

The Interplay Between Management Control Systems and Innovation: The Moderating Influence of Transformational Leadership

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ABSTRACT

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Research aims: This research is based on Resource-Based View (RBV) and Dynamic Capability Theory (DCT) to explain the influence of Belief Systems (Bs) and Interactive Control Systems (ICs) on Innovation Capability (IC) and Innovation Performance (IP). It also explores the moderating effect of Transformational Leadership (TL) in enhancing these relationships.

Design/Methodology/Approach: The results show that Bs and ICs have a significant positive impact on IP, which in turn has a significant positive impact on IP. Moreover, the relationships between management control systems (MCSs), and IC are directly and positively moderated by TL, which strengthens these relationships.

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Theoretical contribution/Originality: This study extends the RBV and DCT by showing how MCSs, IC, and TL interact to impact IP. Considering these perspectives in the context of Chinese manufacturing SMEs, the study offers fresh perspectives on mechanisms by which resources and leadership practices enable innovation.

Practitioner/Policy implications: The results indicate that managers should adopt both belief-based and interactive control mechanisms and also encourage TL behaviors to enhance IC and IP. This can offer manufacturing SMEs the necessary competitiveness and flexibility in the rapidly changing markets.

Keywords: Belief Systems, Interactive Control Systems, Innovation Capability, Innovation Performance, Transformational Leadership

JEL Classification: M10, L60

1. Introduction

In today's fast-changing world of technological progress, shifting market needs, and the global economy, an organisation's competitive and sustainable advantage depends heavily on its innovation (Le & Lei, 2019; Yang et al., 2018). Businesses are constantly pressured to develop new products, services, and processes to stay competitive. In this context, innovation competence is an essential capability for the organisation that can help companies produce, transform, and apply new concepts to effectively meet evolving customer demands and market conditions (Gui et al., 2024). While innovation is known to be an important driver of competitive advantage, developing it is very difficult for companies in developing economies. Most companies in these economies are small and medium-sized enterprises (SMEs), which often lack adequate capital and resources and are therefore unable to invest in innovation activities. Therefore, researchers have increasingly focused on developing and understanding how organisational forms can enhance innovation capacity cost-effectively in resource-limited contexts. (Lei et al., 2019; Tukamuhabwa et al., 2017).

IC is a significant factor in both the economic growth of nations and the competitiveness of organisations, as shown in extensive research (Bogetoft et al., 2024; Hogan & Coote, 2014). Companies with innovative capacities are more likely to generate value, adapt to the environment, and deliver better performance results. However, it is very difficult for companies in developing economies to achieve real innovation, as financial, technological, and specialised knowledge constraints tend to foster imitation rather than innovation (Lin, 2007). These ongoing problems have led researchers to examine

organisational design factors that can support capability development and increase a firm's innovative ability in the face of resource constraints (Geldes et al., 2017; Hoai et al., 2022). Several factors are increasingly studied in the literature as enablers for organisational adaptability, innovativeness, resilience, and strategic renewal, such as MCSs and organisational capabilities (AlTaweel & Al-Hawary, 2021; Barros & Ferreira, 2019; Henri, 2006).

MCSs are essential to the achievement of employee behaviour, organisational activity and related behaviour, linkage to organisational strategy, and organisational learning and innovation (Baird et al., 2019). In Simon's 1995 framework of levers of control, Bs and ICs are two significant control mechanisms that can impact organisational behavior in different but complementary ways. Organisational values, mission, and purpose are communicated through Bs, which focus employee attention on strategic priorities. By contrast, ICs foster ongoing communication, information flow, and organisational learning by allowing companies to properly address new opportunities and environmental uncertainties. In addition to formal control, leadership is also a key factor in influencing innovative behavior. Charisma, intellectual stimulation, inspiring drive, and personalised consideration are all components of TL; this involves creating an organisation that is creative, experimental, and knowledge-sharing (Lathong et al., 2021). Management control and TL are individual and related to innovation-related outcomes, and there is limited understanding about their interaction and the impact on IC.

Research on Bs and ICs has mainly been conducted within a single framework, yielding only a partial understanding of their contribution to IC (Mundy, 2010). The question, therefore, is whether their use simultaneously leads to a complementary, additive, or synergistic effect, which makes it easier for firms to innovate. Past studies also indicated that management controls can either enable or hinder innovation in the context of particular organisational conditions and contextual factors. However, the mechanisms through which these influences can either enable or inhibit innovation are still poorly understood, especially when multiple management controls are used simultaneously (Barros & Ferreira, 2019; Lill et al., 2021). In theoretical terms, the literature has not paid much attention to integrating RBV and DC theory to delineate how Bs and interactive controls work as strategic organisational resources, or as a process by which organisational capabilities are developed, deployed, and reconfigured. This theoretical gap matters because it affects how

managers allocate scarce resources and whether they should consider these control systems as complementary investments or alternative strategies for managing innovation.

In addition, with growing scholarly attention on TL and innovation, the conditions under which TL positively or negatively impacts the performance of management control systems in fostering IC are still under-researched (Adi & Sukmawati, 2020). Previous moderation research has failed to consider the impact of TL behaviors on the use of Bs and ICs to drive innovation in organisations. Further, the industrial environment in developing economies is distinctly different from that more commonly studied in developed countries, making the results of existing research less applicable (Andersén, 2021). Consequently, the present level of understanding on the interactive impact of Bs, ICs, and TL on IC is still in its infancy, especially in resource-constrained manufacturing settings.

