The Knowledge-Innovation Pathway: How Organisational Culture, Structure, and Technology Drive Process Improvement and Product Innovation

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ABSTRACT

Aim. This study investigates the interplay between process improvement (PRI), organisational innovation (OIN), knowledge sharing (KWS), and product innovation (PIN) in small commercial enterprises, framed within the Resource-Based View (RBV) paradigm.

Method. Given the relationship of the variables, Structural equation modeling (SEM) was the most appropriate technique employed to analyse the relationships among these constructs, focusing on mediation effects and pathways influencing innovation outcomes. The results show a direct and positively significant relationship between PRI, OIN, KWS, and PIN, underscoring their synergistic roles in driving innovation. Whereas Knowledge sharing (KWS) mediates the influence of organisational factors (cultural norms, organisational structure and use of advanced technological infrastructure) on product innovation (PIN). The process improvement (PRI) acts as an intermediary between knowledge transfer, organisational change, and PIN. Organisational Innovation (OIN) directly enhances both product innovation (PIN) and knowledge-sharing practices, fostering a culture of continuous improvement.

Results. The findings validate RBV's relevance in small enterprises, highlighting how intangible resources (e.g., knowledge, processes) drive competitive advantage through innovation. The dual mediation roles of KWS and PRI clarify mechanisms linking organisational capabilities to innovation outcomes.

Conclusion. Small enterprises should prioritise the cultivation of a knowledge-sharing culture and robust technological infrastructure to amplify innovation, aligning process improvement initiatives with organisational change strategies to bridge gaps between knowledge and product development.

Keywords: product innovation, organisational culture, organisation structure, knowledge sharing, organisational innovation

Introduction

Organisational culture (OGC) is crucial for enhancing corporate competitiveness. Most corporate breakthroughs have originated from high-performance cultures. Both Suellen J. Hogan and Leonard V. Coote underscored the substantial influence of OGC on employee attitudes and corporate success (Hogan & Coote, 2014). The cultural assessment studies carried out Schein in defining organisational culture often elaborate it as the set of collective values, beliefs, norms and perceptions held by employees in an organisation and are influenced by its environment (Almahasneh et al., 2023). Denison and Mishra have identified four distinct cultures: flexibility, mission engagement, consistency, creative culture, quality culture, supporting culture, and productive culture, which were the cultures applied in prior studies. Conversely,

participation and consistency are internal factors, but flexibility and mission are external expressions. Subsequently, Kim S. Cameron and Robert E. Quinn (2011) Expanded upon the discoveries made by Quinn and Rohrbaugh and devised a competing value framework (CVF) model that encompassed four distinct cultural typologies. The culture typologies included adhocracy, hierarchy, market, and clan. Flexible and stable cultural typologies are thought to enhance employers' performance.

Innovation (Fartash et al., 2018) is commonly linked to the concepts of "newness," "success," and "change." Demircioglu focused on organisational innovation (OIN) within the framework of process and results (Chen et al., 2016). Georg von Krogh et al., (2012) argue that knowledge management plays a crucial role in promoting innovation as the world approaches its attainment (von Krogh et al., 2012) Argue that the knowledge-based approach suggests that an organisation's capacity to innovate is enhanced by effectively managing both tangible and intangible assets. Knowledge management can improve decision-making and expedite product development. Knowledge management encompasses the processes of creating, disseminating, and leveraging knowledge. An imperative aspect of successful knowledge management endeavours is the establishment of a culture that promotes the sharing of knowledge. The organisation's national members cooperate to provide their specialised knowledge and past involvement (Kokol et al., 2015; Sumbal & Amber, 2024; Xue, 2017). According to von Krogh et al. (2012), individuals can convert tacit knowledge into explicit knowledge by interacting and participating in organisational knowledge sharing. Knowledge consists of unprocessed statistics, facts, and images produced from observation rather than analysis, as well as information that summarises the gathered data (Kokol et al., 2015; Sumbal & Amber, 2024; Xue, 2017). Tacit knowledge is essential for the creation and understanding of explicit knowledge. Knowledge management is closely linked to tacit knowledge. Knowledge sharing fosters innovation in the realm of knowledge management (von Krogh et al., 2012).

