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From Intelligent Management Systems to Financial Performance: Distinguishing Financial Governance and Operational Coordination in Tourism Enterprises

Driton Sylqa[1] and Olta Nexhipi[2,*]
[1]University "Haxhi Zeka, Peja, Kosovo
[2]Arden University, Berlin Campus, Berlin, Germany
Correspondence: olta.nexhipi@gmail.com

Abstract Digital technologies can improve the availability of managerial information, yet their association with enterprise financial outcomes depends on the extent to which that information is embedded in organizational routines and translated into managerial action. Addressing a specific distinction within this broader business-value debate, this study examines financial management efficiency and operational efficiency as parallel, conceptually distinct pathways linking intelligent management systems (IMS) with perceived financial performance in tourism enterprises. Drawing on the resource-based view and dynamic capabilities perspective, the proposed model is evaluated using previously reported cross-sectional survey responses provided by 740 middle- and senior-level managers working in or associated with tourism and hospitality enterprises in Southeast Europe. The source analysis reports positive IMS associations with financial management efficiency ($\beta = 0.584$) and operational efficiency ($\beta = 0.528$); both efficiencies are positively related to perceived financial performance ($\beta = 0.412$ and $\beta = 0.324$, respectively). The two reported indirect associations are consistent with the proposed dual-pathway model; the source model reports $R^2 = 0.648$ for perceived financial performance. Rather than treating technology uptake as equivalent to organizational capability, the study distinguishes liquidity-oriented financial governance from the coordination of service processes and positions these mechanisms within recent tourism technology–performance scholarship. The cross-sectional, manager-reported design limits causal inference, and the underlying structural estimates still require independent verification against the original observations and the original statistical software output. Subject to that verification, the framework identifies distinct organizational functions relevant to the business value of intelligent management technologies.

Index Terms intelligent management systems; tourism management; financial governance; operational efficiency; digital capabilities; dynamic capabilities; PLS-SEM; perceived financial performance

I. Introduction

Tourism enterprises routinely manage demand uncertainty, fluctuating occupancy and bookings, perishable service capacity, seasonally variable cash flows, and coordination across reservations, staffing, suppliers, and distribution channels. Monitoring dashboards and decision-support systems can make such problems more visible and improve forecast quality. Visibility, however, is not the same as improved profitability. A system may identify a cash shortage without changing financing decisions, or predict occupancy accurately without enabling staffing adjustments. Recent reviews show that tourism digitalisation research already links technology to organizational performance through several organizational and capability-based explanations; the remaining research challenge is therefore not merely to establish another broad, positive technology–performance association but to distinguish the managerial mechanisms that give digital information economic significance [1]–[3].

This study distinguishes two managerial conversion processes. Financial management efficiency (FME) concerns the timeliness and quality of decisions about liquidity buffers, working capital, funding exposure, and asset–liability alignment. Operational efficiency (OE) concerns the ways in which enterprises coordinate staffing, inventory, service capacity, and operating workflows to reduce avoidable cost or delay. These mechanisms are conceptually and analytically separate, even when they depend on the same information infrastructure. For example, improved forecasting may enable a hotel to plan liquidity for a period of seasonally low demand without altering the speed of room-turnover processes; conversely, an automated rostering system may lower service costs without resolving financing mismatches. Distinguishing these paths

avoids a common interpretation problem in which all improvements in organizational performance are grouped into one vague "capability" construct.

Southeast Europe provides the reported empirical setting, but geographical location alone does not establish a regional theory. Tourism enterprises in this setting may differ in enterprise size, exposure to cross-border demand, labor-market constraints, financing options and technological preparedness. These features are proposed as plausible boundary conditions, not as established empirical findings of this study. Without the identities and sizes of national subsamples or institutional indicators, cross-country effects cannot be inferred. The theoretical claims are accordingly developed at the firm-process level and their portability across different institutional and market settings therefore remains an open empirical question.

The paper addresses three research questions. RQ1 asks whether IMS is associated with financial management and operational efficiency; RQ2 asks whether these capabilities are separately associated with perceived financial performance; RQ3 asks whether the corresponding indirect associations remain distinguishable in a single model. The intended incremental contribution is not simply the observation that digital capabilities are important: recent empirical work has already examined business intelligence and dynamic capabilities in tourism and hospitality firms [4]. Instead, this paper places treasury-oriented governance and service-process coordination side by side, develops their different resource-conversion logics, and tests their association with perceived financial outcomes. This narrower positioning also clarifies the paper's limits: the current design evaluates theoretically consistent associations rather than the timing, complementarity, or causal effects of these mechanisms.

