	98

Source: Author's work
Note: $\chi^2 = 3.208$; $p = 0.524$

Business Performance Across Clusters

The BSC comparison provides external validation of the typology. As shown in Table 6, Cluster 1 substantially outperformed Clusters 2 and 3 on all four dimensions. Its mean financial performance was 4.19, compared with 2.00 in Cluster 2 and 1.68 in Cluster 3. Market performance was 4.16 in Cluster 1, compared with 1.80 and 1.57. Learning and innovation was 4.32 in Cluster 1, compared with 1.90 and 1.57. Process performance showed the largest absolute mean for the high-integration cluster at 4.53, compared with 1.89 and 1.67.

Table 6
Business Performance According to Cluster Membership

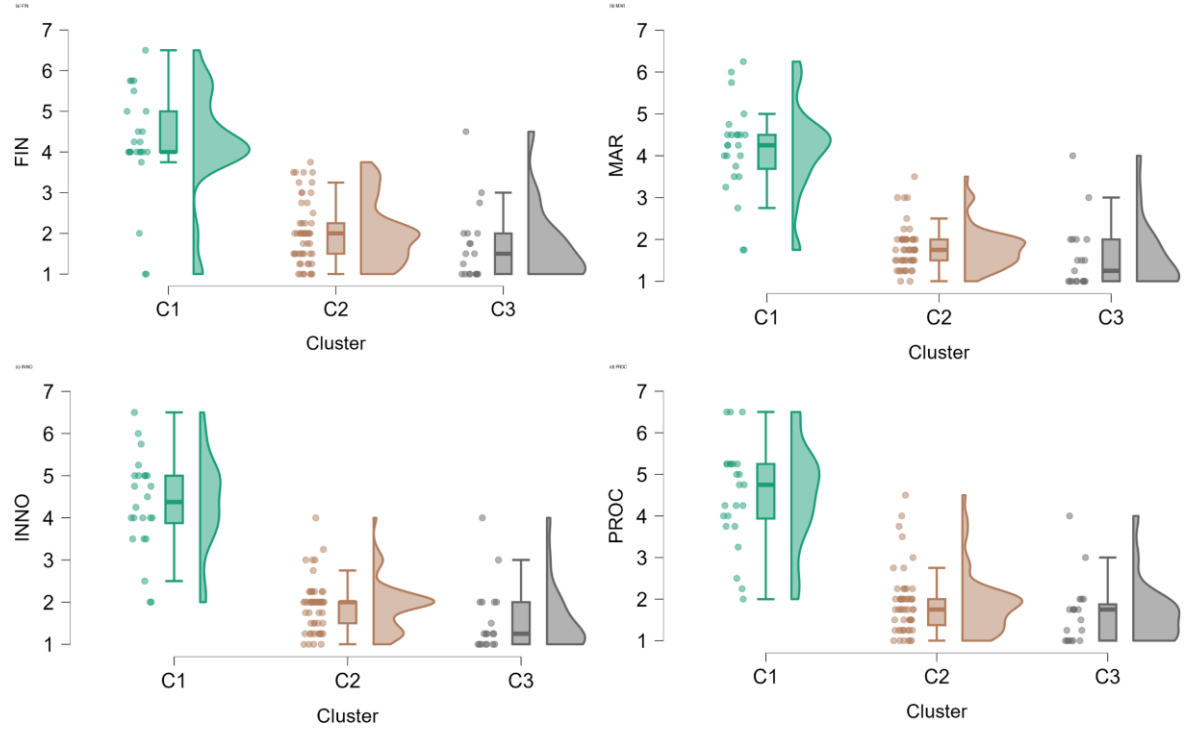
BSC variable	C1 Mean	C1 SD	C2 Mean	C2 SD	C3 Mean	C3 SD	F
FIN	4.19	1.344	2	0.771	1.68	0.916	50.574***
MAR	4.16	1.095	1.8	0.5	1.57	0.807	96.052***
INNO	4.32	1.138	1.9	0.602	1.57	0.799	90.243***
PROC	4.53	1.228	1.89	0.747	1.67	0.769	83.470***

Source: Author's work
Note: *** $p < 0.01$

The ANOVA statistics were significant at the 1% level. Effect-size estimates calculated from the reported F values indicate that cluster membership accounted for approximately 51.6% of variance in FIN, 66.9% in MAR, 65.5% in INNO, and 63.7% in PROC. These are large differences. Market, innovation, and process outcomes were particularly sensitive to organisational profile, consistent with the argument that relational and operational integration affects capabilities not captured by financial measures alone.