In the realm of achievement and attaining a superior position, contemporary enterprises prioritise innovation with great importance. Wenpin Tsai (2001) asserts that creative companies possess the capacity to enhance both human and organisational performance, as well as generate novel alternatives and embrace change to address difficulties. According to Richard L. Daft (1978), innovation is an organisational process of adopting new knowledge applicable in organisational settings, great new ideas, bringing about changes in exiting products or truly introducing new products, novel processes and procedures, policies, and programs from other competitors (Tidd & Bassant, 2014) assert that both product and process innovation can be achieved. They assert that these two forms of innovation specifically aid firms in surmounting challenges, providing value, and improving performance.

Joe Tidd and John Bassant (2014) assert that product innovation is the key element to triumph and creating market hegemony of enterprises. Within the framework of the external environment, it signifies changes within the organisation. Tsai (2001)

established that the assessment of product innovation relied on the product's profitability and diversity. However, Nika Murovec and Igor Prodan (2008) focused specifically on the number of items and the speed at which innovation occurs (Kokol et al., 2015; Sumbal & Amber, 2024; Xue, 2017) emphasises the significance of fostering a culture of information sharing when executing knowledge management projects. Knowledge sharing enables organisations to produce novel ideas and foster innovation (von Krogh et al., 2012). Zhining Wang and Nianxin Wang (2012) assert that innovation is propelled by the expertise, skills, and know-how of employees in creating value. Knowledge is an inherent quality possessed by individuals. Therefore, it is necessary for members of an organisation to share their knowledge in order to create new procedures and cognitive abilities to solve problems (Kokol et al., 2015; Sumbal & Amber, 2024; Xue, 2017). Von Krogh et al. (2012) argue that communal learning allows employees to acquire and share tacit information, hence increasing the overall amount of knowledge inside the organisation. Previous research indicates that the act of sharing knowledge fosters innovation. Their study (Wang & Wang, 2012) discovered that the rate and quality of innovation had a role in connecting tacit and explicit knowledge with the operational and financial success. In their study, Tatiana Andreeva and Aino Kianto (2011) examined the impact of innovation on knowledge processes. These operations encompass the activities of generating, recording, preserving, distributing, obtaining, and amplifying.

The present study aims to examine the correlation between organisational structure, organisational culture, and technological infrastructure as independent factors. Additionally, we will explore how these factors influence knowledge sharing, process innovation, and organisational innovation sequentially. Ultimately, we will assess the impact of these variables on product innovation, which serves as the dependent variable. Despite previous researches carried out on the topic, it is still a new area to be explored to overcome the abundance of ambiguities prevailing in the literature as well as reducing the lack of understanding regarding how process innovation, organisational innovation, and product innovation interact and influence each other in relation to the independent variables mentioned. The objective of this research is to address this deficiency by undertaking a comprehensive examination of the correlations and mediation pathways that exist between these constructs. The results of this study will offer firms valuable insights to enhance their proficiency in product innovation. A sequential examination of knowledge sharing, process innovation, and organisational innovation will accomplish this. This research is significant as it enhances both theoretical understanding and practical application. The true worth of this research lies in its authenticity. The sequential mediation process highlights the interplay between organisational factors and innovation outcomes. An in-depth analysis is conducted to examine how organisational aspects might either facilitate or impede product innovation.

The identification of three distinct forms of innovation process innovation, organisational innovation, and product innovation as focal points for research underscores

the significance and timeliness of this work. Addressing these deficiencies enhances scholarly discourse and equips organisational leaders and practitioners with pragmatic perspectives. An innovative firm environment can be fostered by strategic decision-making that takes into account the impact of organisational structure, culture, and technological infrastructure on innovation at different stages.

This research has the potential to impact corporate policies, procedures, and actions to enhance product innovation. This study aims to connect theoretical concepts with practical applications to advance the field of innovation management and facilitate the achievement of sustained competitive advantage in today's ever-changing corporate environment.