A. Positioning against Adjacent Tourism Research

Three strands of recent scholarship clarify the specific gap addressed here. First, Hernandez and Lee [1] establish that tourism technology may automate, informate, and transform business processes, highlighting the need to specify where business value is realized. Second, Zhang et al. [2] describe a fragmented digital-transformation and performance literature in which definitions, units of analysis, and performance dimensions frequently differ. Third, Tajeddini et al. [4] demonstrate that business intelligence adoption can mediate associations among firm capabilities and performance in tourism and hospitality. Consequently, neither the presence of digital capabilities nor the existence of statistical mediation constitutes sufficient novelty. The distinctive proposition examined here is that internal financial governance and operational coordination represent two separate managerial destinations for digital information, with potentially different decision rights, operational time horizons, and economic outcomes.

This analytical distinction can also reveal plausible boundary conditions and potential failure modes. Technological sensing may fail to yield financial benefits when information is not connected to spending authority, financial controls, or workforce decisions. Conversely, enterprises may achieve better reported performance through stronger financial controls without improving day-to-day service throughput. These possibilities are theoretical interpretations requiring more direct and carefully specified measurements in future research; they are not empirical findings claimed from the present sample.

B. Research Contribution and Theoretical Scope

The proposed contribution is a function-level account of two distinct ways in which managerial information may be converted into economic outcomes. Financial governance concerns the allocation and protection of liquid resources over budgetary horizons; operational coordination concerns the deployment of people, capacity and processes over service-delivery horizons. Unlike a broadly defined technology-adoption model, this framework assigns distinct decision rights, intervention opportunities and proximate consequences to each route. It therefore generates a specific, testable explanation for why the use of similar IMS infrastructure need not be associated with the same performance profile across tourism firms.

The empirical contribution remains conditional upon empirical verification. The reported parallel indirect estimates constitute an initial association-based examination, not evidence of differential pathway strength, complementary interaction, longitudinal mediation or causal technology returns. A decisive test of those stronger propositions would require the original items, verified model estimates, credible measures of operating and financing conditions, and an appropriate temporal design.

II. Theoretical Framework and Hypotheses

A. Linking Digital Resources to Organizational Capabilities

The resource-based view argues that advantage depends on valuable resources and their organization, not on ownership of a widely accessible tool alone [5]. The dynamic capabilities perspective adds a process-based account: firms sense changing conditions, seize opportunities by committing resources, and reconfigure operating routines [6], [7]. Both perspectives are useful but play distinct roles here. RBV establishes why IMS software is not sufficient for a defensible performance advantage. The dynamic capabilities perspective explains the organizational work required to convert system-generated information into changed decisions. The capability claim is therefore about coordinated use and reconfiguration rather than treating software acquisition itself as a dynamic capability. This separation is consistent with broader research on the business value of hospitality and tourism technology [1].

IMS is conceptualized as system-based monitoring (SBM), which records financial or operational conditions, and decision-support systems (DSS), which assist the interpretation of patterns and selection among actions. FME is conceptualized in the source analysis through reserve management (RM) and asset–liability management (ALM), while OE concerns service-process resource use, workflow execution

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and coordination. Perceived financial performance (FP) is the manager's comparative appraisal of outcomes such as profitability, growth and returns; it is not interchangeable with independently audited profitability. Crucially, digital tools, enabling capabilities, efficiency outcomes and financial outcomes occupy conceptually different positions in this chain. Whether SBM and DSS—or RM and ALM—are best represented as manifestations of a shared reflective latent construct or jointly form a multidimensional composite cannot be assumed merely because a two-stage higher-order estimator was used. The indicators and theory must establish the direction of measurement.

Table 1 summarizes the conceptual distinctions between the two managerial pathways. The proposed mechanisms differ on at least four dimensions: (1) the decision locus (finance versus service operations), (2) the time horizon (liquidity exposure and capital planning versus immediate capacity and process coordination), (3) the intervening action (reserve or financing allocation versus schedule or workflow adjustment), and (4) the proximate outcome (cost of funds and financial resilience versus unit service costs and resource utilization). These distinctions matter because the same digital signal can improve one function without improving the other. Estimating both pathways concurrently is a preliminary way to avoid conflation; genuine complementarities would require separately specified interactions or longitudinal process measures and are not established by two positive indirect coefficients.

Table 1: Theoretical Distinctions Between Financial Governance and Operational Coordination (Conceptual Comparison).

Dimension	Financial Management Efficiency (FME)	Operational Efficiency (OE)
Decision locus	Treasury, budgeting, funding, and risk	Capacity, workforce, procurement, and service operations
Illustrative IMS signal	Anticipated cash-flow mismatch or low-season liquidity risk	Demand forecast, booking, or turnaround bottleneck
Managerial conversion	Revise cash budgets, reserves, or financing commitments	Adjust staffing, schedules, purchasing, or capacity allocation
Proximate consequence	Reduced liquidity exposure or avoidable financing friction	Lower avoidable service cost, delay, or unused capacity
Potential limiting condition	Financial decision authority, financing access, risk tolerance	Labor flexibility, process coordination, service-quality trade-offs

B. Boundary Conditions Specific to Tourism

Tourism services have constrained and time-sensitive service capacity: an unoccupied room-night or unsold tour departure cannot be stored as inventory for a later period. Demand forecasting may therefore guide staffing and capacity decisions over short horizons. The same projected booking patterns also influence working-capital requirements, supplier payment timing and reserves across seasonal troughs. An integrated IMS can serve both processes, but the causal steps differ. Digital monitoring may reduce information delay; managers must then act by changing operating schedules or financial allocations. This makes tourism an informative setting for separating information production from managerial resource conversion.