The purpose of this study is to investigate the interrelationships between Bs, ICs, TL, IC, and IP in manufacturing organisations in a developing economy to overcome these limitations. Dynamic capability theory is used to draw on the concepts of Bs and ICs as organisational mechanisms for sensing, seizing, and reconfiguring activities that are necessary to establish capabilities. Bs foster opportunity recognition and exploratory behaviour while interactive controls enable ongoing learning, adaptation, and capability renewal via continuous communication and strategic dialogue (Phan et al., 2023). From this point of view, the RBV theory proposes that TL is a valuable and hard-to-imitate intangible resource that helps employees motivate, creatively use their resources, and effectively share knowledge within the organisation (Oluwatosin Abdul-Azeez et al., 2024). The study brings together these theoretical views and suggests that MCSs support capability development, TL provides relational and motivational support, and IC is the strategic mechanism for achieving superior innovation results.

Three significant additions to the literature are made by this study. First, it goes beyond the fragmented approach adopted in previous studies by investigating Bs and ICs in parallel and as complementary antecedents of IC. Second, it further contributes to the theory by building on the RBV and DCT. In this context, MCSs are considered strategic organisational resources that enable learning, knowledge integration, and adaptive decision-making. At the same time, TL is defined as the organisational resource of a particular human being who, through his/her attitude, behaviour, and actions, boosts these processes, stimulating creativity, risk-

taking, and openness to change. These resources come together to develop IC; it is regarded by RBV as an important organisational resource and as a higher-order capability within DCT. Thirdly, this study focuses on manufacturing companies in a developing economy, meeting the requirement for context-specific studies that examine the special innovation challenges organisations under resource constraints experience. The results thus offer theoretical and practical implications for how firms can better strategically leverage management controls and leadership strategy to enhance IP. The study will answer the following research questions, according to the gaps found in the literature and theory:

RQ1: What is the effect of Bs and ICs on IC of manufacturing companies in developing economies?

RQ2: Does the relationship between MCSs and IC get mediated by TL, and when does the moderating effect make the control–capability relationship stronger or weaker?

RQ3: How does the potential of IC influence the association between management control systems and IP?

2. Theoretical Context and Formulation of Hypotheses

2.1 *RBV and DCT*

This study is based on the RBV and DC theory. From an evolutionary economics viewpoint, RBV has developed the theory of strategic management by making it more holistic, including perspectives from the behavioural sciences and sociology. This integration has therefore introduced new ideas that have enriched the theoretical aspects of strategic management. Businesses have become more focused on intangible assets than tangible ones to obtain a competitive advantage (Barney & Clark, 2007; Barney & Hesterly, 2008). DCT is a company's capacity to swiftly and efficiently integrate, adjust, and manage both internal and external resources in order to deal with environmental instability (Teece et al., 1997). Implementing a control system is required to coordinate organisational planning and managerial control, including performance evaluation, compensation structures, incentive systems, information exchange, and dialogue between units, known as mutual adaptation (Hasanudin et al., 2019). So, companies that can acquire and manage resources well can obtain a competitive edge. To this end, DCT holds that these capabilities enable companies to recognise and act on new opportunities in evolving business contexts, thus turning organisational resources into tangible and

intangible assets. These capabilities lead to value creation by enabling companies to develop new, innovative products and services efficiently, as well as to expand, adapt, and reorganise their resource base strategically. Thus, dynamic capabilities drive organisational renewal and spur innovation, and help the firm adapt to its external environment (Eisenhardt & Martin, 2017; Helfat et al., 2009).

2.2 *Simons' (1995) Levers of Control*

To facilitate implementation of the corporate strategy, Simons developed a framework of four levers of control: (belief, boundary, interactive, and diagnostic) (Simons, 1995). To address the necessity of taking these levers' complementarity into account, Simons divides them into two groups: enabling levers and constraining levers (Simons, 2000). Bs are evident and expressed organisational principles which are clearly communicated and reinforced by the top management of a company to articulate the company's core values, mission, and strategic objectives. Bs promote and stimulate the pursuit of novel opportunities. ICs are used as a tool to promote critical thinking and ongoing learning and to develop new strategies in response to changing opportunities and threats throughout the organisation. ICs enable one-on-one communication across all levels of the organisational hierarchy, augment learning within the organisation, and stimulate innovativeness (Simons, 1995). Simons (2000) views these two controls as being a positive system, because they foster a climate that is conducive to information exchange and organisational learning.

Conversely, boundary systems and diagnostic controls are the restricting processes. Boundary systems determine the boundaries of acceptable action zones that members of an organisation are expected to work within to contain undesirable behaviour and reduce risks for the organisation. A diagnostic control system is used to track employee performance to meet the organisation's goals, to inspire employees to work hard, and to offer appropriate rewards. Simons proposes these two levers of constraint as giving clear objectives, rule-based incentives, and well-defined boundaries that limit opportunity-seeking behaviour.

Simons (2000) proposed that these two constraining levers provide clear objectives, rule-based incentives, and well-defined boundaries that restrict opportunity-seeking behaviour. According to Simons (2000), boundary and diagnostic control systems are restrictive mechanisms intended to limit exploratory actions and enforce adherence to established rules. These systems focus on

managing well-defined, routine matters and ensuring the attainment of predictable, predefined objectives (Ahrens & Chapman, 2004). Bs and ICs are considered constructive mechanisms that encourage employees to engage in creative exploration and broaden opportunities, while enabling managers to concentrate on strategic uncertainties, such as potential future risks and prospects (Henri, 2006). As outlined earlier, this research centers on the application of positive control systems.

