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Effects of Integrated Manufacturing Practices on Organizational Performance: Mediation by Management Accounting System Information

Leila Zamani[1]✉ | **Samad Borzoian Shirvan**[2] | **Akram Ghorbani**[3]

[1.] Assistant Professor, Department of Accounting, Faculty of Management and Finance, Khatam University, Tehran. Iran. Email: l.zamani56@gmail.com.
[2.] Assistant Professor, Department of Management and Educational Planning, Faculty of Psychology and Educational Sciences, Allameh Tabataba'i University, Tehran. Iran. Email: borzooian@gmail.com.
[3.] Master's Degree in Accounting and Auditing, Department of Accounting and Auditing, Faculty of Management and Financial Sciences, Khatam University, Tehran.Iran. Email: akram.ghorbani1366@gmail.com.

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Abstract:

In the contemporary business landscape marked by intense competition and rapid change, superior organizational performance is essential for long-term firm viability and success. This research examines the impact of Integrated Manufacturing Practices (IMP) on organizational performance, while exploring the intermediary role of Management Accounting System (MAS) information in manufacturing companies listed on the Tehran Stock Exchange. Using an applied descriptive-survey approach with a cross-sectional quantitative design, the study targeted firms from the six leading industries on the exchange. A sample of 385 managers (finance, production, and sales roles) from 129 companies was selected via Cochran's formula and random sampling. Data were collected through a validated questionnaire and analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) in SmartPLS. Results showed that IMP positively influences organizational performance both directly and indirectly through MAS information, alongside a strong connection between IMP adoption and greater managerial reliance on MAS data. MAS information also directly improves performance outcomes and acts as a significant mediator in the IMP–performance link. The measurement model displayed strong reliability and validity, with adequate overall fit. These findings provide empirical evidence that benefits from advanced manufacturing practices are primarily realized via access to comprehensive, timely, and integrated accounting information. The study advances Contingency Theory by stressing the need to align manufacturing strategies with suitable information systems. Practically, organizations should develop IMP capabilities while simultaneously improving the quality and scope of MAS

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information. Managers, especially management accountants, are urged to serve as strategic partners in creating systems that meet complex decision needs in modern production environments. Future research could investigate the role of digital innovations and artificial intelligence in this framework.

1. Introduction

The manufacturing sector plays a pivotal role in driving economic growth, raising living standards, and fostering broader business development. Rapid increases in product diversity coupled with shifting consumer demands have profoundly reshaped how organizations operate (Hariyani & Mishra, 2023). At the same time, companies are confronting major threats to their survival and market expansion stemming from shrinking profit margins, global competitive pressures, and intensified rivalry. Against this challenging backdrop, integrated production approaches—encompassing Supply Chain Management (SCM), Just-in-Time (JIT) practices, as well as lean and sustainable manufacturing models—provide an effective means to elevate organizational performance. These strategies contribute by enhancing product quality, lowering costs, eliminating inefficiencies, and improving customer satisfaction (Krishnamurthy & Yauch, 2007; Virmani & Sharma, 2019). Overall, they help strengthen competitive positioning, increase operational adaptability, and achieve higher levels of effectiveness. However, prior studies, including Dean and Snell (1996), demonstrate that simply implementing such production methods does not guarantee performance gains. Effective information management emerges as an essential supporting element for managerial decision-making (Fullerton & Wempe, 2009).

In today's dynamic competitive environment, having access to accurate and reliable information is critical for developing sound strategies and responding to market changes (Latifah et al., 2021). Management Accounting Systems (MAS) serve a central function in meeting this requirement, going beyond traditional financial reporting to deliver key insights that support decisions related to efficiency and economic outcomes. Although numerous studies have explored the connection between MAS usage and organizational performance, results have been inconsistent (Hammad et al., 2013; Ismail et al., 2018). Such variability likely arises from differences in measurement techniques and contextual factors, suggesting that important mediating elements may have been overlooked in previous models.

In the Iranian setting, holistic investigations into integrated production approaches and their combined effects on performance remain limited. Earlier domestic research has typically examined isolated elements—such as Total Quality Management (TQM), Advanced Manufacturing Technologies (AMT), or JIT—without addressing their interactive effects. Accordingly, the primary aim of this study is to investigate current practices among manufacturing companies

listed on the Tehran Stock Exchange, placing particular emphasis on their Management Accounting Information Systems. The research seeks to identify key shortcomings and recommend practical measures to enhance performance, with a focus on boosting market value and protecting stakeholder interests.

2. Theoretical Foundations

2.1. Organizational Performance

Organizational performance constitutes a fundamental metric for evaluating an entity's efficacy in attaining its strategic aims via the prudent deployment of resources, serving as a cornerstone for ensuring long-term viability and market superiority (Akpa et al., 2021). This construct transcends the mere accomplishment of immediate targets, embracing broader organizational competencies such as economical resource utilization, adaptability to shifting circumstances, and the consistent generation of positive results (Conţu, 2020; Nuhu et al., 2016). Attaining higher performance levels necessitates adept leadership and a strategic approach to managing transformation. Managerial engagement in charting organizational course and inspiring the workforce, combined with the adoption of contemporary operational practices, fosters enhanced decision-making, minimizes interpersonal friction, and consequently boosts both productivity and comprehensive organizational outcomes (Shoukat et al., 2023; Chatterjee et al., 2023).