Importantly, the extent of conversion may depend on service segment, chain affiliation, contract structure, seasonality, the ability to adjust staffing, and the availability of external financing. These are plausible moderators, not tested moderators in the supplied results. The regional context could become a meaningful contribution only if such conditions are measured or compared; no assertion of Southeast Europe–specific effects is made from the present data.

C. Intelligent Management Systems and Efficiency

System-based monitoring may reveal revenue deviations, receivable delays, cash conversion problems or mismatches between expected income and upcoming obligations. Decision-support systems may support scenario evaluation and prioritization of financing choices. However, financial efficiencies are realized only if managers can incorporate these signals into cash budgets, liquidity thresholds and decisions about capital commitments. Financial governance therefore embodies the deployment of intelligence into specific financial routines [8], [9]. Operationally, the same monitoring and forecast signals may be used to coordinate room allocation, staff rosters, purchasing and service delivery. Their effect depends on decision authority, task interdependence and the adjustability of labor and capacity. Prior work on analytics and tourism technology identifies both strategic and operational forms of business value but does not make these particular two processes interchangeable [1], [10].

H1. Intelligent management systems are positively associated with financial management efficiency.

H2. Intelligent management systems are positively associated with operational efficiency.

D. Efficiency and Perceived Financial Performance

Financial management efficiency should be associated with favorable performance assessments where timely liquidity decisions reduce avoidable short-term borrowing costs and disruptions caused by cash shortages. Operational efficiency should be associated with better performance assessments when workload, service capacity and supporting inputs are more closely coordinated with actual demand. Yet each explanation has plausible limits. Stronger reserves can reduce liquidity risk without increasing current-period profitability, and aggressive cost reductions may undermine perceived service quality. Better-performing firms might also have more capacity to invest in IMS, staff and financial controls. For these reasons, the proposed directions are theoretically motivated but the empirical tests remain associational rather than causal.

H3. Financial management efficiency is positively associated with perceived financial performance.

H4. Operational efficiency is positively associated with perceived financial performance.

E. Parallel Indirect Pathways

Figure 1 depicts the two hypothesized parallel pathways linking intelligent management systems to perceived financial per-

formance. The two hypothesized routes imply parallel statistical indirect associations. A financial route would be consistent with more timely information improving liquidity and funding decisions, while an operational route would be consistent with better coordination of demand and service resources. This does not imply that the two routes are mutually exclusive, nor does it demonstrate that either route is stronger: their comparative size must be evaluated with an explicit bootstrap test of the difference between indirect effects. Likewise, a significant product of coefficients in a cross-sectional survey does not identify a longitudinal mediation process. Cross-sectional mediation can yield biased estimates even when the underlying longitudinal process differs, as demonstrated by Maxwell and Cole [11].

H5. Financial management efficiency statistically mediates the association between intelligent management systems and perceived financial performance.

H6. Operational efficiency statistically mediates the association between intelligent management systems and perceived financial performance.

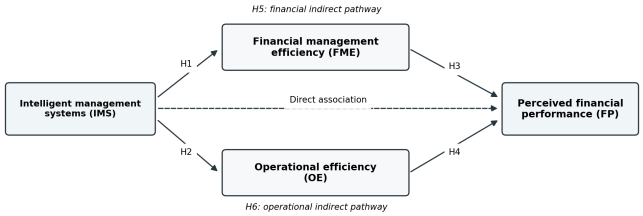


Figure 1: Hypothesized parallel-pathway framework; arrows are theoretical associations, not causal effects.

F. Scope of the Theoretical Claim

The study therefore offers a deliberately bounded contribution: it formalizes and evaluates two functionally separate domains of organizational resource conversion. It does not claim that capability mediation is novel per se, that both pathways interact synergistically, or that Southeast European institutional conditions have been causally identified. Such claims would require dedicated constructs, subgroup identification, stronger research designs and additional tests. A clear boundary between what is argued theoretically and what is established statistically is essential for interpreting the model.