2.3 *Impact of Simons' Positive Control System on Innovation Capability*

MCSs are an essential organisational mechanism in shaping employees' behaviours, synchronising strategic goals, and facilitating organisational learning. Bs are one of the most important positive levers because they help articulate organisational values, mission, and strategic direction, and create a sense of direction and purpose for employees. Bs can help employees act in ways that support problem-solving and innovative solutions to organisational challenges, which are key components of IC (Henri, 2006; Mohamed et al., 2014). In support of this, Phan's study revealed that belief control has a positive relationship with dynamic capability, which is measured through the variables of resilience and workplace flexibility, and Chairunisa showed that belief control has a significant positive correlation with organisational innovativeness in manufacturing companies (Chairunisa, 2019; Phan et al., 2023).

Bs allow organisations to shift from efficiencies to experimentation and learning, strengthening their IC through shared values and adaptive behaviors (Marginson, 2002). Another tool of control, ICs, is also crucial to improving innovation capability. ICs allow for ongoing communication, dialogue, and knowledge-sharing among organisational members, whereas traditional controls are more commonly performance-monitoring mechanisms (Simons, 1988). Regular communication between managers and staff creates opportunities to align on the strategy and to explore new opportunities and innovative ways of responding to environmental uncertainty. This correlation supports the empirical studies. For instance, Müller-Stewens et al. (2020) showed that ICs can substantially enhance product innovation by increasing coordination routines, especially in technologically dynamic settings. Likewise, Phan et al. (2023) found that ICs positively affect workplace flexibility and organisational resilience, and Pudjiarti et al. (2020) noted that ICs contribute to organisational learning and top management

participation in innovation-related activities. In addition to improving coordination and communication, ICs also foster sharing, learning, and employee engagement.

ICs allow for open discussion, give employees access to strategic information, and help them stay more motivated and ready to experiment, which is critical for lasting innovation (Beuren et al., 2020). Employees are more likely to be dedicated, creative, and willing to take an innovative approach to solving organisational issues in such an environment (DesJardine et al., 2019). In addition, Widener states that there is a best practice for integrating Bs and ICs. Bs establish a common set of values and strategic direction, and ICs establish a communication infrastructure that facilitates organisational learning and adaptation. Combining these two control mechanisms fosters a helpful atmosphere that promotes the development of IC and enhances an organisation's ability to create and implement new ideas. From the above statements, the following hypotheses are put forward:

H_{1a} : Bs and IC are positively correlated.

H_{1b} : ICs have a positive relationship with IC.

2.4 *Impact of Transformational Leadership on Simons' Positive System and Innovation Capability*

Past studies have pointed out that leadership is a key determinant of the design, implementation, and use of control mechanisms in organisations and that leadership and management control systems are closely related. Leaders interpret the situation in the organisation and lead strategic responses; hence, their influence is crucial to the effectiveness of MCSs. Bilton and Cummings (2010) state that leadership in control systems is the ability to set a clear vision, communicate strategic goals, empower staff, develop strategies, and maintain integrity within the organisation. How these responsibilities are fulfilled varies based on the leadership style of organisational leaders. Leadership styles influence how vision, mission, and strategic plans are communicated; how employees are motivated and empowered; and how the organisation's activities are coordinated and monitored (Ishmail Bangura, 2023). Therefore, leadership styles will greatly affect the management control systems and their contribution to the organisation's objectives (Shalley et al., 2004; Speklé et al., 2017). TL is one of the leadership styles that has received much attention because of its close association with innovation and change (Bass, 1985).

One of the most crucial factors is leadership style that led to performance and development in an organisation. Good leaders inspire, motivate, and influence their staff and help to establish a common goal for the entire company. (Burns, 1978). TL is especially concerned with doing something to help followers meet their needs and improve their motivation to perform beyond their capacity. Transformational leaders have the skill to communicate a vision, promote thinking, facilitate the learning process, and evoke dedication to the organisation's objectives. They are good at communicating organisational values, influencing employee attitudes and behaviours towards innovation and change, and working in a dynamic environment (Henker et al., 2015; Suifan et al., 2018). Based on the RBV, TL could be considered a valuable organisational resource that contributes to the effectiveness of other organisational strategic resources and capabilities.

According to the RBV, firms' long-term competitive advantage is based on the effective use of valuable internal resources and capabilities (Assensoh-Kodua, 2019; Cristache et al., 2025). In this context, it is hypothesised that TL will augment the innovation-enhancing effects of Bs and ICs. Transformational leaders actively communicate and reinforce organisational values, ensuring they are not just symbolic statements but are deeply grounded in the organisation's culture (Affandie & Churiyah, 2022; Alén et al., 2017). They align employee behaviour with the organisation's goals, thereby creating a learning, creative, and innovative culture. Likewise, transformational leaders can help improve the effectiveness of ICs by encouraging candid dialogue, information exchange, and cross-functional cooperation. These leaders empower organisations to realise all of the benefits of interactive controls through ongoing dialogue, adaptive learning, and active employee engagement.

Furthermore, transformational leaders can coordinate across levels and departments in an organisation, eliminating communication barriers and ensuring that ICs are used effectively to detect opportunities, resolve new problems, and support innovation projects (Alharbi et al., 2023). Thus, TL is predicted to reinforce the positive connection between enabling control systems and IC. The following theories are proposed considering the aforementioned:

H_{2a} : The influence of Bs on IC is mediated by TL.