Organizational performance serves as a core indicator of how effectively a company achieves its strategic objectives through efficient resource management, forming the basis for sustained competitiveness and long-term success (Akpa et al., 2021). It extends beyond short-term goal fulfillment to include capabilities like resource optimization, flexibility in dynamic environments, and the ability to deliver consistent positive outcomes (Conţu, 2020; Nuhu et al., 2016). Strong leadership and thoughtful change management are essential for superior performance, as active managerial involvement in guiding strategy, motivating employees, and embracing modern practices lead to better decisions, reduced internal conflicts, and improved overall productivity (Shoukat et al., 2023; Chatterjee et al., 2023).

From a conceptual standpoint, performance is often viewed as an organization’s ability to maximize output from available resources, allowing the evaluation of both efficiency and effectiveness (Gomez-Mejia et al., 2014). In today’s rapidly changing business environment, factors such as rapid technological progress, social responsibility obligations, and sustainability demands play a significant role in shaping results (Lo et al., 2020). Continuous improvement therefore requires comprehensive evaluation approaches that combine financial and non-financial measures, providing reliable feedback to support strategic decisions and strengthen competitive advantages.

2.2. Integrated Production Systems and Organizational Performance

Integrated production systems act as strategic tools that create value and enhance overall organizational performance through the coordinated use of key practices, including Just-in-Time (JIT) production, Supply Chain Management (SCM), and Total Quality Management (TQM). JIT focuses on minimizing costs and increasing customer responsiveness by reducing excess inventory and acquiring materials only when needed. SCM improves efficiency by aligning the flow of materials, information, and finances throughout the supply chain. The growing adoption of these integrated approaches is driven mainly by rising global competition, advances in information technology, and changing customer needs (Swarnakar et al., 2019).

TQM promotes a culture of ongoing improvement, strong customer focus, and evidence-based decision-making, leading to higher product quality and greater satisfaction. Studies confirm that TQM strengthens competitive advantage and performance by raising standards (Nguyen & Chau, 2017) and fostering an environment that supports optimal employee contributions (Iqbal & Asrar-ul-Haq, 2018). When these elements are applied together within a cohesive framework, they significantly boost organizational outcomes by streamlining processes and enhancing customer loyalty.

2.3. Management Accounting Systems (MAS)

Management accounting plays a vital role in supporting managers' efforts to gain competitive edge by delivering relevant financial and non-financial information (IFAC, 1998). It provides crucial data for planning, operational control, and performance assessment, thereby contributing to organizational success (Kesumawati et al., 2019). Over time, Management Accounting Systems (MAS) have shifted from relying solely on past financial records to including forward-looking and non-financial insights from internal and external sources (Chenhall & Morris, 1986).

The effectiveness of MAS depends on four main information characteristics: broad scope (covering wide-ranging operational and environmental details), timeliness, aggregation (combining data into useful summaries), and integration (aligning departmental goals) (Alliyah & Dewi, 2023; Godil et al., 2019; Alcazar, 2020). Successful system design requires adaptation to the specific context of each organization, since internal and external factors strongly influence its usefulness (Otley, 1980; Abu Afifa & Saleh, 2022; Heryanto & Sudibyo, 2017). This tailored approach ensures that managerial needs are met and that the system aligns with broader strategic goals, ultimately promoting ongoing performance gains.

2.4. Contingency Theory

Contingency Theory stands as a foundational framework in management and accounting research, built on the idea that there is no universally superior way to manage or control organizations. Rather, the success of any management practice

or system depends entirely on how well it aligns with the specific internal features and external conditions surrounding the organization. Emerging in the 1960s, this approach has gained wider acceptance and application in later studies (Garavan et al., 2024; Nassou et al., 2024).

In the field of management accounting, Contingency Theory provides a valuable perspective for understanding how various contextual elements—such as company size, technology adoption, organizational culture, strategic priorities, and environmental uncertainty—influence the structure and effectiveness of Management Accounting Systems (MAS). Studies highlight that positive organizational results rely on achieving a strong "fit" between these situational factors and the design of the accounting system (Islam & Hu, 2012; Nguyen et al., 2023). For example, in developing markets, intense competition and unpredictable conditions often drive the use of advanced strategic accounting techniques. Additionally, how managers perceive environmental uncertainty directly affects their choice of accounting practices and, consequently, financial performance (Hongpukdee & Saraphat, 2024).

Key principles of the theory include: Contextuality (focusing on the unique characteristics of the organization and its surroundings), Adaptability (allowing adjustments to changing circumstances), Fit/Match (achieving alignment among systems, technology, and strategy), Customization (adapting designs to specific settings), Strategic Decision Support (providing accurate and timely data for important decisions), and Operational Efficiency (promoting higher productivity and effectiveness). Consistent empirical evidence shows that accounting systems enhance performance only when properly matched to the organizational environment (Pedroso et al., 2020; Piosik & Karmańska, 2023). Ultimately, Contingency Theory discourages generic solutions and encourages detailed examination of relevant factors to create information systems that effectively aid decision-making and improve overall performance. This adaptable viewpoint helps organizations manage the challenges of constantly evolving business environments.