III. Methodology

A. Research Design, Sampling and Unit of Analysis

This study employs a cross-sectional survey of middle- and senior-level managers working in or associated with tourism and hospitality enterprises in Southeast Europe. According to the supplied research record, a total of 1,200 questionnaires were distributed through professional association networks and direct executive channels, 763 were returned, and 23 were excluded for incompleteness or unengaged responses. The resulting sample contains 740 usable manager responses (61.7% of distributed questionnaires; 97.0% of returned responses). Of these, 426 were associated with enterprises employing more than 250 individuals and 314 with enterprises employing 250 or fewer individuals. The documented recruitment procedure is best described as nonprobability, network-based sampling; no probability sampling frame is documented. The number of unique enterprises, whether firms supplied multiple respondents, the participating country counts, the survey period, industry segments, response-wave information and inclusion criteria were not provided with the source data. These missing details prevent any claim of firm-level representativeness and preclude a reliable correction for within-firm clustering. Table 2 reports only verifiable counts drawn from the manuscript; it does not reclassify observations as independent firms.

Table 2: Survey flow and reported sample distribution; percentages are calculated using explicitly identified denominators.

Sample Flow /Characteristic	Count	Percentage of Distributed / Usable
Distributed questionnaires	1200	100.0% of distributed
Returned questionnaires	763	63.6% of distributed
Excluded questionnaires	23	1.9% of distributed
Usable manager responses	740	61.7% of distributed
Enterprise size: >250 employees	426	57.6% of usable
Enterprise size: $\leq$250 employees	314	42.4% of usable

B. Unit of Analysis and Observation Independence

The focal constructs concern enterprise-level practices and performance, whereas the observed records are manager-level questionnaires. A respondent's perception is not automatically equivalent to an independently measured firm-level characteristic. If several managers report on the same enterprise, observations may be correlated and standard errors obtained by treating all records as independent may be too small. Firm identifiers, role distributions and within-firm agreement statistics are required before aggregation or cluster-robust inference. In the absence of those records, the unit of observation should be described as the manager response and cross-enterprise generalizations should remain tentative.

C. Instrument and Construct Measurement

The original survey instrument is described as a five-point agreement questionnaire (1 = strongly disagree; 5 = strongly agree). Based on the indicator-level table rather than the inconsistent accompanying narrative, the reported first-order dimensions include SBM (four indicators), DSS (four), RM (three), ALM (three), OE (four) and FP (five). SBM captures monitoring of transactions and operational conditions; DSS reflects analytic support for forecasts and decisions; RM and ALM represent financial control and alignment; OE concerns workflow and resource-use efficiency; FP reflects comparative perceived economic outcomes. The exact wording of the individual questionnaire items, original scale sources, translation/adaptation protocol, pilot-test documentation and missingness distributions were not supplied. These omissions limit

a rigorous assessment of content validity and invites construct overlap—for example, an item measuring "cost reduction" may be closer to realized performance than to the managerial capability meant to explain performance.

For higher-order measurement, the original manuscript specifies a two-stage reflective–reflective procedure for IMS and FME. This measurement choice requires explicit justification and validation rather than automatic retention. SBM and DSS may constitute different components of an IMS configuration; RM and ALM may likewise be complementary financial functions. If dimensions jointly define the higher-order concept, a formative/composite specification may be more defensible than a reflective specification, and evaluation would require multicollinearity checks, weights and content-validity arguments rather than reflective reliability alone. The measurement model should be respecified only after inspecting item meanings and estimating competing specifications. The present study does not claim that such re-estimation has been performed.

D. Model Estimation and Common-Source Bias

The original analysis reportedly used partial least squares structural equation modelling (PLS-SEM) with 5,000 bootstrap resamples. A defensible and reproducible model evaluation would first specify whether the estimand is a common-factor latent model or an explanatory/predictive composite model; the estimator should follow that decision. Reflective first-order constructs require indicator loadings, α, ρA, composite reliability and AVE, together with discriminant-validity evidence including HTMT confidence intervals [12], [13]. Higher-order assessment depends on the justified measurement direction. Structural analysis requires coefficient estimates, bootstrap confidence intervals, endogenous R^2, f^2, predictor VIFs and sensitivity to relevant controls. Out-of-sample predictive performance should be evaluated with PLSpredict or an equivalent validation procedure rather than inferred from blindfolding Q^2 [14]. The present revision therefore reports only metrics available in the original record or arithmetically reconstructable from source tables; unobserved diagnostics are not asserted.

The supplied source record describes assurances of respondent anonymity and randomized questionnaire items and reports a largest single-factor variance share of 31.2% and full-collinearity VIFs of 1.42–2.18. Neither diagnostic establishes the absence of common method bias, especially where IMS, intermediate capabilities and financial outcomes originate from the same survey and respondent at one time. Because there are no independently measured predictors or outcomes for the full sample, common-source contamination and socially desirable managerial assessments remain competing explanations [15], [16]. Any additional marker-variable, sensitivity, or multi-source analysis should be conducted from the actual observations and documented before claiming that this risk is mitigated.