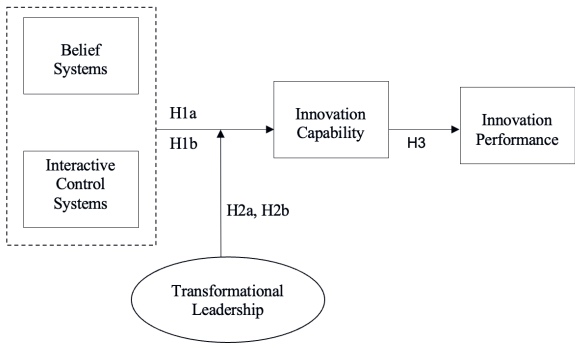
H_{2b} : ICs positively moderate the relationship between IC and TL.

2.5 Innovation Capability and Innovation Performance

Innovation is commonly used to describe a key factor in organisational success and continued competitiveness. IP is a crucial measure of how well innovation tactics are working and is measured by the degree of success in developing and implementing new products, services, processes, and practices that help firms achieve their innovation-related goals (Audretsch & Belitski, 2023). IP goes beyond the mere production of innovations; it also refers to the added value, quality, and uniqueness of what a company offers, which in turn affects market positioning and growth (Zhao, 2023). In terms of the RBV, IP is mainly dependent on the firm’s ability to mobilise valuable resources and capabilities internally to achieve competitive advantage. Of these capabilities, the ability to innovate is key, representing an organisation’s capacity to conceive, nurture, and successfully execute new ideas. Strategic resources of knowledge, expertise, organisational learning and technological competencies underpin this capability. Businesses with strong innovation capabilities are better able to adjust to environmental changes, make the best of new opportunities and turn resources into new products. Empirical evidence throughout the literature consistently shows a favorable association between IC and organisational performance in various contexts (Bogetoft et al., 2024; Rajapathirana & Hui, 2018). Thus, organisations with higher levels of IC are likely to perform better in terms of innovation, productivity, and competitive advantage in dynamic markets. Thus, IC is hypothesised to be a key antecedent of IP. Consequently, the following hypothesis is proposed.:

H₃: IC has a positive impact on IP.

Figure 1: Theoretical Framework



3. Research Design and Data Analysis

This study uses a deductive research approach, which entails formulating hypotheses based on well-established theoretical underpinnings and then evaluating them empirically (Ferasso & Grenier, 2021). A deductive approach is particularly appropriate for examining emerging research issues that require theoretical validation and empirical verification. Given the study's objective of investigating the antecedents and outcomes embedded within the proposed conceptual framework, this research design provides a rigorous means of testing theoretically derived relationships within the manufacturing sector. In line with the positivist research paradigm, which prioritises hypothesis testing and objective measurement (Wilson, 2014), a survey-based approach was adopted as the primary data collection method because it is suitable for examining relationships among multiple organisational constructs (Howell, 2012).

3.1 Measures

The conceptual framework comprises five key constructs: Bs, ICs, IC, IP, and TL. Bs was measured using four items and five items each for ICs, IC, IP and TL. A 5-point Likert scale was used to gauge responses (1 being strongly disagree, and 5 being strongly agree). The measurement items were adapted from well-established scales in prior studies and refined to reflect the manufacturing context. Specifically, the measures for Bs and ICs were adapted from Phan et al. (2023). IC was assessed using five items adopted from Bansal et al. (2023), while Five items modified from Bass and Avolio (1995) were used to measure TL. IP was evaluated using five items adapted from Tortorella et al. (2024).

The questionnaire was translated from English to Chinese and back to English in accordance with Brislin (1970) recommendations to ensure linguistic equivalence and content accuracy. Subject matter experts reviewed both versions of the instrument and resolved any discrepancies identified during the translation process. Content validity was further assessed through expert evaluation involving three employees from the manufacturing industry, whose feedback on wording, clarity, and contextual appropriateness helped improve the comprehensibility of the questionnaire. In addition, a pilot study was conducted with 55 employees from leading manufacturing firms to evaluate the clarity, readability, and face validity of the survey instrument. The pilot test results indicated that respondents clearly

understood the questionnaire items, and no more changes were needed prior to the last round of data collecting.

3.2 Respondent Information

This study included employees at different levels of the organisations (senior, middle, frontline managers, non-managers) from Chinese manufacturing companies. An online survey using random sampling was used to collect data. Finally, 505 valid questionnaires were collected and analysed.

Regarding gender distribution, 313 respondents (62.0%) were male, while 192 respondents (38.0%) were female. In terms of age, 41 participants (8.1%) were between 20 and 29 years old, 274 (54.3%) were between 30 and 39 years old, 183 (36.2%) were between 40 and 49 years old, 5 (1.0%) were between 50 and 59 years old, and 2 (0.4%) were over 60 years old.

With respect to educational attainment, 34 respondents (6.7%) held a high school diploma or equivalent qualification, 93 (18.4%) possessed an associate or college degree, 259 (51.3%) held a bachelor's degree, 117 (23.2%) had obtained a master's degree, and 2 respondents (0.4%) possessed a doctoral or professional degree.

Regarding organisational position, 7 respondents (1.4%) occupied senior management roles, including chief executive officers and other executive positions. Middle-level managers, such as departmental heads and managers, accounted for 213 respondents (42.2%), while 187 respondents (37.0%) were frontline managers, including team leaders and supervisors. The remaining 98 respondents (19.4%) were non-managerial employees. The diversity of respondents across managerial levels enhances the representativeness of the sample. It provides a comprehensive perspective on management control systems, IC, and organisational performance within the Chinese manufacturing sector.

