
When Does Business Model Innovation Create Value?

The Role of Digital Transformation

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Abstract: Despite sustained investments in innovation, many firms struggle to translate innovation activities into measurable performance improvements. This study examines whether business model innovation (BMI) contributes to firm performance and investigates the moderating role of digital transformation. Using firm-level data from 335 Hungarian medium- and large-sized companies, we estimate regression models with interaction effects to analyse the relationship between BMI, digital transformation, and productivity. The results show that BMI does not have a significant direct effect on firm performance. However, the interaction between BMI and digital transformation is positive and statistically significant, indicating that BMI improves performance only in firms with higher levels of digital maturity. In firms with low digital readiness, BMI does not lead to productivity gains. The findings highlight the contingent nature of business model innovation and emphasise the importance of digital capabilities as an enabling condition for value creation.

Keywords: innovation; BMI; business model; competitiveness; digitalisation; productivity

1. Introduction

Despite sustained investments in innovation and digital technologies, many firms fail to translate innovation efforts into measurable performance improvements. While innovation is widely regarded as a key driver of competitiveness, empirical evidence consistently shows that innovation activity alone does not guarantee superior economic outcomes (Prajogo, 2006; Tran et al., 2021). This persistent “innovation–performance gap” remains a central challenge in innovation management.

Business model innovation (BMI) has been proposed as a mechanism through which firms can better appropriate value from innovation by reconfiguring how they create, deliver, and capture value. However, existing research suggests that BMI does not uniformly improve firm performance; instead, its effects are highly context-dependent (Cucculelli and Bettinelli, 2015; Ilyas et al., 2023). This raises a fundamental question: why does business model innovation create value in some firms but not in others?

Recent literature increasingly points to the role of digital transformation as a potential enabling condition. Digital technologies may enhance firms' ability to reconfigure resources, coordinate activities, and implement new business models effectively (Bouwman et al., 2019; Latifi et al., 2021). Prior research suggests that the performance implications of digital transformation depend not merely on technology adoption, but on the level of digital maturity achieved by firms. Kane et al. (2017) argue that digitally mature organisations differ fundamentally from less mature firms in their ability to integrate technologies into organisational processes, decision-making, and business strategy. However, large-scale empirical evidence on this relationship—particularly from Central and Eastern European contexts—remains limited.

This study addresses this gap by examining the conditional relationship between business model innovation, digital transformation, and firm performance using firm-level data from Hungary. Specifically, it investigates whether digital transformation explains why BMI leads to performance gains in some firms but not in others.

2. Literature Review

2.1 Business Model Innovation and Firm Performance

Business model innovation refers to changes in how firms create, deliver, and capture value. Unlike product or process innovation, BMI focuses on the configuration of activities and relationships that underpin value creation. Prior research suggests that BMI can enhance firm performance by enabling firms to exploit new revenue streams, improve efficiency, or reposition themselves in the market (Cucculelli and Bettinelli, 2015).

However, empirical findings are mixed. Several studies show that BMI does not have a consistent direct effect on performance, particularly in SME and emerging economy contexts (Ilyas et al., 2023). This suggests that BMI may not function as a standalone performance driver but rather as part of a broader system of complementary capabilities.

2.2 Digital Transformation as an Enabling Capability

Digital transformation refers to the integration of digital technologies into firm operations, decision-making processes, and value creation activities. From a resource-based view (RBV), digital capabilities can be understood as valuable and potentially rare resources that enhance a firm's ability to compete (Kraaijenbrink et al., 2010).

From a dynamic capabilities perspective (Teece, 2007), digital transformation enables firms to sense opportunities, seize them, and reconfigure resources more effectively. In this sense, digital transformation does not directly create value but enhances the effectiveness of other strategic actions—such as business model innovation.

This suggests a complementarity mechanism: BMI may require a sufficient level of digital capability to be successfully implemented and translated into performance outcomes.