3. Empirical literature review

A wide range of empirical studies has shed light on the connections between management practices, information systems, and organizational outcomes. For instance, Namazi and Moghimi (2025) emphasized how advancements in management accounting positively affect financial results, with organizational culture playing an especially strong role in Eastern settings. Similarly, Kordani et al. (2024) showed that sound corporate governance strengthens the link between strategic management accounting and the effectiveness of accounting information systems. In a related vein, Heydari and Karimi Yazd Abadi (2023) identified job satisfaction as a key intermediary between organizational intelligence and overall performance. The value of integrated approaches was highlighted by Gilani Nia

et al. (2023), who used Interpretive Structural Modeling (ISM) to demonstrate improvements in transparency and accountability, while Azizi Mehr et al. (2023) pointed to the critical role of dynamic capabilities in supporting managerial decisions.

Other research has focused on broader contextual and structural factors. Sotoudeh (2021) explored the reinforcement of organizational culture, and Asadi Loye et al. (2024) examined how information systems help reduce earnings manipulation. In sector-specific work, Hasanzadeh and Abdollahi (2024) confirmed the positive impact of management accounting systems on managerial performance in cooperative organizations. Aftabi and Haghighat (2023) uncovered the mediating function of information systems in the relationship between human resources practices and performance, whereas Azizi et al. (2021) analyzed how features of accounting information systems influence outcomes, with decentralization serving as a moderating factor. The growing reach of accounting practices is evident in Houshiyarzadeh and Falamarzi (2024), who illustrated the role of environmental accounting in promoting transparency and sustainable choices.

Recent literature also addresses emerging technologies and situational influences. Kassa and Worku (2025) provided evidence of artificial intelligence's beneficial effects on productivity and performance. Pedroso and Gomes (2024) concluded that the success of Management Accounting Systems hinges on factors such as accountants' strategic involvement and user satisfaction. Lad (2025) recommended combining specialized platforms—like Manufacturing Execution Systems (MES), Laboratory Information Management Systems (LIMS), and Enterprise Resource Planning (ERP)—to improve efficiency and reduce errors in biotechnology contexts. Hadianto and Djuminah (2023) reported mixed contingent effects, noting positive influences from decentralization and environmental uncertainty alongside negative impacts from overly complex information technology. Irfan (2024) supported the strong effect of management accounting information on performance, though Hani and Sahhputri (2024) offered contrasting views on its specific attributes.

Further studies have investigated drivers of system adoption in various business settings. Wiroonratch and Mungsakul (2022) along with Christina and Brahmana (2024) explored organizational and economic elements affecting implementation in small and medium enterprises. Hariyati et al. (2023) positioned intellectual capital as an important mediator in these dynamics. Most relevant to the current research, Ismail et al. (2018) offered empirical confirmation that integrated production approaches, including JIT and TQM, improve organizational performance through the mediating role of management accounting information.

4. Conceptual Model and Research Hypotheses

The conceptual model for this study (shown in Figure 1) builds on a combination of well-established theories and existing empirical findings. The proposed

relationships and their directional sequence among the variables are drawn logically from key prior work, particularly the framework developed by Ismail et al. (2018). Previous research indicates that Integrated Manufacturing Practices (IMP) have a notable impact on organizational performance, and Management Accounting System (MAS) information may moderate or influence the strength of this connection. Based on these foundations, the research goals, and the strategic importance of IMP, the hypotheses below are put forward.

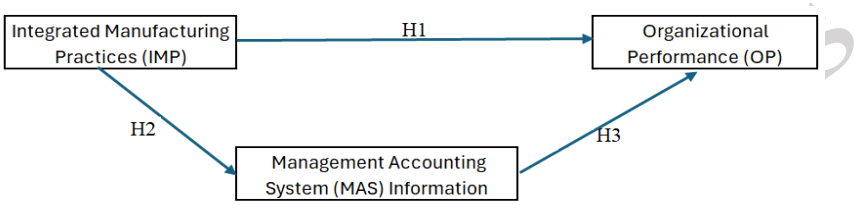

Fig 1. Research Conceptual Model (Adapted from Ismail et al., 2018)

Hypothesis 1 (H1): Academic literature views Integrated Manufacturing Practices (IMP)—a combined approach based on Just-in-Time (JIT), Total Quality Management (TQM), and Advanced Manufacturing Technologies (AMT)—as an effective way to improve operational efficiency and boost both financial and non-financial aspects of performance. Each element contributes uniquely: JIT helps build lasting competitive advantages by cutting inventory costs and reducing waste; TQM raises product quality and process effectiveness; and AMT increases flexibility and responsiveness to market demands. When these components work together in an IMP structure, they promote better performance by improving information exchange and coordination throughout the value chain. However, studies on the direct link between IMP and performance have produced mixed results, highlighting the need for additional evidence. Therefore, the first hypothesis states: *H1: Integrated Manufacturing Practices (IMP) have a significant positive impact on Organizational Performance (OP).*