E. Structural Specification and Robustness Requirements

The original structural specification comprises the following paths: IMS $\rightarrow$ FME, IMS $\rightarrow$ OE, FME $\rightarrow$ perceived FP, OE $\rightarrow$ perceived FP, and IMS $\rightarrow$ perceived FP. In addition to the main specification, appropriate robustness analyses—conditional on obtaining access to the underlying observations—would evaluate: (i) predictor and construct collinearity; (ii) firm size, industry segment, country and respondent role as common antecedents; (iii) a model without one of the parallel mediators; (iv) alternative measurement direction for the higher-order constructs; and (v) sensitivity of inference to clustering by firm where applicable. Reverse-direction alternatives could be estimated as descriptive sensitivity checks, but model fit alone would not establish which temporal direction is correct. These are proposed analyses, not tests already performed.

F. Archival Performance Cross-Check

An earlier manuscript version states that objective return-on-investment or profit-margin data were matched with survey responses for 112 enterprises and reports a subjective–objective correlation of r = 0.78 ($p < 0.001$). This is a potentially valuable validation design, but the linkage file, date alignment, matching rules, specific accounting indicators and denominator of eligible enterprises are not available for inspection. The claim should be restored as independently substantiated validation evidence only after re-computation. It therefore cannot currently substantiate a declaration that the entire self-reported FP scale has been objectively validated.

G. Research Ethics and Data Governance

The supplied manuscript states that survey respondents were assured anonymity but does not identify a reviewing ethics body, consent documentation, the fieldwork period, retention arrangements or rules for linking questionnaire observations with archival accounts. These details should be recovered and reported from the original study documentation before submission. The authors should also state whether personal data were processed, who had access to the matching key, and what form of anonymized data and analysis materials can be shared under applicable research ethics and data-protection requirements. No ethics approval, consent procedure or data-sharing availability beyond the source account is presumed here.

IV. Results and Statistical Reporting

Tables 3–6 separate values transcribed from the original manuscript from arithmetic checks based on printed, rounded indicator loadings and path coefficients. The structural model has not been re-estimated from individual observations, and original SmartPLS output has not been supplied. Consequently, these results provide a transparent, provisional record of the study as reported, not a reproducibly verified analysis. All reported coefficients, uncertainty intervals, and model diagnostics must be replaced or confirmed against the original analysis prior to journal submission.

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A. Measurement Model

In Table 3, asterisks identify source-reported reliability estimates, whereas daggers identify composite reliability and average variance extracted values calculated algebraically from the printed loadings. For the lower-order dimensions, the composite reliability and AVE values reconstructed from the printed loadings exceed common preliminary screening benchmarks, but source-reported α and ρA estimates cannot be independently validated. The more consequential disagreement concerns higher-order dimensions: IMS loadings of 0.862 and 0.884 imply an AVE of approximately 0.762 and conventional reflective CR of approximately 0.865, rather than the original figures of 0.612 and 0.904. FME also exhibits differences between loadings-based reconstructions and originally reported reliability/AVE values. These inconsistencies are not merely minor editorial discrepancies: they may reflect a different indicator set, alternative specification or reporting error. They must be resolved using the exact statistical software project and data before the construct-validity claim is retained.

Table 3: Reported Reliability and Algebraically Reconstructed Measurement Statistics; Values Were Not Re-Estimated from Raw Data.

Construct	Items	Printed Loadings	α	ρA	CR	AVE
SBM	4	0.782, 0.841, 0.865, 0.810	0.835*	0.842*	0.895†	0.681†
DSS	4	0.795, 0.858, 0.871, 0.822	0.852*	0.858*	0.903†	0.701†
RM	3	0.810, 0.865, 0.880	0.812*	0.819*	0.888†	0.726†
ALM	3	0.825, 0.872, 0.892	0.828*	0.834*	0.898†	0.746†
OE	4	0.788, 0.832, 0.854, 0.815	0.841*	0.847*	0.893†	0.677†
FP	5	0.802, 0.845, 0.878, 0.830, 0.841	0.895*	0.901*	0.923†	0.705†
IMS (higher order)	2	0.862, 0.884	0.868*	0.874*	0.865†	0.762†
FME (higher order)	2	0.855, 0.878	0.849*	0.853*	0.858†	0.751†

These purely algebraic reconstructions assume standardized reflective indicators and employ only rounded outer loadings. They are diagnostic consistency checks, not replacements for software-estimated construct scores, bootstrapping, or documented higher-order measurement specification. In particular, a two-indicator higher-order construct may require additional conceptual and identification scrutiny even where its reconstructed AVE exceeds a heuristic threshold.