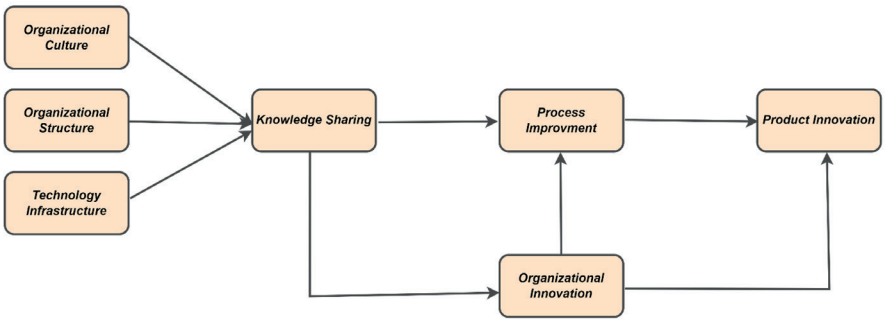
This research aims to examine the combined effect of how knowledge sharing and process innovation, along with organisational innovation, mediate the relationship between organisational structure, organisational culture, technological infrastructure, on the product innovation element of the private organisations. More precisely, the research will concentrate on examining the impact of these three factors on the correlation between them. The findings of this research as envisioned may to address the identified research gaps on the interplay among process innovation, organizational innovation, and product innovation by investigating the connections between these three forms of innovation. This study envisages contribution to the development of approaches that private organisations can use to foster product innovation by providing crucial insights into how organisational factors and technological infrastructure influence innovation results.

Literature Review

This study presents a thorough framework that combines organisational and technological factors with innovation processes to examine the intricate dynamics that contribute to product innovation. The model proposes three independent variables. The variables in question pertain to the organisational structure, the organisational culture, and the technological infrastructure. Each of these variables is sourced from the year 2020. The influence of these basic elements on product innovation is attributed to a sequential mediation process. Initially, it is expected that these independent variables will enhance the dissemination of knowledge (Azeem et al., 2021), hence fostering the advancement of process Improvement (Chión et al., 2020). Therefore, it is anticipated that Process Innovation will serve as the primary catalyst for Organisational Innovation (Azeem et al., 2021), finally leading to Product Innovation (Al-Husseini & Elbeltagi, 2018). The objective of this model is to analyse the sequential mediating functions of process and organisational innovation in the correlation between organisational attributes (Chión et al., 2020) and product innovation (Al-Husseini & Elbeltagi, 2018). This paradigm was created to address a substantial deficiency in research and the find-

ings as a result of this research will ensure to enhance our comprehension of how internal organisational dynamics and technological infrastructure (Chión et al., 2020) might be utilised to enhance inventive outcomes. This will be achieved since the investigation illuminates these pathways. Figure 1 shows the diagram of the proposed model.

Figure 1
Proposed Model



Source. Adapted from Chión et al., 2020.

Literature Review and Hypotheses Development

The objective of organisational culture is to establish a connection between an organisation's principles and its personnel's beliefs, resulting in enhanced organisational performance (Tan, 2019). Organisational culture serves as both an asset and a fundamental skill or ability. Cameron and Quinn (2011) characterise organisational culture with a focus on the set of collective values, beliefs, and underlying assumptions that all employees of an organisation share collectively. Cultural settings usually influence the preparedness of the employee towards adoption of innovation and technological advancements. The influence of organisational culture on a company's beliefs, procedures, values, and behaviour is significant. Each company possesses its unique culture, technological capacities, human resources, and other related factors, with originality being a distinguishing characteristic. Marshal Ahmed and Saima Shafiq highlight that leaders' primary task is to establish and oversee the culture within an organisation, which is considered the most significant aspect of their role (Ahmed & Shafiq, 2014).

Corporate culture, guided under the governance rules of performance and conduct, plays a crucial role in business performance by establishing work values, attitudes, and work structures that drive and sustain competitive sustainability. Organisational culture promotes new learning to expedite work, helping employees recognise the organisation's worth and gain a shared knowledge of its work norms and achievement objectives, thus leading to increased employee involvement and employee engagement.

Cameron and Quinn (2011) identified four distinct organisational cultures: adhocracy, clan, hierarchy, and market organisation.