The raincloud plots in Figure 5 show the full distributions rather than only the means. Cluster 1 is clearly shifted upward on every dimension, although it also displays greater dispersion. Clusters 2 and 3 are concentrated near the lower end of the scale and overlap considerably. This pattern suggests a threshold rather than a smooth linear progression: moderate relational integration without strong price-setting and inventory practices does not produce performance close to the high-integration group. The principal distinction is therefore between a coherent configuration that combines relational and operational maturity and the remaining profiles.

Figure 5
Distribution of Balanced Scorecard Performance Across Clusters



Source: Author's work

Discussion

Interpretation of the Findings

The results answer the first research question by identifying three recognisable post-M&A profiles. The high-integration cluster combines strong cooperation, complementary resources, aligned goals, trust, flexible price management, sophisticated price-setting, and developed inventory practices. The moderate cluster has established relational foundations but weaker operational implementation. The weak cluster performs poorly on both relational and operational dimensions. The solution therefore reveals not only levels of integration but also a sequencing problem: many subsidiaries appear to have reached agreement and strategic alignment without fully embedding those relationships in commercial and supply-chain routines.

This distinction extends post-acquisition integration research. The literature commonly separates human and task integration (Birkinshaw et al., 2000), autonomy and coordination (Puranam et al., 2006), or strategic fit and implementation. The cluster solution shows how these dimensions coexist empirically. Cluster 2 resembles an incomplete integration stage in which relational structures have advanced further than operational systems. Such companies may have formal cooperation, shared objectives, and adequate credibility, but pricing and inventory decisions remain fragmented. The performance comparison indicates that this incomplete configuration is not merely transitional in appearance; it is associated with results much closer to the weak cluster than to the high cluster.

The strongest discriminators were price settings and inventory management. This is theoretically important because M&A research often treats such practices as downstream technical details. The findings suggest that they are diagnostic indicators

of whether broader integration has become operational. Pricing requires timely market, cost, customer, and competitor information, as well as clarity about decision rights. Inventory management requires information sharing, coordinated forecasting, and aligned incentives. Both practices therefore embody the quality of parent-subsidiary cooperation. Their importance does not reduce the role of trust or goal congruence; rather, it shows where relational quality becomes visible in decisions that affect customers, working capital, and process performance.

The second research question is answered by the substantial BSC differences. The integrated and operationally aligned cluster outperformed the other groups on financial, market, innovation, and process dimensions. This broad pattern is consistent with the BSC logic that performance perspectives are interdependent. Better coordination can improve product availability and customer satisfaction, reduce excess inventory and price inconsistency, support process upgrading, and release managerial attention for learning and innovation. The high cluster's advantage was not confined to cost or profit; it extended to capabilities that sustain future competitiveness.

The particularly large differences in market, innovation, and process performance are relevant to the IT sector. Acquisitions in technology-intensive industries are frequently justified by access to markets, products, knowledge, or talent. These benefits require more than ownership. They require the subsidiary to participate in information flows, joint decision-making, and coordinated execution without losing local responsiveness. The cluster results are consistent with studies showing that knowledge relatedness, autonomy, and organisational integration jointly shape high-tech acquisition performance (Cloodt et al., 2006; Ensign et al., 2014; Tarba et al., 2019).

The third research question concerned firm size. The non-significant chi-square result indicates that organisational maturity after acquisition is not a simple function of employee numbers. Medium-sized firms appeared in all three clusters, and the few large companies were divided between the high and moderate groups. This finding redirects managerial attention from structural scale to governance and process quality. Larger subsidiaries may have more resources, but they do not automatically possess aligned decision rights, trust, pricing discipline, or inventory coordination.

Theoretical Contributions

The first contribution is methodological. The study applies a person- or case-centred clustering approach to a field dominated by variable-centred models. Regression and structural equation models estimate average relationships and are valuable for testing direct and indirect effects, but they do not show whether organisations form recurring configurations. The two-step analysis demonstrates that post-M&A subsidiaries can be grouped into substantively distinct profiles and that these profiles possess strong external validity in relation to BSC performance.

The second contribution is the integration of relational and operational dimensions. Cooperation agreements, complementarity, goal congruence, and trust represent the social and governance infrastructure of the parent-subsidiary relationship. Price setting and inventory management represent implementation. Treating these domains together reveals that relational integration is necessary but may not be sufficient. The moderate cluster's profile suggests that cooperation can remain decoupled from operational routines. This provides a more precise explanation for why apparently well-managed acquisitions may fail to generate expected performance.