Hypothesis 2 (H2): Adopting Integrated Manufacturing Practices (IMP) is expected to significantly increase managers' dependence on and use of Management Accounting System (MAS) information. Advanced production settings created by IMP require supporting data that is wide-ranging, timely, well-summarized, and highly coordinated (Chenhall & Morris, 1986). Supporting evidence includes Chenhall (2003), who connected TQM to greater use of broad-scope control systems, and Mia and Winata (2008), who found a positive relationship between JIT implementation and comprehensive information usage. Since IMP requires greater adaptability and real-time decisions (Mia, 2000), access to MAS information with these qualities is essential for planning, ongoing

oversight, and responsive control in unpredictable environments, especially for maintaining quality and customer satisfaction. To fill the gap in this particular relationship, the second hypothesis is: *H2: Greater adoption of Integrated Manufacturing Practices (IMP) is positively associated with higher managerial use of Management Accounting System (MAS) information.*

Hypothesis 3 (H3): Earlier research shows that using Management Accounting System (MAS) information leads to more accurate decisions and better organizational results (Mia, 1993; Chenhall & Morris, 1995). Targeted studies, such as Sim and Killough (1998) and Mia (2000), have shown that MAS information strengthens performance in companies applying separate IMP elements like JIT and TQM. Fullerton and Wempe (2009) also noted its contribution to improved financial outcomes. Yet, the effects of MAS information in a fully integrated IMP context—combining JIT, TQM, and AMT simultaneously—have received less attention. Drawing on established ideas (Mia & Clarke, 1999; Mia, 1993) and assuming support for the first two hypotheses (a direct IMP-to-OP link and an IMP-to-MAS connection), MAS information is proposed to act as a mediator between IMP and performance. Accordingly, the third hypothesis is: *H3: Management Accounting System (MAS) information mediates the relationship between Integrated Manufacturing Practices (IMP) and Organizational Performance (OP).*

5. Research Methodology

This research is applied in nature and uses a descriptive-survey approach within a cross-sectional quantitative design. The population consists of manufacturing companies from the six most prominent industries on the Tehran Stock Exchange, namely automotive and parts, chemical products, basic metals, petroleum products, pharmaceuticals, and food and beverage sectors. Sample size was calculated using Cochran's formula, and random sampling resulted in 385 respondents—comprising financial, production, and sales managers—from 129 companies across these industries. Data were collected with a structured questionnaire and analyzed in SmartPLS software through Structural Equation Modeling (SEM), with hypotheses tested specifically via the Partial Least Squares (PLS) method.

Data Collection Method and Measurement Instrument

The main data collection tool was a questionnaire divided into two main parts. The first part captured demographic and professional information from participants, including job role, years of experience, and education level. Respondents were managers (financial, production, and sales) working in manufacturing firms from the six selected industries. The breakdown of responses by industry and managerial position is presented in Table 1.

Table 1. Distribution of Managers by Industry and Organizational Position

Industry	Financial Managers	Production Managers	Sales Managers	Total
Automotive & Parts	25	25	25	75
Petroleum Products	8	8	8	24
Basic Metals	22	22	22	66
Chemical Products	34	34	34	102
Food & Beverage Products	22	22	22	66
Pharmaceutical Materials & Products	16	18	18	52
Total	129	129	127	385

The second part focused on measuring the study's key variables: Integrated Manufacturing Practices (IMP), Management Accounting System (MAS) Information, and Organizational Performance (OP). Items were drawn from the established questionnaire of Ismail et al. (2018). The IMP scale included 18 items covering three dimensions: Advanced Manufacturing Technologies (AMT; items 1–6), Total Quality Management (TQM; items 7–12), and Just-in-Time (JIT) production (items 13–18). The MAS Information scale had 19 items assessing four characteristics: Scope (items 19–23), Timeliness (items 24–28), Aggregation (items 29–33), and Integration (items 34–37). Organizational Performance (OP) was measured with an 8-item scale addressing indicators such as productivity, quality, delivery speed, service levels, R&D expenditure, sales volume, market share, and profitability. All items used a five-point Likert scale from 1 ("Very Low/Poor") to 5 ("Very High/Excellent"). Responses from the 385 managers in 129 companies were analyzed using SmartPLS and Structural Equation Modeling (SEM) techniques.

6. Research Findings

6.1. Demographic Characteristics of Respondents

Table 2 summarizes the demographic profile of the 385 participants, showing frequency distributions for gender, age, education, and work experience.