Knowledge management (KM) refers to the extent of knowledge sharing among the organisational employee and in a study, Muhammad Malik and Maria Kanwal (2018) identified the positive impact of knowledge sharing on employee job satisfaction and highlighted that if sharing of experiences, facts, knowledge, and skills within the entire organisation is a common practice, then employees feel of satisfaction is enhanced. In the modern market, knowledge sharing (KWS) improves companies' skills and encourages originality and advancement (Lin, 2006). Organisations can enhance their prospects and facilitate the conveyance of information to employees to address key issues by utilising knowledge resources (Danish et al., 2014). This exemplifies the need for both collecting and disseminating knowledge. KM facilitates the attainment of organisational objectives by enhancing the utilisation of corporate knowledge assets (Yang et al., 2018).

Innovation can be conceptualised in multiple ways. International Organisation for Economic Development (IOED) explains innovation as creating entirely a new product, or bringing about changes in the existing products or services or, adopting novel process, or implementing latest marketing methods, or organisational methods in the organisations, the result of such developmental. Innovation and innovative processes are the manifestation of creativity, can significantly contribute to enterprises' market success (Organisation for Economic Co-operation and Development [OECD] & Eurostat, 2005). Organisational innovation involves creating and executing new strategies and practices to transform the organisation or its external relationships (Zeb et al., 2021). Open Innovation (OI) directly influences corporations' growth, market share, and performance (Lee et al., 2021). A recent study indicates that having strong competencies is a key factor in promoting innovation (Barham et al., 2020).

Effective management implements innovation internally or externally keenly in order to gain sustained benefits. The implementation processes are widely promulgated and employees are prepared for the new systems of work. Several specialists assert that Organisational Innovation (OI) can sustain a company's expansion and profitability (Fartash et al., 2018; Liao et al., 2012). OI contributes to improving business performance through enhancing employees knowledge about the work and processes, increasing adaptability and effectively promoting organisational progress. Given the potential of OI to generate value, management should be motivated to promote innovative techniques that enhance corporate efficiency and competitiveness.

Prodromos Chatzoglou and Dimitrios Chatzoudes argue that innovation plays a crucial role in enhancing products, processes, and technology. This, in turn, allows organisations to develop and implement new and improved marketing strategies, leading to better future performance (Chatzoglou & Chatzoudes, 2018; Hameed et al., 2023; Tajdar et al., 2023; Zhao et al., 2021). Innovation is crucial for attaining sustained success and securing a competitive edge. Only organisations demonstrating

high innovation can achieve superior outcomes and sustain market stability amidst environmental changes (Montes et al., 2004).

- H1: Process Improvement significantly correlates with Product Innovation.
- H2: Organisational Innovation significantly correlates with Product Innovation.
- H3: There is a sequential mediating correlation existed of Knowledge Sharing and Process Improvement between Organisational Culture and Product Innovation.
- H4: There is a sequential mediating correlation existed of Knowledge Sharing and Process Improvement between Organisational Structure and Product Innovation.
- H5: There is a sequential mediating correlation existed of Knowledge Sharing and Process Improvement between Technological Infrastructure and Product Innovation.
- H6: There is a sequential mediating correlation existed of Knowledge Sharing and Organisational Innovation between Organisational Culture and Product Innovation.
- H7: There is a sequential mediating correlation existed of Knowledge Sharing and Organisational Innovation between Organisational Structure and Product Innovation.
- H8: There is a sequential mediating correlation existed of Knowledge Sharing and Organisational Innovation between Technological Infrastructure and Product Innovation.
- H9: Process improvement has a significant mediating role in knowledge sharing and product innovation.
- H10: Process improvement has a significant mediating role in organisational innovation and product innovation.
- H110: Organisational innovation has a significant mediating role in knowledge sharing and product innovation.
- H12: There is a significant sequential mediating role of Organisational Innovation and Process Improvement between Knowledge Sharing and Product Innovation.