Research questions:

- 1. To what extent does digital transformation condition the performance effects of business model innovation?*
- 2. Can digital transformation explain why business model innovation creates value in some firms but not in others?*

Sampling and data collection

For the data analysis, we relied on the corporate questionnaire survey conducted within the research program coordinated by the Competitiveness Research Centre at Corvinus University of Budapest (Chikán et al. 2025). The survey aims to provide a comprehensive overview of the competitiveness of Hungarian firms and the main directions of their management practices. Beyond traditional corporate functions, the questionnaire also covers major global trends (digitalization, sustainability), current challenges (supply chain organization), and topics that hold particular priority in the Hungarian business environment (subsidies, family businesses). The survey has been conducted periodically for nearly 30 years.

Data collection took place between October 2024 and January 2025 with the involvement of Scale Research Ltd. Survey participants were companies operating in Hungary with independent legal status and more than 50 employees. The research covers the manufacturing, construction, trade, transportation, and storage sectors. Of the total domestic population of 3,748 firms, 335 were included in the final sample. Top managers of these 335 firms completed the questionnaire. The survey is intentionally targeted at medium-sized and large enterprises. The sample includes 290 medium-sized firms (50–249 employees) and 45 large firms (250+ employees). Ninety percent of the firms in the sample are domestically owned, and more than one-third (122 firms) are family businesses. Internationalization patterns are represented through the experiences of 202 exporting firms. Table 1 presents the demographic characteristics of the sample, which can be considered representative in terms of size and sector (Chikán et al. 2025).

Table 1 Sample characteristics

<i>Characteristic</i>	<i>Description</i>	<i>Frequency</i>	<i>Percentage</i>
Firm size	No. of employees in 2024		
	50-249	292	87.2%
	>250	43	12.8%
Ownership	Hungarian owned	304	90.7%
	Foreign owned	31	9.3%
Sectors	Manufacturing	164	49%
	Construction	33	9.9%
	Wholesale and retail trade; repair of motor vehicles	86	25.6%
	Transportation and storage	52	15.5%
Export activity	Export activity	204	60.9%
	No export activity	131	39.1%

Source: Author's own editing.

Methodology

The empirical analysis employs regression models with an interaction term to test the moderating effect of digital transformation on the relationship between BMI and firm performance. Digital transformation is captured using a composite indicator reflecting the extent to which firms have adopted and integrated digital technologies into their operations and decision-making processes. Business model innovation is measured through a multi-item construct reflecting changes in core elements of the business model, including value creation, delivery, and capture mechanisms. Firm performance is measured using a productivity-based indicator, operationalised as the natural logarithm of revenue per employee. This measure captures economic value creation and allows for comparability across firms. Control variables include firm size, age, ownership structure, sector, and location.

To ensure robustness, additional estimations were conducted using instrumental variable techniques. Diagnostic tests, including Hausman and Sargan tests, indicate no significant endogeneity concerns, supporting the validity of the regression results. Specifically, in Model 2 we employ a two-stage least squares (2SLS) estimation to address potential endogeneity concerns inherent in cross-sectional data. BMI is treated as an endogenous variable and instrumented using variables capturing external sources of innovation ideas collected in the survey. A six-item factor analysis identified two independent factors ($r = 0$), which are included separately in the 2SLS model as instrumental variables. The first factor represents market-based sources of innovation (customers, competitors, suppliers), while the second captures scientific and publicly available knowledge sources (e.g. universities, research institutes, academic journals, and conferences).

Firm age is included in the 2SLS specification; however, it is excluded from the OLS model (Model 3) as it introduced heteroskedasticity, thereby violating OLS assumptions.

While Model 2 reports 2SLS estimates, Model 3 (OLS) is retained as the primary specification for interpretation due to its greater efficiency and stability. In the present case, the 2SLS specification becomes over-parameterised when multiple instruments are included simultaneously, leading to inflated standard errors and less reliable coefficient estimates. In line with standard econometric practice, OLS estimates are preferred when instrumental variable estimations do not improve consistency and result in higher variance.

Results

The ordered logit model shows that digital transformation is positively and significantly associated with the likelihood of engaging in business model innovation. Firms with higher levels of digital maturity are more likely to experiment with and implement new business models, indicating that digital capabilities support strategic renewal. Firms located in the capital region are more likely to introduce business model changes, while the other firm-level characteristics are not significant.