Table 2. Demographic Characteristics of Respondents

Demographic/ Variable		Frequency	Percent	Cumulative Percent
Gender	Male	223	57.9	57.9
	Female	162	42.1	100.0
Age	20-30 years	43	11.2	11.2
	31-40 years	148	38.4	49.6
	41-50 years	114	29.6	79.2
	Over 50 years	80	20.8	100.0
Education Leve	Associate Degree	92	23.9	23.9
	Bachelor's Degree	162	42.1	66.0
	Master's Degree and Higher	131	34.0	100.0

Work Experience	1-5 years	63	16.4	16.4
	6-10 years	163	42.3	58.7
	11-20 years	129	33.5	92.2
	More than 20 years	30	7.8	100.0

The sample displays clear patterns. Males make up the majority (57.9%), while females account for 42.1%. The largest age group is 31–40 years (38.4%), with the youngest cohort (20–30 years) being the smallest (11.2%), suggesting most respondents are in mid-career stages. In terms of education, nearly all hold post-secondary qualifications, with Bachelor's degrees the most common (42.1%), followed by Master's or higher (34.0%). Experience levels peak in the 6–10 years category (42.3%), and the 11–20 years group is also substantial (33.5%), while those with over 20 years are fewest (7.8%). Overall, the respondents are well-educated, experienced professionals with reasonable gender balance, providing a solid basis for the subsequent statistical analyses.

6.2. Descriptive Statistics of Main Variables

Descriptive statistics for the study's primary variables—Integrated Manufacturing Practices, Management Accounting System Information, and Organizational Performance—are shown in Table 3. These variables were assessed using multiple questionnaire items, and their theoretical ranges were factored into the analysis.

Table 3. Descriptive Statistics of Research Variables

Variable	No. of Observations	Minimum	Maximum	Mean	Standard Deviation
Integrated Manufacturing Practices	385	17	85	47.4	10.2
Management Accounting System Information	385	19	95	55.8	12.0
Organizational Performance	385	8	40	25.0	6.7

Scores for Integrated Manufacturing Practices (theoretical range: 18–90) ranged from 17 to 85, with a mean of 47.4 and standard deviation of 10.2, indicating moderate variation in perceived adoption levels. Management Accounting System Information (theoretical range: 19–95) covered nearly the full spectrum (19–95), achieving the highest mean (55.8) and greatest dispersion (SD=12.0), possibly due to differences in system maturity or managerial perceptions across firms. Organizational Performance (theoretical range: 8–40) also spanned the complete range, with a mean of 25.0 and standard deviation of 6.7, reflecting balanced diversity in reported outcomes. Taken together, the variability observed in these variables supports the reliability of the instruments and ensures adequate data diversity for the planned multivariate modeling.

7. Reliability, Validity, and Effect Size

7.1. Reliability and Validity of the Measurement Model

Psychometric evaluation of the measurement model involved testing reliability with Cronbach's Alpha (α) and Composite Reliability (CR), and convergent validity with Average Variance Extracted (AVE). Table 4 displays the outcomes,

which affirm the strength of the scales used. Internal consistency is high across all constructs, as Cronbach's Alpha scores comfortably exceed the 0.70 cutoff. Composite Reliability values are equally robust, surpassing 0.70 for every variable. Moreover, AVE figures for each construct are above the accepted 0.50 level, indicating good convergent validity (Hair et al., 2019).

Table 4. Reliability and Validity of the Measurement Tool

Variable	Cronbach's Alpha (α > 0.7	Composite Reliability (CR > 0.7)	Average Variance Extracted (AVE > 0.5
Management Accounting System Information	0.962	0.965	0.594
Integrated Manufacturing Practices	0.957	0.961	0.577
Organizational Performance	0.940	0.950	0.706

7.2. Effect Size Test (f^2)

The effect size index (f^2) was calculated to evaluate the substantive impact of the exogenous latent variables on the endogenous constructs within the structural model. This index quantifies the magnitude of an independent variable's influence on a dependent variable. The results, detailed in Table 5, reveal differentiated effect strengths. The effect of *Integrated Manufacturing Practices (IMP)* on *Organizational Performance (OP)* is substantial ($f^2 = 0.101$), which, according to conventional guidelines (Cohen, 1988), can be interpreted as a moderate-to-strong effect. In contrast, the direct effect of *Management Accounting System Information (MASI)* on Organizational Performance is relatively weak ($f^2 = 0.028$). Additionally, the analysis shows a very strong effect of IMP on MASI ($f^2 = 1.442$), indicating that the adoption of integrated practices significantly influences the extent and nature of management accounting information utilized.

Table 5. Effect Size Index (f^2)

Variable	(MASI)	(IMP)	(OP)
Management Accounting System Information (MASI)	-	-	0.028
Integrated Manufacturing Practices (IMP)	1.442	-	0.101
Organizational Performance (OP)	-	-	-

8. Structural Model Fit

Data analysis in this study relied on Partial Least Squares Structural Equation Modeling (PLS-SEM). Evaluating the structural model requires examining both overall fit quality and the significance of proposed paths. Figure 2 illustrates the estimated model with standardized factor loadings for all items. Every loading is above the 0.7 threshold, indicating that each construct shares more variance with its indicators than with error terms, thus supporting indicator reliability (Hair et al., 2019). This confirms that the observed variables suitably represent their underlying constructs. Significance of the loadings is further verified in Figure 3, where all t-values exceed 1.96 (at $p < 0.05$).