The third contribution is the use of the BSC as a multidimensional external criterion. Acquisition performance is often assessed by shareholder returns or accounting outcomes, which may miss changes in innovation, customer relationships, and internal processes. The four BSC dimensions show that the high-integration configuration is associated with a broad performance system rather than a narrow financial advantage. This result supports calls for more comprehensive definitions of M&A performance (Zollo & Meier, 2008) and extends BSC applications in technology and supply-chain contexts.

The fourth contribution concerns the role of operational mediators in high-tech acquisitions. The predictor-importance output and cluster profiles place price setting and inventory management at the centre of differentiation. These practices should not be treated as peripheral controls. They are mechanisms through which strategic alignment affects market responsiveness, working capital, service quality, and learning. Future models of post-acquisition integration should therefore include commercial and supply-chain routines alongside culture, leadership, and human-resource variables.

Managerial Implications

Managers can use the three profiles as a diagnostic framework. A subsidiary resembling Cluster 3 requires foundational intervention: clarification of goals and decision rights, credible communication, structured cooperation mechanisms, and visible support from the parent company. Attempting to impose advanced pricing or inventory systems without repairing trust and alignment may produce compliance without useful information sharing. The initial priority is to establish a workable relationship and a common operating logic.

A subsidiary resembling Cluster 2 requires a different response. Its relational foundation is already moderately strong, so additional meetings or formal agreements may have limited value unless they change decisions. Management should focus on translating cooperation into operational governance. This includes defining who can change prices, which data must be shared, how frequently inventory and turnover are reviewed, how local market knowledge enters group decisions, and how exceptions are escalated. Joint dashboards linking price, volume, margin, stock ageing, availability, and customer outcomes can make integration measurable.

Cluster 1 provides a benchmark, not a reason for complacency. Its higher performance variability indicates that even integrated subsidiaries differ in realised outcomes. Managers should balance coordination with local autonomy, avoid over-standardisation, and keep investing in innovation and process renewal. The BSC can be used to detect whether financial improvements are being achieved at the expense of customer satisfaction, learning, or future capabilities.

The results also caution against using company size as a proxy for integration readiness. Post-M&A planning should be based on the quality of relationships, information flows, and operational systems rather than employee numbers. Due diligence and integration reviews should include explicit assessment of pricing governance and inventory practices, because weaknesses in these areas may reveal deeper coordination problems. For boards and corporate development teams, the findings imply that synergy plans should specify not only strategic targets but also the routines through which subsidiaries will execute them.

Limitations and Future Research

Several limitations constrain the interpretation. First, the cross-sectional design does not establish temporal order or causal impact. The clusters show that organisational

configurations and performance coexist, but stronger performance may also enable investment in better systems and cooperation. Longitudinal research should follow subsidiaries from the pre-acquisition period through successive integration stages and examine movements between profiles.

Second, the sample contains 98 European IT subsidiaries and is geographically concentrated in Central and Eastern Europe. The response rate is strong, but the number of cases limits detailed country comparisons and the stability of smaller subgroups. Replication with larger samples in North America, Asia, and other European regions would test whether the same three profiles recur under different institutional and market conditions.

Third, the study relies on perceptual survey measures. Key informants were selected according to their expertise, and two respondent roles were used, but self-report and social-desirability bias remain possible. Future studies should combine survey data with objective indicators such as revenue growth, margins, inventory turnover, stock ageing, delivery performance, employee retention, patenting, and customer churn.

Fourth, the silhouette measure indicates fair rather than strong separation. The three-cluster solution is supported by BIC, distance measures, interpretability, and external performance differences, but replication is necessary. Latent profile analysis, finite-mixture structural equation modelling, or repeated clustering on holdout samples could provide stronger validation. Finally, the model focuses on cooperation, pricing, and inventory. Future configurational research should incorporate leadership, culture, digital integration, talent retention, acquisition experience, and the chosen integration mode.

Conclusion

This study examined post-M&A business performance among 98 European IT subsidiaries through two-step cluster analysis. Eight variables describing cooperation with the parent company, trust, price management, price setting, and inventory management produced three profiles: an integrated, operationally aligned cluster; a relationally established but operationally underdeveloped cluster; and a weakly integrated, operationally constrained cluster.

The profiles differed substantially across all four BSC dimensions. The high-integration cluster achieved markedly better financial, market, learning and innovation, and process performance. Price settings and inventory management were the strongest discriminators, showing that operational practices are central indicators of whether post-acquisition cooperation has become effective. Company size was not associated with cluster membership.