B. Discriminant Validity

The source-reported HTMT point estimates for the first-order constructs are all below 0.85. Point estimates alone do not constitute a comprehensive assessment of discriminant validity; uncertainty intervals and the higher-order measurement structure remain undocumented. In addition, the original Fornell–Larcker diagonal differs from values implied by the original AVE table, so it should not be reproduced as if confirmed. Correlations between constructs must also be interpreted in light of conceptual overlaps among operational cost savings, reserve quality and perceived financial outcomes. Table 4 is therefore a transparent transcription of source-reported HTMT values, not an independently established measurement-validity decision.

Table 4: Reported HTMT Values for First-Order Constructs; Bootstrap Confidence Intervals Are Unavailable.

Construct	SBM	DSS	RM	ALM	OE	FP
SBM	—	0.742	0.512	0.485	0.618	0.765
DSS		—	0.582	0.540	0.672	0.710
RM			—	0.648	0.495	0.575
ALM				—	0.510	0.532
OE					—	0.682
FP						—

C. Structural Relationships

The source model reports positive statistical associations from IMS to both FME and OE, and from each mediator to perceived FP (Table 5). The originally stated explained variance of perceived financial performance is R^2 = 0.648, while a separate direct effect of IMS on perceived FP is reported as β = 0.383 without a corresponding standard error or confidence interval. Source-reported significance thresholds are retained only as attributed claims, not independently recomputed p-values. The original adjusted R^2 is not reproduced because its reconciliation depends on the exact set of predictors used. Likewise, the reported blindfolding Q^2 is not evidence of holdout predictive accuracy. No claim that the model is superior to rivals can be made without appropriate comparative and predictive analyses.

Table 5: Reported Structural Path Estimates Pending Confirmation from the Original Bootstrap Output.

Path	Reported β	SE	Reported t	Significance
H1: IMS → FME	0.584	0.042	13.90	$p < 0.001$
H2: IMS → OE	0.528	0.048	11.00	$p < 0.001$
H3: FME → FP	0.412	0.045	9.16	$p < 0.001$
H4: OE → FP	0.324	0.049	6.61	$p < 0.001$
IMS → FP (direct)	0.383	Not reported	Not reported	$p < 0.001$ (source claim)

D. Parallel Mediation Analysis

The products of the component coefficients are arithmetically consistent with the reported indirect coefficients: IMS → FME → FP is approximately 0.584 × 0.412 = 0.241, and IMS → OE → FP is approximately 0.528 × 0.324 = 0.171. Taken together, they sum to 0.412. Using the common reported direct coefficient of 0.383 yields a total association of about 0.795. Descriptive indirect-to-total ratios are therefore 30.3% for FME and 21.5% for OE, with a combined 51.8%, rather than the two inconsistent percentages in the original manuscript. These are arithmetic summaries. Proportional mediation estimates obtained from cross-sectional models are particularly sensitive to modeling assumptions and should not be interpreted as the fraction of a causal effect explained [11]. Source bootstrap confidence intervals are included in Table 6 for audit purposes but cannot be independently verified here.

The reported positive indirect coefficients are consistent with the conceptual distinction proposed in Section II, but they do not establish distinct causal mechanisms, comparative superiority of one mediator, temporal ordering, or firm-level

return on technology investment. In particular, the observed coefficient for the FME pathway exceeds that for OE numerically; without an explicit bootstrap contrast between the two indirect effects, this does not demonstrate a statistically larger financial-governance route. To evaluate a stronger hypothesis concerning complementary organizational capabilities, future analyses would need interactions, dependencies or sequential process measures rather than simply two positive parallel indirect associations.

Table 6: Reported Bootstrap Intervals and Algebraically Corrected Indirect-Effect Shares; Percentages Use a Total Association of 0.795.

Path	Indirect β	Reported 95% CI	Arithmetic Share of Total*	Interpretation
H5: IMS → FME → FP	0.241	[0.168, 0.318]	30.3%	Positive indirect association
H6: IMS → OE → FP	0.171	[0.105, 0.238]	21.5%	Positive indirect association
Combined indirect	0.412	[0.325, 0.502]	51.8%	Two parallel indirect pathways
Direct IMS → FP	0.383	Not provided	48.2%	Positive direct association reported

V. Discussion

A. Interpreting the Two Pathways

The results, if confirmed, would support a more differentiated description of where the business value of management technology may occur. Financial management efficiency represents a governance-facing route: managers use monitoring and analytical information to anticipate funding needs, address cash-flow mismatches and organize reserves. Operational efficiency represents a production-facing route: managers use information to coordinate capacity, processes, personnel and service delivery. The distinction provides an interpretive contribution because finance and operations face different constraints, decision makers and horizons. It also discourages the assumption that an increase in information quality automatically constitutes a dynamic capability or a financial gain.

This interpretation is deliberately narrower than claiming to have uncovered a new general pathway between digitalization and performance. Hernandez and Lee [1] already distinguish technological roles in tourism business value; Zhang et al. [2] identify multiple antecedents and performance dimensions; and Tajeddini et al. [4] empirically connect firm capabilities, business intelligence and organizational outcomes. Relative to this work, the potential increment here is the finance-versus-operations separation—especially treasury-like functions such as reserve and asset–liability decisions, which are conceptually different from service scheduling and throughput. The paper's strength therefore depends on validly measured constructs and evidence that those two paths are not simply different labels for a common manager-reported positive appraisal.