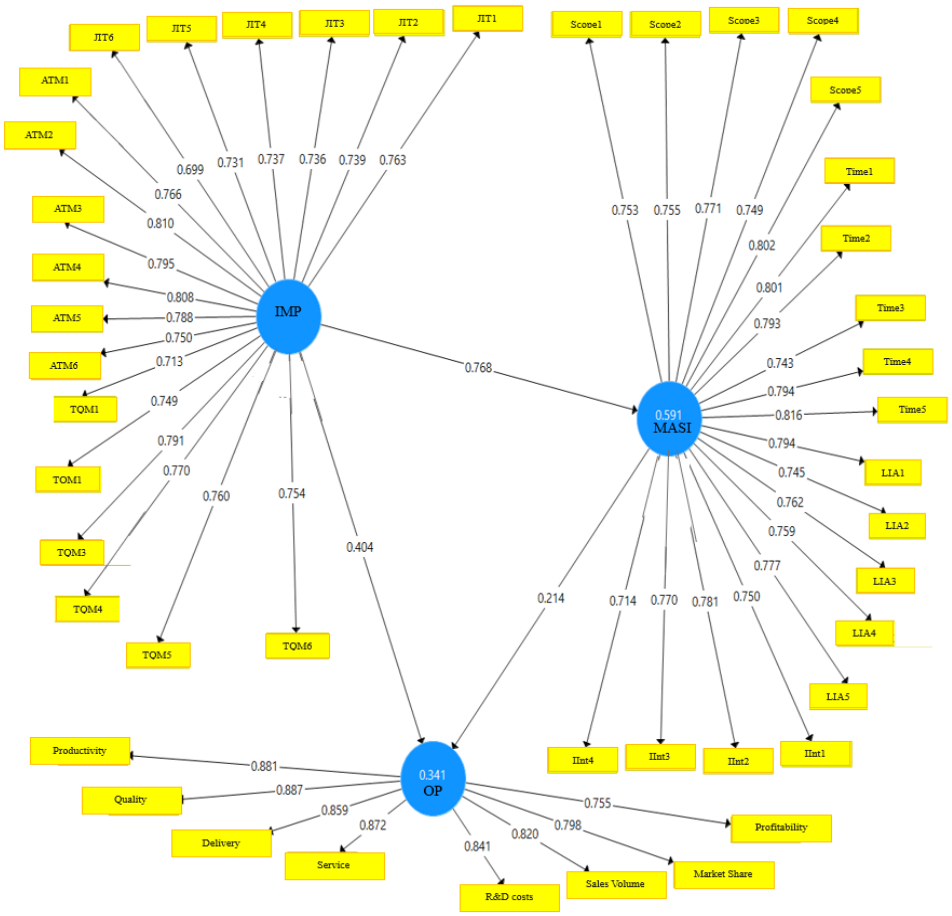

Fig 2. Research Model Fit (Factor Loadings and Path Coefficients)

8.1. Assessment of Overall Model Fit

Evaluating the overall model fit aims to determine the degree of congruence between the proposed theoretical framework and the empirical data. In the context of PLS-SEM, the Goodness of Fit (GOF) index serves as a global measure for this purpose (Tenenhaus et al., 2005). The GOF is calculated as the geometric mean of the average communality and the average R^2 of the endogenous constructs, as per the following formula:

$$GOF = \sqrt{\overline{communality} * \overline{R^2}}$$

In this formula, 'Average Communality' represents the mean of the communality values for all constructs, and 'Average R^2' is the mean of the coefficient of determination values for the endogenous variables in the model. The calculated

quality indices for the measurement model are reported in Table 6. The obtained GOF value of 0.511 reflects acceptable overall model fit.

Table 6. Measurement Model Quality Indices

Variable	CV Com	CV Red	GOF
Management Accounting System Information	0.550	0.346	-
Integrated Manufacturing Practices	0.525	-	0.511
Organizational Performance	0.608	0.238	-