The main implication is that M&A value is not realised through ownership, formal cooperation, or strategic alignment alone. Performance is strongest when relational integration is converted into coherent commercial and supply-chain routines. Managers should therefore evaluate post-acquisition progress as a configuration of trust, goals, decision rights, pricing, inventory, and multidimensional performance. Because the study is cross-sectional, these findings should be interpreted as strong associations rather than causal estimates; nevertheless, the typology offers a practical basis for diagnosing integration gaps and directing future research.

References

1. Agrawal, A., & Jaffe, J. F. (2000). The post-merger performance puzzle. In *Advances in mergers and acquisitions* (pp. 7-41). Emerald Group Publishing Limited.

2. Ahuja, G., & Katila, R. (2001). Technological acquisitions and the innovation performance of acquiring firms: A longitudinal study. *Strategic Management Journal, 22*(3), 197-220.
3. Ambroselli, S. (2021). Subsidiary decision-making autonomy: A systematic literature review of the determinants. *International Journal of Business Research and Management, 12*(4), 205-249.
4. Andrade, G., Mitchell, M., & Stafford, E. (2001). New evidence and perspectives on mergers. *Journal of Economic Perspectives, 15*(2), 103-120.
5. Antunes, A. L., Cardoso, E., & Barateiro, J. (2025). The balanced scorecard ontology: A semantic approach to enhance strategy management. *IEEE Engineering Management Review, 53*(4), 121–140. https://doi.org/10.1109/EMR.2024.3439880
6. Bena, J., & Li, K. (2014). Corporate innovation and mergers and acquisitions. *Journal of Finance, 69*(5), 1923-1960.
7. Birkinshaw, J., Bresman, H., & Håkanson, L. (2000). Managing the post-acquisition integration process: How the human integration and task integration processes interact to foster value creation. *Journal of Management Studies, 37*(3), 395-425.
8. Chaudhuri, S., & Tabrizi, B. (1999). Capturing the real value in high-tech acquisitions. *Harvard Business Review, 77*, 123-132.
9. Chiu, T., Fang, D., Chen, J., Wang, Y., & Jeris, C. (2001). A robust and scalable clustering algorithm for mixed type attributes in large database environment. In *Proceedings of the seventh ACM SIGKDD international conference on Knowledge discovery and data mining* (pp. 263–268). Association for Computing Machinery. https://doi.org/10.1145/502512.502549
10. Chopra, S., & Meindl, P. (2019). *Supply chain management: Strategy, planning, and operation* (7th ed.). Pearson.
11. Cloodt, M., Hagedoorn, J., & Van Kranenburg, H. (2006). Mergers and acquisitions: Their effect on the innovative performance of companies in high-tech industries. *Research Policy, 35*(5), 642-654.
12. Dezi, L., Battisti, E., Ferraris, A., & Papa, A. (2018). The link between mergers and acquisitions and innovation: A systematic literature review. *Management Research Review, 41*(6), 716-752.
13. Ensign, P. C., Lin, C.-D., Chreim, S., & Persaud, A. (2014). Proximity, knowledge transfer, and innovation in technology-based mergers and acquisitions. *International Journal of Technology Management, 66*(1), 1–31. https://doi.org/10.1504/IJTM.2014.064018
14. Finkelstein, S., & Haleblian, J. (2002). Understanding acquisition performance: The role of transfer effects. *Organization Science, 13*(1), 36-47.
15. Gantumur, T., & Stephan, A. (2012). Mergers and acquisitions and innovation performance in the telecommunications equipment industry. *Industrial and Corporate Change, 21*(2), 277-314.
16. Gaur, V., & Kesavan, S. (2015). The effects of firm size and sales growth rate on inventory turnover performance in the U.S. retail sector. *Manufacturing & Service Operations Management, 17*(4), 445-462.
17. Haleblian, J., & Finkelstein, S. (1999). The influence of organizational acquisition experience on acquisition performance: A behavioral learning perspective. *Administrative Science Quarterly, 44*(1), 29-56.
18. Haleblian, J., Devers, C. E., McNamara, G., Carpenter, M. A., & Davison, R. B. (2009). Taking stock of what we know about mergers and acquisitions: A review and research agenda. *Journal of Management, 35*(3), 469-502.
19. Hitt, M. A., Ireland, R. D., & Hoskisson, R. E. (2024). *Strategic management: Concepts and cases: Competitiveness and globalization* (14th ed.). Cengage Learning.
20. Hou, C. K. (2016). Using the balanced scorecard in assessing the impact of BI system usage on organizational performance: An empirical study of Taiwan's semiconductor industry. *Information Development, 32*(5), 1545-1569.
21. Ingenbleek, P. T., & Van der Lans, I. A. (2013). Relating price strategies and price-setting practices. *European Journal of Marketing, 47*(1/2), 27-48.