The Resource-Based View (RBV) theory provided the basis of conceptualising and analyzing the dynamics of organisational innovation and product creation, as well as understanding the core of the impact. This theory is suited to the specific context of your research model. Jay Barney (1991) explained RBVtheory by highlighting the importance of unique resources and competencies existed in a company as the foundation of its competitive advantage. Knowledge sharing, process innovation, and organisational innovation are crucial capabilities that contribute to gaining a competitive advantage. Additionally, organisational structure, culture, and technological infrastructure are considered important resources (Barney, 1991; Teece et al., 1997). It also identifies these attributes as crucial abilities that create a competitive edge. The model's sequential mediation routes facilitate the transformation of resources into product innovation, ultimately impacting the company's success (Barney, 1991; Teece et al., 1997).

The study model demonstrates that product innovation can be achieved through sequential mediation pathways of multiple elements involving knowledge sharing, process innovation, organisational innovation, and the influence of organisational structure, culture, and technological infrastructure. The research gap in this area exists because

there is a requirement for a more detailed understanding of process and organisational innovation in different situations. It is essential to investigate how various forms of innovation emerge and impact product innovation. This requires considering multiple ways of understanding innovation and recognising the external factors that affect the effectiveness of these innovations. These phases are crucial in this process. Furthermore, enhancing the model could be achieved by including external factors such as market dynamics, industry competition, and trends in technological advancements. To achieve a comprehensive understanding of the situation, it is advantageous to explore how these variables interact with specific internal organizational aspects to impact innovation outcomes. This research has the potential to offer valuable insights to firms seeking to enhance their innovation skills in dynamic situations by addressing the highlighted gaps.

Research Methodology

Data Collection

Convenience sampling techniques was undertaken in this research, a method commonly employed in research. The study specifically focused on private enterprises and small industries located in Alkharj, Saudi Arabia Industrial Areas. A physical questionnaire was distributed to a pool of 800 potential respondents. The survey was largely aimed at key personnel in these organisations, such as executives, supervisors, HR managers, and directors. A substantial number of 670 responses were collected from the distributed questionnaires, yielding an overall response rate that was rather impressive. This data collection technique involved obtaining views from persons in influential positions within their respective companies, thus ensuring the relevance of their perspectives on the subject under investigation.

Measurement Development

This study utilises a comprehensive measuring model to analyse how different organizational factors affect product innovation through sequential mediation processes. The independent variables consist of Organisational Structure, Organisational Culture, and Technological Infrastructure. These variables are assessed using a collection of items derived from the previous researches. More precisely, the assessment of Organisational Structure consists of 5 questions taken from Sergio J. Chión et al. (2020), while Organisational Culture is evaluated using eight questions taken from Chión et al. (2020), and Technological Infrastructure is examined through 4 questions also taken from Chión et al. (2020).

The variables that serve as mediators in our model are Knowledge Sharing, Process Innovation, and Organisational Innovation. The assessment of Knowledge Sharing is based on five questions extracted from the research of Chión et al. (2020) While Process Improvement is evaluated using six questions also from Chión et al., (2020). The assessment of Organisational Innovation is conducted using four questions derived from the framework established by Muhammad Azeem et al. (2021).

The variable being measured, Product Innovation, is evaluated using a set of 4 questions taken from the Sawasan Al-Husseini and Ibrahim Elbeltagi (2018) survey. The components within these conceptions are formulated as 5-point Likert scale questions, spanning from "Strongly Agree" to "Strongly Disagree." This methodology guarantees a consistent and systematic way of collecting participants' opinions and beliefs, which enables accurate and trustworthy measurement of the variables in the research framework.

Table 1 displays the demographic findings, indicating that the workforce is primarily composed of males (65%) and the greatest age group is within the range of 26–35 years old (43%). The majority of employees (44%) had 1–5 years of experience and hold a master's degree (53%), with Officers being the most prevalent classification (33%).

Table 1
Demographics Analysis

Demographics		**Frequency**	**Percentage**
Gender	Male	435	65%
	Female	235	35%
Age	18–25	112	17%
	26–35	285	43%
	36–45	212	32%
	46–60	61	9%
Experience	1 to 5	295	44%
	6 to 10	201	30%
	11 to 20	132	20%
	20 & above	42	6%
Education	Undergraduate	87	13%
	Graduate	218	33%
	Masters	358	53%
	PhD	7	1%
Designation	Officers	222	33%
	Executives	195	29%
	Supervisors	130	19%
	HR Managers	85	13%
	Directors	38	6%

Source. Own research

Data Reliability and Validity

Several crucial metrics surpass the necessary standards, demonstrating the dependability and accuracy of the data. Overall fitness of the elements as well as their relationships are highly consistent and reliable to be carried forward for further testing of the correlations existed in and among the variables. The model is well-suited to the data structure as A R^2 score 0.74 indicates that the model is accurately defined and effectively accounts for a significant amount of the variability, demonstrating its strong explanatory capability and dependability. All the results of confirmatory factor analysis are shown in Table 2.