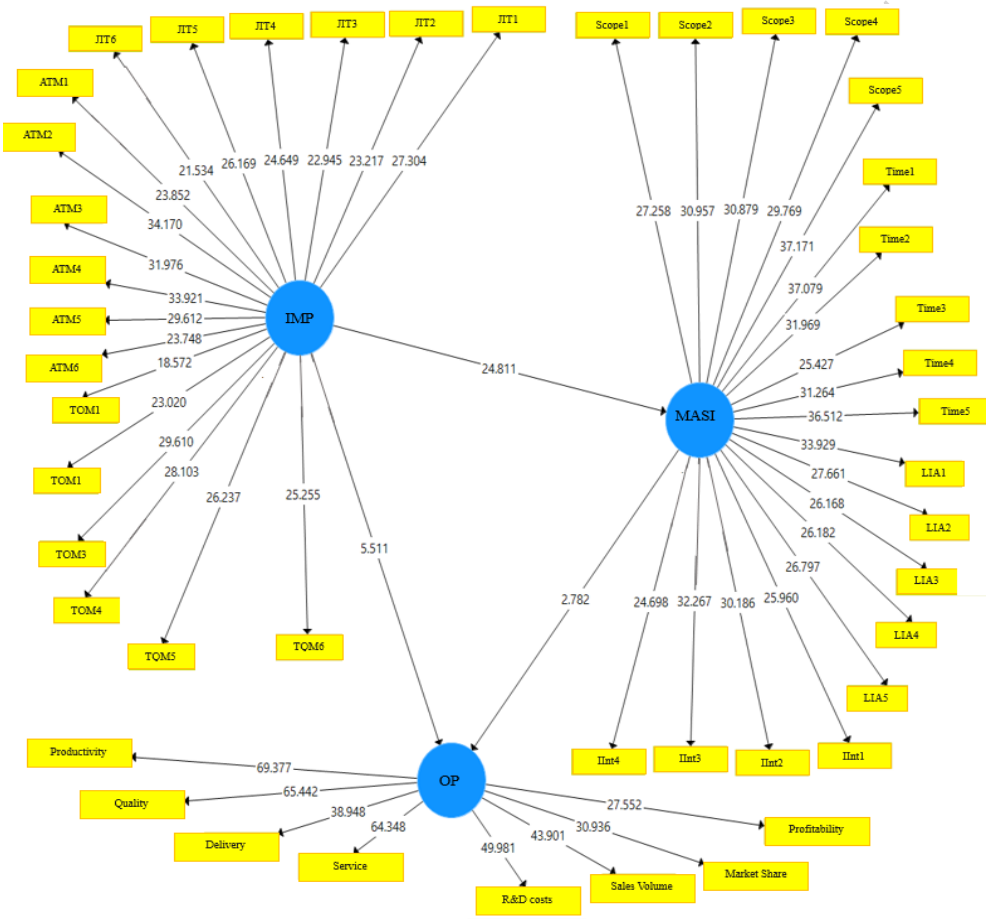

Fig 3. Research Model Fit (T-Values of Factor Loadings and Path Coefficients)

9. Hypothesis Testing

With the measurement model, structural model, and overall fit indices all deemed adequate, the proposed hypotheses were examined using PLS-SEM results. Key path estimates are summarized in Table 7.

Table 7. Results of the Impact of Independent Variables on Organizational Performance

Hypothesis	Path Coefficient	t-statistic	P-value	Result
IMP→OP	0.404	24.81	0.000	Confirm
IMP→MASI	0.768	5.51	0.000	Confirm
MAS→OP	0.214	2.78	0.006	Confirm

The direct path from Integrated Manufacturing Practices (IMP) to Organizational Performance (OP) is positive and highly significant ($\beta = 0.404$, $t = 24.81$, $p < 0.001$), providing robust support for H1. The link between IMP and Management Accounting System Information (MASI) is also strong ($\beta = 0.768$, $t = 5.51$, $p < 0.001$), confirming H2 and showing that greater IMP adoption markedly boosts managers' use of MAS information. The path from MASI to OP is likewise significant ($\beta = 0.214$, $t = 2.78$, $p = 0.006$). Mediation proposed in H3 was tested by assessing the indirect effect of IMP on OP through MASI (Table 8). This indirect path proved significant ($\beta = 0.164$, $t = 2.76$, $p = 0.006$).

Table 8. Results of the Impact of the Mediating Variable on Organizational Performance

Hypothesis	Path Coefficient	t-statistic	P-value	Result
IMP → MASI→ OP	0.164	2.76	0.006	Confirm

The combination of a significant direct effect (IMP → OP), a significant path to the mediator (IMP → MASI), and a significant indirect effect satisfies standard mediation criteria (Baron & Kenny, 1986; Hayes, 2018). Accordingly, H3 is upheld, demonstrating partial mediation by Management Accounting System Information in the relationship between Integrated Manufacturing Practices and Organizational Performance.

10. Discussion and Conclusion

This research investigated the relationships between Integrated Manufacturing Practices (IMP) and Organizational Performance (OP) in manufacturing companies listed on the Tehran Stock Exchange, emphasizing the intermediary role of Management Accounting System (MAS) information. Responses from 385 managers in 129 firms were analyzed using Structural Equation Modeling in SmartPLS. The results show that IMP positively affects OP both directly ($\beta = 0.404$) and indirectly through MAS information ($\beta = 0.164$). Support for H1 aligns with earlier studies (Ismail et al., 2018; Yang et al., 2011; Ahmadi Babadi et al., 2022; Virmani & Sharma, 2019), confirming that combining Just-in-Time (JIT), Total Quality Management (TQM), and Advanced Manufacturing Technologies (AMT) effectively boosts performance in Iranian manufacturing contexts and lends further evidence to Contingency Theory.

Findings for H2 reveal a particularly strong positive link between IMP and managerial use of MAS information ($\beta = 0.768$)—the most prominent relationship in the model. This supports theoretical views (Chenhall & Morris, 1986) and empirical evidence (Mia & Winata, 2008) that advanced production

environments demand accounting information with wide scope, timeliness, aggregation, and integration. H3 is also confirmed, as MAS information directly enhances OP ($\beta = 0.214$), consistent with prior work (Pedroso & Gomes, 2024; Fullerton & Wempe, 2009; Mia, 1993; Lad, 2025; Irfan, 2024; Wiroonratch & Mungsakul, 2022; Christina & Brahmana, 2024; Hariyati et al., 2023; Ismail et al., 2018; Swarnakar et al., 2019). Overall, these results highlight the critical value-added role of well-designed MAS beyond simply adopting new production techniques.