Table 2 Regression results

	(1) BMI Ordered logit (robust SE)	(2) Ln Revenue/Emp 2SLS	(3) Ln Revenue/Emp OLS
R&D Expenditure	-0.072 (0.262)		
Ln Number of Employees	0.267 (0.165)	0.167** (0.072)	0.186*** (0.071)
Ln Age	-0.019 (0.128)	0.221*** (0.077)	
Manufacturing	-0.104 (0.220)	-0.282** (0.110)	-0.250** (0.111)
Foreign ownership	0.288 (0.308)	0.306 (0.190)	0.321* (0.192)
Capital city	0.752*** (0.229)	-0.053 (0.120)	0.001 (0.115)
Digital Transformation	0.759*** (0.122)	-0.007 (0.075)	-0.126 (0.102)
BMI		0.107* (0.058)	0.039 (0.029)
BMI*DT			0.065** (0.032)
_cons		2.050*** (0.402)	2.710*** (0.341)
cut1	0.492 (0.819)		

cut2	0.986 (0.820)		
cut3	1.291 (0.820)		
cut4	1.714** (0.826)		
cut5	2.106** (0.829)		
N	335	335	335
LogLik	-479.374		
LR chi2	66.142		
LR p	0.000		
R-squared			0.074
Adj. R-squared			0.054

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Source: Author's own editing.

Regression results indicate that business model innovation (BMI) exhibits a positive and weakly significant average effect on labour productivity in the instrumental variable specification (Model 2). However, once the interaction between BMI and digital transformation is introduced (Model 3), the main effect of BMI becomes insignificant, while the interaction term is positive and statistically significant. This pattern suggests that the productivity effect of business model innovation is conditional on the level of digital transformation.

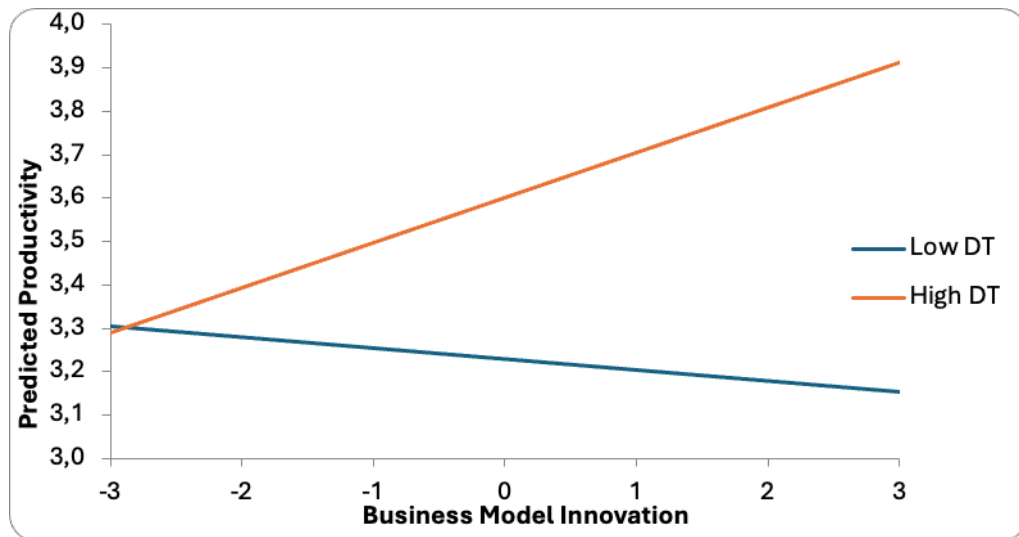


Figure 1 The impact of BMI on productivity at different level of digital transformation

The interaction plot corroborates this finding by showing diverging slopes of BMI across low and high digital transformation levels. This finding demonstrates that BMI improves firm performance only when firms have reached a sufficiently advanced level of digital transformation. In digitally mature firms, business model changes translate into productivity gains, while in firms with low digital maturity, BMI does not generate performance improvements and may even be associated with slightly negative outcomes.