B. Alternative Explanations and Boundary Conditions

Several alternative explanations remain viable. More successful enterprises may finance stronger information systems, hire experienced managers and maintain formal financial procedures, producing reverse association. Firm size and chain affiliation may jointly raise adoption, service efficiency and financial outcomes. Enterprise segment, seasonality, capital intensity and access to finance may affect the relevance of the different routes. Simultaneous manager ratings may induce a broad positive-evaluation tendency, inflating associations across all constructs. Since the current evidence does not identify or rule out these explanations, "consistent with" is more defensible than "demonstrates that" in the interpretation of the paths.

The regional setting requires similar interpretive care. It may be useful for studying firms exposed to heterogeneous digital readiness, seasonal demand or financing conditions, but the analysis contains no verified country breakdown or measured country-level institutions. Southeast Europe is therefore the sampling context rather than an empirically identified moderator. A higher-impact contribution would require specifying an institutional mechanism—for example, whether financing constraints condition the conversion of monitoring into reserve-management efficiency—and estimating it with measured country- or firm-level characteristics.

C. What the Evidence Does Not Show

Three boundaries deserve emphasis. First, even the combined reported indirect association of 0.412 does not show that an IMS investment generated a given financial return. Second, the observed measurements do not show that RM and ALM are equally relevant for all tourism subsectors; those processes may be interpreted differently by independent hotels, tour operators or travel agencies. Third, positive paths are compatible with omitted common determinants such as managerial competence, data quality and firm resources. These limitations should be treated as substantive rival explanations, not only as standard methodological caveats.

VI. Implications

A. Managerial Implications

Managers should first identify and diagnose the decision problem before buying or expanding an intelligent system. For service operations, useful questions include whether booking forecasts are translated into revised staffing, supplier orders and capacity allocation, and how promptly managers can act on those forecasts. For financial governance, useful questions include whether receivables, expected seasonal cash shortfalls and funding commitments lead to explicit changes in cash budgets or reserve policies. Practical implementation should specify decision ownership, information quality, review frequency and independent outcome monitoring. Such a diagnostic framework is consistent with the theoretical model, but the present survey does not quantify the financial returns of a particular implementation sequence.

B. Policy Implications

The available findings do not establish the effectiveness of public grants, tax incentives or mandatory financial-governance rules. A proportionate policy implication is that support for tourism digitalization should consider management capabilities, data literacy and the ability to translate

information into decisions alongside software access. Pilot schemes could compare technology-only assistance with combined technology-and-managerial training, particularly among smaller enterprises, and track objectively measured operational and financial outcomes. These ideas are researchable interventions, not policies shown to be effective by this study.

C. Implications by Tourism Operating Model

For accommodation providers, the operational route can plausibly include demand-sensitive labor scheduling and housekeeping allocation, while the financial route includes low-season liquidity planning and the timing of large maintenance outlays. For tour operators, the operational route may concern supplier commitments and departure capacity, whereas the financial route may concern deposits, refund exposures and foreign-currency cash flows. For travel intermediaries, commission settlements and receivables may dominate financial routines even when inventory ownership is limited. These examples illustrate why segment-specific construct validation is necessary; none represents a subgroup finding from the reported dataset.

VII. Limitations and Future Research

The current study is subject to several limitations that constrain publication-level inference. It is cross-sectional and therefore cannot establish the ordering implied by mediation. Survey constructs were reported by managers, creating potential common-source variance and separating perceived performance from audited results. The source files do not specify participating countries, unique enterprise identifiers or survey dates, which prevents examination of representativeness, clustering and historical context. The original measurement item wording and higher-order construct rationale are incomplete, and several reliability/AVE figures are inconsistent with printed loadings. Reported bootstrap tests, direct-effect precision and the archival validation cannot be reproduced without the original observations and analysis outputs. The original high-versus-low digital-integration comparison is omitted because documented measurement invariance and credible group definition are absent [17].

Additional inferential constraints arise from possible selection into digital technology adoption, differential access to financial resources, self-reported outcome scales and the absence of explicitly modeled contextual interactions. Inferences should not be generalized to all Southeast European tourism enterprises or interpreted as sector-specific causal effects until sampling coverage, respondent independence and the relevant sector composition are established.