A key contribution lies in verifying the partial mediating effect of MAS information between IMP and OP. This helps explain conflicting earlier results, such as the lack of direct impact found by Dean and Snell (1996). Implementing IMP increases complexity, raising the need for high-quality decision-support data; MAS meets this need and improves decision-making, ultimately driving better performance. The pattern underscores Contingency Theory's emphasis on alignment between production strategies and information systems.

Theoretical Implications: The study advances Contingency Theory by showing that strong performance depends not only on introducing practices like IMP but also on achieving proper alignment with supporting management accounting systems. MAS emerges as an essential mechanism that turns operational strategies into measurable results.

Practical Implications: Managers should pursue parallel investments in IMP capabilities and robust MAS infrastructure. For accountants and finance professionals, the findings reposition them as key strategic contributors responsible for developing systems that provide timely, integrated, and non-financial insights for sophisticated operational choices.

Limitations and Future Research: The research is limited by its focus on Tehran Stock Exchange-listed firms at one point in time, its cross-sectional design, and possible common method variance from survey data. Future studies could extend the model to other sectors or countries, use longitudinal approaches for stronger causal inference, examine moderators such as culture or leadership, and investigate how new technologies like artificial intelligence affect the IMP–MAS–OP linkages.

In conclusion, organizational performance gains depend on creating effective alignment between Integrated Manufacturing Practices and the decision-support capabilities of Management Accounting Systems. Superior results arise not merely from adopting advanced production methods but from combining them with advanced, well-aligned information systems that guide strategic and day-to-day decisions.

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تأثیر شیوه‌های تولید یکپارچه بر عملکرد سازمانی: نقش میانجی اطلاعات سیستم حسابداری مدیریت

چکیده

در محیط کسب‌وکار امروزی که با رقابت شدید و تغییرات سریع همراه است، دستیابی به عملکرد سازمانی برتر برای پایداری و موفقیت بلندمدت شرکت‌ها ضروری است. این پژوهش به بررسی تأثیر شیوه‌های تولید یکپارچه (IMP)بر عملکرد سازمانی می‌پردازد و نقش میانجی اطلاعات سیستم حسابداری مدیریت (MAS) را در شرکت‌های تولیدی پذیرفته‌شده در بورس اوراق بهادار تهران کاوش می‌کند. این تحقیق با رویکرد کاربردی، از روش توصیفی-پیمایشی و طرح کمی مقطعی استفاده کرده است. جامعه هدف شامل شرکت‌های شش صنعت پیشرو در بورس بود و نمونه‌ای شامل ۳۸۵ مدیر (در حوزه‌های مالی، تولید و فروش) از ۱۲۹ شرکت با استفاده از فرمول کوکران و نمونه‌گیری تصادفی انتخاب شد. داده‌ها از طریق پرسشنامه معتبر جمع‌آوری و با روش مدلسازی معادلات ساختاری حداقل مربعات جزئی (PLS-SEM) در نرم‌افزار SmartPLS تحلیل شدند. نتایج نشان داد که شیوه‌های تولید یکپارچه هم به‌طور مستقیم و هم به‌طور غیرمستقیم) از طریق اطلاعات MAS تأثیر مثبتی بر عملکرد سازمانی دارند و همچنین ارتباط قوی بین پذیرش IMP و افزایش وابستگی مدیران به داده‌های MAS مشاهده شد. اطلاعات MAS نیز مستقیماً به بهبود نتایج عملکرد کمک می‌کند و نقش میانجی مهمی در رابطه IMP عملکرد ایفا می‌نماید. مدل اندازه‌گیری از پایایی و روایی بالایی برخوردار بود و برازش کلی مدل نیز مناسب ارزیابی شد. این یافته‌ها شواهد تجربی ارائه می‌دهند که مزایای شیوه‌های تولید پیشرفته عمدتاً از طریق دسترسی بهتر به اطلاعات حسابداری جامع، به‌موقع و یکپارچه محقق می‌شود. پژوهش حاضر با تأکید بر لزوم هم‌راستایی استراتژی تولید با سیستم‌های اطلاعاتی مناسب، به توسعه نظریه اقتضایی کمک می‌کند. از منظر کاربردی، سازمان‌ها باید قابلیت‌های IMP را همزمان با ارتقای کیفیت و دامنه اطلاعات MAS توسعه دهند. مدیران، به‌ویژه حسابداران مدیریتی، تشویق می‌شوند تا به‌عنوان همکاران راهبردی در ایجاد سیستم‌های اطلاعاتی عمل کنند که قادر به پاسخگویی به نیازهای پیچیده تصمیم‌گیری در محیط‌های تولیدی کنونی باشند. تحقیقات آینده می‌توانند نقش نوآوری‌های دیجیتال و هوش مصنوعی را در این چارچوب بررسی کنند

کلمات کلیدی: شیوه‌های تولید یکپارچه، عملکرد سازمانی، اطلاعات سیستم حسابداری مدیریت، مدلسازی معادلات ساختاری.