3.3 Data Aggregation

An online poll was used to collect the data from managers and employees in Chinese manufacturing SMEs. Following the recommendations of previous research, online surveys were selected due to their advantages in facilitating rapid and cost-effective data collection, improving response accuracy, and enabling access to geographically dispersed respondents who may be difficult to reach through traditional data collection methods (Schillewaert et al., 2005). The questionnaire was created and used on the widely used

online survey platform in China, the Star survey platform (<https://www.wjx.cn/>). The survey link was distributed through professional WeChat networks to obtain responses from participants across diverse manufacturing subsectors.

A total of 657 questionnaires were gathered. To ensure the reliability and quality of the dataset, responses with duplicate submissions, incomplete information, or identical response patterns across all measurement items were excluded. Following data screening, 505 valid and complete responses were used in the subsequent analysis. The final sample included firms from various manufacturing subsectors, providing a broad cross-sectional perspective on the relationships among positive control system, IC, and IP within the Chinese SME context.

In the context of sample size for Structural Equation Modeling (SEM), this study adopted the recommendations of Kline (2015). The final sample size of 505 responses was above the minimum necessary for SEM analysis, with adequate numbers for hypothesis testing and multivariate analysis.

3.4 Procedural Remedies in CMB

During the study's design phase, several procedural remedies were used to lessen the prevalent common method bias (CMB), as the design was cross-sectional with one respondent per firm.

First, to mitigate potential social desirability bias and evaluation apprehension, respondents received clear guarantees of total secrecy and anonymity.

Second, the survey was written straightforwardly and succinctly to reduce ambiguity and problems with item interpretation.

Third, items were separated to ensure that the predictors, moderators, mediators, and outcome variables were not presented in a single block that led the respondents to assume the relationships expected by the researchers in the study.

Fourth, the questionnaire emphasised that honest opinions were most helpful in the research and that there were no right or incorrect responses.

In addition to these procedural remedies, post hoc statistical diagnostics, such as Harman's single-factor test and full-collinearity VIF evaluation, were used to determine whether CMB posed a significant risk to the results.

4. Results

The measuring model was assessed after data collection to determine the measures’ construct validity and reliability. According to Table 1, Cronbach’s alpha values ranging from 0.996 to 0.998 and CR values ranging from 0.997 to 0.998 which are higher than the suggested threshold (Hair & Alamer, 2022), these results showed strong internal consistency reliability. Furthermore, all average variance extracted (AVE) values were greater than 0.50 and all indicator loadings were greater than 0.70, confirming the convergent validity (Hair & Alamer, 2022).

The HTMT ratio of correlations and the Fornell-Larcker criteria were both used to evaluate discriminant validity. Table 2 results demonstrate that each construct’s square root of the AVE was greater than its maximum correlation with any other construct. Additionally, all HTMT values were well below the conservative level, indicating sufficient discriminant validity (Hair et al., 2021; Polit & Beck, 2006) (Table 3).

To investigate the possible impact of CMB, Harman’s single-factor test was conducted using unrotated exploratory factor analysis (EFA) with main axis factoring. According to the findings, CMB was not a major issue because the first factor explained less than 50% of the overall variation (Podsakoff et al., 2003). The full collinearity assessment (VIF) was also conducted to provide further evidence of the lack of CMB; the results were consistent with the absence of significant measurement-related bias affecting the estimated relationships.

Table 1: Evaluation of Construct Reliability and Convergent Validity

Construct	Item	Loading	CA	CR	AVE	VIF
Belief Systems	Bs1	0.996	0.996	0.997	0.985	2.02
	Bs2	0.991				
	Bs3	0.991				
	Bs4	0.994				
Innovation Capability	IC1	0.995	0.997	0.997	0.986	2.57
	IC2	0.993				
	IC3	0.996				
	IC4	0.993				
	IC5	0.989				
Interactive Control Systems	ICs1	0.993	0.997	0.998	0.988	2.39
	ICs2	0.992				
	ICs3	0.994				
	ICs4	0.993				
	ICs5	0.997				

Construct	Item	Loading	CA	CR	AVE	VIF
Innovation Performance	IP1	0.997	0.998	0.998	0.992	2.23
	IP2	0.999				
	IP3	0.996				
	IP4	0.994				
	IP5	0.994				
Innovation Performance Transformational Leadership	IP1	0.997	0.998	0.998	0.992	2.23
	TL1	0.990	0.996	0.997	0.983	2.76
	TL2	0.996				
	TL3	0.990				
	TL4	0.991				
Interaction: TL×Bs Interaction: TL×ICs	TL5	0.990				
	TL × Bs	1.000				
	TL × ICs	1.000				

Table 2: Discriminant Validity Evaluation Using the Fornell-Larcker Criteria

	Bs	IC	ICs	IP	TL
Bs	0.992				
IC	0.381	0.993			
ICs	0.047	0.331	0.994		
IP	0.331	0.942	0.315	0.996	
TL	0.026	0.252	0.063	0.232	0.991

Table 3: Discriminant Validity (HTMT Ratio Criterion)

	Bs	IC	ICs	IP	TL	TL× Bs	TL× ICs
Bs	–						
IC	0.383	–					
ICs	0.047	0.332	–				
IP	0.332	0.629	0.316	–			
TL	0.027	0.253	0.063	0.233	–		
TL× Bs	0.051	0.312	0.025	0.310	0.053	–	
TL× ICs	0.026	0.390	0.019	0.359	0.039	0.019	–

Following the validation of the measurement model, the structural model was evaluated in many stages, including model fit, coefficient of determination (R^2), path coefficients (β), collinearity diagnostics, effect sizes (f^2), and predictive relevance (Q^2).

The variance inflation factor (VIF) was initially examined to look for collinearity. Every VIF value fell between 2.00 and 2.76, which remained below the critical value of 3.3 (Hair & Alamer, 2022) (Table 1), thus not raising any concern about multicollinearity.