Future research should adopt multiwave or longitudinal designs that measure IMS use before governance and operational changes and outcomes in a subsequent period, preferably from independent financial records [11]. Direct observation of decision routines could examine whether forecasts actually alter reserve policies or operating schedules. With adequate data, robust models could compare the two indirect paths, account for firm-level clustering, test justified controls, and establish measurement invariance before segment or country comparisons. Sensitivity analyses should contrast reflective and formative higher-order specifications, consider objective profitability separately from managers' relative assessments and apply holdout predictive assessment [14]. A specifically tourism-oriented extension could test whether seasonality and flexibility of service capacity moderate the operational route, while financing constraints and cash-flow volatility moderate the financial route.

VIII. Conclusion

Intelligent management systems can supply faster monitoring and richer decision support, but the mechanisms linking those resources with enterprise performance are not interchangeable. Financial management efficiency concerns liquidity and allocation governance; operational efficiency concerns the coordination of perishable capacity and service processes. The source-reported associations are consistent with both routes, although neither direction nor causal mediation is identified by the single-wave, cross-sectional survey. By placing these functions in a single theoretically differentiated framework and engaging recent tourism business-value scholarship, the study offers a focused proposition for further validation. Its empirical credibility and ultimate publication suitability depend on resolving the measurement discrepancies, documenting sampling and firm independence, and reproducing the reported coefficients from the actual data.

This revision does not claim access to respondent-level records, original SmartPLS/project files, verbatim scales, matched archival accounts or subgroup identifiers. Statistics attributed to the initial manuscript remain reported values until verified. The source data and analysis documentation should be archived in an access-controlled repository and made available to editors or reviewers when ethically and legally permissible. Any final journal submission should use results re-estimated from these records and disclose analysis decisions, exclusions, software and version information, and planned sensitivity checks.

Author Contributions

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Conflict of Interest

The authors declare that they have no known conflicts of interest.

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Data Availability

No new data were created or analyzed in this study.

References

[1] Hernandez, A., & Lee, M. (2025). Hospitality and tourism technology and organizational performance: An integrated framework of HTT business value and future research agenda. *International Journal of Hospitality Management, 126*, Article 104092. https://doi.org/10.1016/j.ijhm.2025.104092

[2] Zhang, Q., Chen, J. L., Li, G., & Jiao, X. (2026). Digital transformation and tourism performance: A systematic literature review and research agenda. *Tourism Economics, 32*(7), 1454–1479. https://doi.org/10.1177/13548166251383186

[3] Gessa, A., Jiménez-Jiménez, A., & Nemer, R. (2026). Leveraging digital technology to improve hotel performance: A systematic literature review. *Information Technology & Tourism, 28*, Article 62. https://doi.org/10.1007/s40558-026-00399-7

[4] Tajeddini, O., Tajeddini, K., Gamage, T. C., & Hameed, W. U. (2026). Smart insights, stronger performance: Leveraging business intelligence and dynamic capabilities in tourism and hospitality. *International Journal of Hospitality Management, 133*, Article 104410. https://doi.org/10.1016/j.ijhm.2025.104410

[5] Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120. https://doi.org/10.1177/014920639101700108

[6] Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal, 18*(7), 509–533.

[7] Teece, D. J. (2007). Explicating dynamic capabilities: The nature and microfoundations of (sustainable) enterprise performance. *Strategic Management Journal, 28*(13), 1319–1350. https://doi.org/10.1002/smj.640

[8] Sharda, R., Delen, D., & Turban, E. (2020). *Analytics, Data Science, & Artificial Intelligence: Systems for Decision Support* (11th Ed., Global Ed.). Pearson.

[9] Ullah, M. F. (2024). The impact of artificial intelligence on investment strategies and financial governance in the tourism and hospitality industry. *International Journal of Research and Innovation in Social Science, 8*(10), 2729–2735. https://doi.org/10.47772/IJRISS.2024.8100228

[10] Mariani, M., & Baggio, R. (2022). Big data and analytics in hospitality and tourism: A systematic literature review. *International Journal of Contemporary Hospitality Management, 34*(1), 231–278. https://doi.org/10.1108/IJCHM-03-2021-0301

[11] Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods, 12*(1), 23–44. https://doi.org/10.1037/1082-989X.12.1.23

[12] Dijkstra, T. K., & Henseler, J. (2015). Consistent partial least squares path modeling. *MIS Quarterly, 39*(2), 297–316. https://doi.org/10.25300/MISQ/2015/39.2.02

[13] Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science, 43*(1), 115–135. https://doi.org/10.1007/s11747-014-0403-8

[14] Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J.-H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: Guidelines for using PLSpredict. *European Journal of Marketing, 53*(11), 2322–2347. https://doi.org/10.1108/EJM-02-2019-0189

[15] Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879–903. https://doi.org/10.1037/0021-9010.88.5.879

[16] Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration, 11*(4), 1–10. https://doi.org/10.4018/ijec.2015100101

[17] Henseler, J., Ringle, C. M., & Sarstedt, M. (2016). Testing measurement invariance of composites using partial least squares. *International Marketing Review, 33*(3), 405–431. https://doi.org/10.1108/IMR-09-2014-0304