22. Karadağ, H. (2018). Cash, receivables and inventory management practices in small enterprises: Their associations with financial performance and competitiveness. *Small Enterprise Research, 25*(1), 69-89.
23. King, D. R., Dalton, D. R., Daily, C. M., & Covin, J. G. (2004). Meta-analyses of post-acquisition performance: Indications of unidentified moderators. *Strategic Management Journal, 25*(2), 187-200.
24. Koolmann, L., Luu, A., & Shaw, S. (2024, February 29). Thoughtful M&A strategies are key to growth in tech, media, and telecom. McKinsey & Company. https://www.mckinsey.com/capabilities/m-and-a/our-insights/thoughtful-m-and-a-strategies-are-key-to-growth-in-tech-media-and-telecom
25. Llorach, C., & Ottosson, E. (2016). *The balanced scorecard during the early stages of a tech firm*. Uppsala University, Department of Business Studies.
26. Makri, M., Hitt, M. A., & Lane, P. J. (2010). Complementary technologies, knowledge relatedness, and invention outcomes in high technology mergers and acquisitions. *Strategic Management Journal, 31*(6), 602-628.
27. Manocha, P., & Srai, J. S. (2020). Exploring environmental supply chain innovation in M&A. *Sustainability, 12*(23), 10105.
28. Manolopoulos, D., Magoutas, A., & Kapnias, Y. (2021). Governing headquarters-subsidiaries relationship: An agency perspective. *Journal of Governance and Regulation, 10*(3), 117-127.
29. Meyer, K. E., Li, C., & Schotter, A. P. (2020). Managing the MNE subsidiary: Advancing a multi-level and dynamic research agenda. *Journal of International Business Studies, 51*, 538-576.
30. Pejić Bach, M., Klinčar, A., Aleksić, A., Rašić Jelavić, S., & Zeqiri, J. (2023). Supply chain management maturity and business performance: The balanced scorecard perspective. *Applied Sciences, 13*(4), 2065.
31. Puranam, P., Singh, H., & Zollo, M. (2003). A bird in the hand or two in the bush? Integration trade-offs in technology-grafting acquisitions. *European Management Journal, 21*(2), 179-184.
32. Puranam, P., Singh, H., & Zollo, M. (2006). Organizing for innovation: Managing the coordination-autonomy dilemma in technology acquisitions. *Academy of Management Journal, 49*(2), 263-280.
33. Raziq, M. M., Benito, G. R., & Kang, Y. (2023). Multinational enterprise organizational structures and subsidiary role and capability development: The moderating role of establishment mode. *Group & Organization Management, 48*(3), 908-952.
34. Renneboog, L., & Vansteenkiste, C. (2019). Failure and success in mergers and acquisitions. *Journal of Corporate Finance, 58*, 650-699.
35. Rossi, M., Yedidia Tarba, S., & Raviv, A. (2013). Mergers and acquisitions in the high-tech industry: A literature review. *International Journal of Organizational Analysis, 21*(1), 66-82.
36. Schwarz, G. (1978). Estimating the dimension of a model. *The Annals of Statistics, 6*(2), 461-464.
37. Tarba, S. Y., Ahammad, M. F., Junni, P., Stokes, P., & Morag, O. (2019). The impact of organizational culture differences, synergy potential, and autonomy granted to the acquired high-tech organizations on M&A performance. *Group & Organization Management, 44*(3), 483-520.
38. Vázquez, R., Iglesias, V., & Álvarez-González, L. I. (2005). Distribution channel relationships: The conditions and strategic outcomes of cooperation between manufacturer and distributor. *The International Review of Retail, Distribution and Consumer Research, 15*(2), 125–150. https://doi.org/10.1080/09593960500049241
39. Zairbani, A., Doddaullarthi Basavaraj, C., SriSai, V., Jaya Prakash, S. K., & Anitha Kumari, P. (2024). Investigating the distinctive link between a balanced scorecard and organizational performance in IT and non-IT sectors. International Journal of Quality & Reliability Management, ahead-of-print.
40. Zollo, M., & Meier, D. (2008). What is M&A performance? *Academy of Management Perspectives, 22*(3), 55-77.

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