To assess the importance of the proposed correlations, bootstrapping with 5,000 resamples was employed. All proposed relationships H_{1a} to H_3 were statistically significant ($p < 0.001$) and supported. The R^2 values assessed the explanatory power of the model. The findings revealed that the overall model of Bs, ICs, and interactions between Bs and ICs accounted for 65.5% of the variance in IC ($R^2 = 0.655$). Furthermore, IC accounted for 88.7% of the variance in IP ($R^2 = 0.887$), suggesting a close fit between the two (Hair & Alamer, 2022) (Table 4).

The Q^2 statistic was also used as an additional measure of predictive relevance. As shown in Table 4, the Q^2 values were 0.648 for IC and 0.555 for IP, these values were good in both endogenous constructs in terms of predictive relevance.

Finally, overall model fit was assessed with the standardised root mean square residual (SRMR) value. The SRMR value was less than the recommended 0.08 (Hair & Alamer, 2022), indicating acceptable model fit.

PLS-SEM investigated the direct relationship between Bs and ICs and the IC with bootstrapping based on 5,000 resamples. The findings revealed significant positive relationships between Bs and IC ($\beta = 0.437$, $STDEV = 0.027$, $T = 16.18$, $p < .001$) and between ICs and IC ($\beta = 0.370$, $STDEV = 0.028$, $T = 13.21$, $p < .001$). The effect sizes for both of these ($f^2 = 0.551$ and $f^2 = 0.393$, respectively) showed both to be of high practical significance using Cohen's (1988) criteria. These relationships are also robust, as demonstrated by the large T-values. The results indicate that Bs are important, as are ICs, as determinants of organisational IC. Based on this, both hypotheses, H_{1a} and H_{1b} , were accepted.

The correlation between IC and IP was also studied. The analysis revealed a significant positive effect of IC on IP ($\beta = 0.369$, $STDEV = 0.022$, $T = 16.77$, $p < .001$), with a large effect size ($f^2 = 0.462$). In the direct relationships analysed, this path had the highest T-value, indicating a strong and consistent relationship. The results suggest that better innovation outcomes are likely to be obtained in organisations with a high level of IC. Hence, the findings confirmed support for hypothesis H_3 (see Table 4).

Table 4: Direct Path Results

Hypothesis	Relationship	β	S. D	<i>t</i> -value	<i>p</i> -value	Decision	f^2
H_{1a}	Bs $\rightarrow$ IC	0.437	0.027	16.18	<.001	Accepted	0.551
H_{1b}	ICs $\rightarrow$ IC	0.370	0.028	13.21	<.001	Accepted	0.393
H_3	IC $\rightarrow$ IP	0.369	0.022	16.77	<.001	Accepted	0.462

Note: R^2 (IC)=0.655 & (IP)= 0.887

Q^2 (IC)= 0.648 & (IP)=0.555

SRMR= 0.007

S.D: Standard deviation

** $p < 0.001$

Table 5 shows the outcome of the moderation analysis. The results provide evidence of the significant positive influence TL has on the link between Bs and IC. There was a positive and statistically significant interaction effect ($\beta = 0.388$, $T = 13.85$, $p < .001$), and the effect was large ($f^2 = 0.414$), supporting Hypothesis H2a. This result indicates that the influence of Bs to develop IC grows stronger If organisational leaders exhibit transformative behaviours like intellectual stimulation, personalised attention, and inspiring motivation. Similarly, the positive impact of ICs on IC ($\beta = 0.485$, $T = 16.72$, $p < .001$, $f^2 = 0.579$) was significantly supported by TL, supporting Hypothesis H_{2b} . This was the strongest moderating effect in the model, suggesting a high interactive synergy between ICs and TL. TL seems especially powerful in maximising the potential for innovation-enhancing benefits of interactive control systems, as both types stress communication, participation, knowledge sharing, and strategic dialogue.

Table 5: Results of Moderation

Hypothesis	Relationship	β	S. D	<i>t</i> -value	<i>p</i> -value	Decision	f^2
H_{2a}	TL $\times$ Bs $\rightarrow$ IC	0.388	0.028	13.85	<.001	Accepted	0.414
H_{2b}	TL $\times$ ICs $\rightarrow$ IC	0.485	0.029	16.72	<.001	Accepted	0.579

Table 6 shows the outcome of the mediation analysis. The results showed that the relationship between Bs and IP was significantly mediated by IC ($\beta = 0.410$, $T = 16.211$, $p < .001$). The finding indicates that Bs have a direct positive influence on IP through their role in building and strengthening organisational capabilities for innovation. That is, the positive effect of Bs on IP occurs because of the organisation's ability to develop, absorb, and execute new ideas. Similarly, ICs were determined to be a significant mediator between

IC and IP ($\beta = 0.348$, $T = 12.902$, $p < .001$). These results suggest that interactive control's role in organisational IC is the primary channel through which the performance-enhancing effect of interactive control is brought about. Together, the mediation outcomes provide a clear indication of the role of IC as a key mechanism by which MCSs can positively influence innovation performance.