Regarding control variables, firm size exhibits a positive and robust association with labour productivity across both specifications, indicating the presence of scale-related efficiency advantages. Firm age is positively related to productivity in the instrumental variable model, suggesting learning and experience effects. In contrast, manufacturing firms display significantly lower labour productivity compared to service firms in both models, reflecting persistent sectoral differences in value creation and production structures. Foreign ownership provides a stable, positive productivity advantage. These effects remain stable after controlling for business model innovation, digital transformation, and their interaction, indicating that the estimated moderating role of digital transformation operates over and above fundamental firm characteristics.

Conclusions

This study provides empirical evidence that business model innovation is not a universal driver of firm performance, but a contingent mechanism whose effectiveness depends on complementary capabilities. In particular, digital transformation emerges as a key factor determining whether BMI leads to measurable economic value.

The findings contribute to innovation management research by integrating strategic and technological perspectives and by emphasising interaction effects rather than direct relationships. They also extend the empirical literature by providing evidence from a Central and Eastern European context and from a sample of medium-sized and large enterprises.

From a managerial perspective, the results suggest that firms should not expect performance improvements from business model innovation alone. Instead, investments in digital capabilities should accompany or precede business model changes.

From a policy perspective, the findings imply that innovation support schemes focusing solely on R&D may be insufficient. Policies that enhance digital readiness and organisational transformation are likely to increase the effectiveness of business model innovation.

Future research could extend the analysis by using longitudinal data, incorporating additional performance measures, and exploring industry-specific dynamics. Overall, the study highlights that the value of business model innovation depends not only on what firms change, but also on their ability to implement these changes in a digitally enabled environment.

Request on feedback

We welcome feedback from the ISPIM community on three key aspects of this study.

First, we seek guidance on addressing potential biases related to survey-based data collection. As business model innovation and digital transformation are measured using self-reported data, concerns related to common method bias and perceptual distortions may arise. We would appreciate suggestions on established approaches to mitigate these limitations in cross-sectional settings.

Second, we would welcome input on a data-related trade-off in our empirical design. While the current analysis relies on a sample of 335 firms, we have access to multi-year financial data for a subset of these companies. However, due to differences in the level of detail in financial reporting, incorporating these more granular data would reduce the sample size to approximately 240 firms. We are interested in whether, from a methodological perspective, it is preferable to prioritise a larger sample size with less detailed measures, or a smaller sample with richer and more precise financial indicators..

Third, we would appreciate feedback on the level of aggregation in the measurement of business model innovation and digital transformation. We are interested in whether a more fine-grained approach, such as focusing on specific business model components or incorporating digital maturity perspectives, could provide deeper insight into the mechanisms identified in this study.

References

- Bouwman, H., Nikou, S. and de Reuver, M. (2019) 'Digitalization, business models, and SMEs', *Telecommunications Policy*, 43(2), pp. 101–113.
- Cucculelli, M. and Bettinelli, C. (2015) 'Business models, intangibles and firm performance: Evidence on corporate entrepreneurship from Italian manufacturing SMEs', *Journal of Business Research*, 68(8), pp. 1659–1668.
- Ilyas, M., Rehman, S.U., Ahmad, S. and Almas, H. (2023) 'When business model innovation creates value for companies: A meta-analysis', *Journal of Management Studies*, 60(3), pp. 1–32.
- Kane, G.C., Palmer, D. and Phillips, A.N. (2017) 'Achieving digital maturity', *MIT Sloan Management Review*.
- Kraaijenbrink, J., Spender, J.C. and Groen, A.J. (2010) 'The resource-based view: A review and assessment of its critiques', *Journal of Management*, 36(1), pp. 349–372.
- Latifi, M.A., Nikou, S., Bouwman, H. and de Reuver, M. (2021) 'Business model innovation and firm performance: The role of mediating mechanisms', *Journal of Business Research*, 135, pp. 593–606.
- Prajogo, D.I. (2006) 'The relationship between innovation and business performance: A comparative study between manufacturing and service firms', *Omega*, 34(5), pp. 521–534.
- Teece, D.J. (2007) 'Explicating dynamic capabilities: the nature and microfoundations of (sustainable) enterprise performance', *Strategic Management Journal*, 28(13), pp. 1319–1350.

Tran, T.T., Le, H.B. and Nguyen, D.T. (2021) 'Innovation and firm performance: Is R&D worth it?', *Journal of Business Research*, 122, pp. 398–408.