Table 6: Mediation Results

Relationship	β	S. D	<i>t</i> -value	<i>p</i> -value	Decision
Bs $\rightarrow$ IC $\rightarrow$ IP	0.410	0.025	16.211	<.001	Accepted
ICs $\rightarrow$ IC $\rightarrow$ IP	0.348	0.027	12.092	<.001	Accepted

5. Discussion

This research explored the influence of Bs and ICs on IC, the moderating influence of TL, and the mediating influence of IC in improving IP in Chinese manufacturing firms. The findings offer strong empirical backing for the study's suggested research paradigm and offer implications for understanding MCSs in organisational settings that support innovation outcomes. The results show that Bs and ICs are important positive factors for IC. Interestingly, Bs had a slightly greater impact than ICs, indicating that organisational values, strategic focus, and performance expectations need to be clearly communicated in ways that support the development of firms' innovation capabilities. This is consistent with Simons' concept for levers of control, which suggests that MCSs can be not only monitoring systems but also strategic tools for learning, capability building, and organisational adaptation. The findings again support earlier studies that have shown the positive link between management control systems and innovation and organisational learning (Bedford et al., 2016; Henri, 2006).

In contrast, previous studies concentrate mostly on the direct link between MCSs and innovation outcomes. However, the current study shows that MCSs have an indirect effect on IP through the development of IC. The strong positive correlation between ICs and IP indicates the need for ongoing communication, information sharing, and strategic discussion in developing innovation. ICs invite managers and employees to examine uncertainties, question assumptions, and collectively look for new opportunities. These interactions enable the organisation to learn and enhance its capacity to adjust to the environment. The results confirm the hypothesis developed by Malagueño and Bisbe (2010) that interaction between

control systems fosters innovative behaviour and strategic adaptation. For Chinese manufacturing companies, interactive controls seem especially useful for improving innovation readiness and organisational flexibility, particularly in an increasingly competitive landscape and amid ongoing technological advancements.

The moderation analysis findings also show that TL is a key component in fortifying the positive relationship between Bs, ICs and IC. The results show how crucial it is to motivate employees, deliver a convincing vision, and foster innovative problem-solving to make control systems more effective. Leadership and control systems do not seem to be substitutes for one another, but rather organisational resources that complement each other. Transformational leaders create a climate that enables employees to be more open to participation in the organisation's goals, knowledge sharing, and the use of control systems as learning and innovation tools. As a result, companies can be more successful in applying managerial controls to improve their innovative capacity. One interesting finding is that the moderating effect of TL was greater for ICs than Bs. The result suggests that interactive controls are more likely to be effective at increasing innovation-enhancing effects when there is TL. Communication, employee involvement, participation, and knowledge sharing are the three elements highlighted by both TL and ICs, which establish a mutually reinforcing relationship between them and contribute significantly to the advancement of IC. This result adds to the previous studies on leadership and innovation and shows that the effectiveness of MCSs is highly dependent on the leadership context in which they are applied (Fitri et al., 2024; Gui et al., 2024).

Additionally, the mediation study demonstrates that IC is crucial in tying the Bs, ICs, and IP together. The indirect effects are significant, suggesting that Bs and ICs have the most significant impact on IP through their impact on capacity to innovate. That is, the influence of management control systems on improvement of innovation outcomes goes beyond monitoring or performance evaluation; it also facilitates the building of the organisation's innovative capability to generate, implement, and commercialise innovative ideas successfully. This finding is similar to DCT, which explains that the most important way managerial practices affect performance outcomes is through their effect on organisational capabilities (Teece et al., 1997). The higher indirect effect found for Bs indicates that a formalised organisational system and explicit strategic values could be relevant factors in the capability development of

manufacturing companies. Manufacturing companies normally need to coordinate, be disciplined in the processes, allocate resources efficiently, and be consistent in operations. In such circumstances, the purpose of Bs is to provide a shared direction that will guide employee behaviour and align organisational efforts towards innovation-related aims. Hence, Bs is particularly effective in capability development and ultimately improving the IP.

Lastly, the positive correlation between IC and IP is quite strong, underscoring the importance of innovation-related skills. Businesses that are highly innovative are more likely to recognise new possibilities, adjust to shifting market dynamics, create new products and processes, and sustain competitive advantages in the long term. This result is consistent with previous studies based on DCT and validates IC as the most significant elements affecting innovation success in manufacturing entities. The findings indicate that building innovation capabilities by integrating effective MCSs and TL practices is crucial for organisations looking to attain sustainable IP.

6. Theoretical Contributions

This study is important for the literature on MCSs, IC, leadership, and performance. The study contributes to the organisational capabilities and MCS literature in two aspects: first, by placing IC as a new yet under-researched organisational capability, and second, by conceptualising and analysing IC in the context of the broader organisational capability. The literature has mainly focused on capability attributes like organisational flexibility, resilience, and agility (AlTaweel & Al-Hawary, 2021; Phan et al., 2023), with relatively little attention paid to IC as an outcome influenced by management control systems. This omission is a very serious gap, particularly in light of the importance of innovation to maintaining competitiveness in a continually changing business world. This study analyses the role of Bs and ICs as levers of control and shows that positive management controls can make the firms more capable of innovation. The majority of earlier research has concentrated on the impact of diagnostic and interactive controls on firm performance (Henri, 2006; Lee et al., 2017); however, there is little study that particularly looks into the effects of Bs and ICs on IC as a strategic organisational capability. Thus, this research adds to the corpus of knowledge by expanding our comprehension of how IC is a key enabling mechanism that can create value for organisations through reducing the use of enabling controls.

Additionally, the work adds empirical evidence of a high positive association between IC and IP to the IC literature. The results support earlier research indicating that companies with better innovation capabilities are probably going to be more successful in terms of their organisational and innovational results (Khan et al., 2023; Yusof et al., 2023). Most significantly, the findings support the central importance of IC as a strategic lever for IP regarding emerging economies, where companies are frequently faced with more environmental uncertainty and resource constraints.

This research unifies two areas of literature that have evolved separately, namely leadership and management control systems. Previous studies have examined effect of MCSs on strategy implementation and organisational performance and how leadership styles' impact overall organisational results (Adi & Sukmawati, 2020; Ayu Nani & Dina Safitri, 2021; Fitri et al., 2024; Phornlaphatrachakorn, 2019). However, little research has examined the combined effect of TL and enabling systems on the development of IC. This work advances leadership theory and upper echelons theory by establishing TL as a boundary condition that improves Bs and ICs' efficacy. The results show that employees' perceptions of control systems can be influenced by TL, shifting from a restrictive control system to a flexible one that allows employees to be innovative, try new things, and share knowledge. In this regard, the study combines leadership and organisational control theories, providing a more holistic approach to understanding IC development.

This study makes a further contribution to the MCSs and innovation literature by examining the manufacturing sector in China, which has not been sufficiently well studied to date. Most of the literature in this area has been done in developed economies, and it is unclear whether the findings of these studies can be transferred to emerging market economies. To enhance the external validity of management control theory, innovation theory, and leadership theory, and to gain insight into the relationship between these three factors in the fast industrialisation and highly competitive environment of developing countries, this study centers on Chinese manufacturing companies.

Also, the study provides a methodological contribution by developing and testing an exhaustive moderated-mediation model. This study is different from past research that focused on either the direct effect or indirect effect of MCSs on innovation on the one hand, and the conditional effect of MCSs on innovation on the

other, because the present study examines the multiple relationships between Bs, ICs, IC, TL, and IP. This integrated framework offers a more fundamental understanding of the processes and circumstances under which innovative products are produced, and provides a more comprehensive view of organisational innovation processes.

Last, this study helps advance DCT and RBV for emerging economies. Findings from a DCT perspective include that Bs and ICs enable organisations to sense possible opportunities, exploit emerging market opportunities, and reconfigure resources in response to variable environmental conditions even when resources are limited. RBV sees TL as a valuable and hard-to-imitate organisational resource. At the same time, IC is viewed as a higher-order VRIN (valuable, rare, inimitable, and non-substitutable) that can contribute to sustainable competitive advantage. These findings collectively depth-thematise the link between leadership, management controls, and organisational capabilities in improving IP in volatile and resource-constrained environments.

7. Practical Contributions

These practices can assist companies in recognising skill gaps and addressing them better. As IC is a critical connection between management control systems and IP, managers should aim to strike a balance between designing effective management control systems and investing in appropriate capability development. This can be done by incorporating innovation-based skills in employee training, recruitment, and appraisal systems. These practices can help companies identify skill gaps and address them more effectively. As IC is a critical connection between MCSs and IP, managers should aim to strike a balance between designing effective management control systems and investing in appropriate capability development. This can be done by incorporating innovation-based skills in employee training, recruitment and appraisal systems. The findings also indicate that TL ought to be combined with management control systems design and implementation, and not as an independent managerial role. Companies with ICs will be well-served by managers who allow for open communication, free thinking and participation in decision-making. The leadership behaviours are supplementary to interactive controls and can help them build IC. Importantly, the implications are also applicable for SMEs. SMEs can enhance their IP through simple and effective control measures and invest in leadership development even if they have limited resources. Thus, management control systems and TL must be considered a key

strategic resource that can help keep organisations competitive over time and engaged in continuous innovation.

8. Conclusion

The current investigation sought to investigate the interrelationships between Bs, ICs, TL, IC, and IP under one theoretical framework. The complex interconnections among the direct, mediating, and moderating pathways have yielded a theoretically sophisticated and empirically sound set of results that together enhance our comprehension of how organisations can strategically use control systems and leadership behaviours to foster the development of IC and to stimulate sustained IP. The results showed that both the Bs and the ICs have significant direct positive effects on the IC, and the latter variable acts as an important mediator between the two control systems and the superior IP. Furthermore, the moderation study demonstrated that Bs and ICs both positively impacted IC; the interaction between TL and ICs had the highest effect among all the interactions in the moderation analysis. Together, these findings refute the conventional wisdom that control and leadership are antagonistic forces in an organisation and present them as complementary, mutually supportive mechanisms that can collectively and synergistically enhance organisational innovation capacity and organisational IP.

Theoretically, this study builds on Simons' (1995) framework for levers of control by adding the most important intervening and boundary-condition variables to account for the organisational determinants of IP in a more integrative and dynamic way, namely IC and TL. The implications for practice are immediate and offer practical advice for senior leaders, HR managers, and organisational designers who want to create innovation-ready organisations by designing aligned control systems and leadership behaviours. Finally, this study reinforces the idea that there is no single organisational intervention that can achieve IP excellence. However, performance excellence is achieved when a series of organisational interventions and controls build on one another and work together to create the conditions in which organisational innovation can be regularly and reliably successful.

The present study was limited to cross-sectional designs, which did not allow for causal inference of change. Future studies could benefit from using longitudinal designs to make stronger causal claims and from extending the study to other sectors, organisation sizes, and countries to test the generalisability of the

proposed framework. Meanwhile, scholars are invited to consider other conceptions of leadership (servant leadership, ambidextrous leadership, entrepreneurial leadership) in addition to digitally enabled control systems (AI-based analytics, real-time monitoring systems), to comprehend how the connection between control and innovation is affected by digital transformation. Moreover, multilevel analytical approaches that incorporate individual, team, and organisational dynamics, along with qualitative and mixed-methods approaches such as case studies and interviews, would offer more thorough, meaningful, and context-specific evidence about how control systems and TL interact to shape innovation capability and performance.

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