Table 2
Data Reliability and Validity

Constructs	Item	Factor Loading	CA	CR	AVE	SRMR	RM-SEA	CFI	TLI
Organizational Structure			0.85	0.88	0.6				
	OGS1	0.72							
	OGS2	0.68							
	OGS3	0.75							
	OGS4	0.7							
	OGS5	0.73							
Organizational Culture			0.88	0.91	0.65				
	OGC1	0.81							
	OGC2	0.77							
	OGC3	0.82							
	OGC4	0.79							
	OGC5	0.76							
	OGC6	0.8							
	OGC7	0.78							
	OGC8	0.83							
Technological Infrastructure			0.83	0.87	0.58				
	TIF1	0.84							
	TIF2	0.85							
	TIF3	0.86							
	TIF4	0.88							
Knowledge Sharing			0.9	0.92	0.7	*0.056*	*0.042*	*0.973*	*0.968*

Constructs	Item	Factor Loading	CA	CR	AVE	SRMR	RM-SEA	CFI	TLI
	KWS1	0.79							
	KWS2	0.8							
	KWS3	0.78							
	KWS4	0.77							
	KWS5	0.81							
Process Improvement			0.87	0.89	0.63				
	PRI1	0.74							
	PRI2	0.76							
	PRI3	0.75							
	PRI4	0.77							
	PRI5	0.78							
	PRI6	0.79							
Organisational Innovation			0.89	0.93	0.68				
	OIN1	0.82							
	OIN2	0.81							
	OIN3	0.83							
	OIN4	0.84							
Product Innovation			0.86	0.9	0.62				
	PIN1	0.85							
	PIN2	0.86							
	PIN3	0.87							
	PIN4	0.88							

Source. Own research

Table 3

Model Fit Indices

Index	Value	Recommended Threshold	Interpretation
GFI	0.97	> 0.90	Good if ≥ 0.90
AGFI	0.92	> 0.90	Good if ≥ 0.90
RMSEA	0.042	< 0.06	Excellent fit
NFI	0.946	> 0.90	Good if ≥ 0.90
TLI	0.968	> 0.95	Excellent fit
CFI	0.973	> 0.95	Excellent fit
SRMR	0.056	< 0.08	Good fit

Source. Own research

Table 3 presents the model fitness indices which clearly shows that the hypothesised research model fits the collected data and exceptionally very good in terms of fitness indices threshold values. The goodness of fit index (GFI) is 97% and adjusted goodness of fit index (AGFI) is 92% which depicts model strength at excellence level. The commonly acceptable GFI and AGFI value is 0.90 (Hu & Bentler, 1999; Hair et al., 2019) and current results shows strong model-data correspondence even after adjusted GFI for model complexity (Chomeya & Tayraukham, 2025).

The Root Mean Square Error of Approximation (RMSEA) is 0.042 and reports a minimal discrepancy between the model and the population covariance matrix whereas the recommended variation of 0.08 is acceptable generally (Hu & Bentler,1999; Preprints.org, 2025).

The Normed Fit Index (NFI) NFI is a goodness fit index while comparing research hypothesised model to a null model indicating a substantial improvement over the null model whereas P. M. Bentler and Douglas G. Bonett (1980) suggested cutoff value NFI ≥ 0.90 (Sideridis & Alghamdi, 2025) and the model shows NFI=0.946 which surpasses the cut point value. Tucker Lewis Index (TLI) of the model shows 0.968. Li-tze Hu and Peter M. Bentler (1999) suggested that TLI ≥ 0.95 as excellent. Model index in Table 3 shows Comparative Fit Index (CFI) is 0.973 which exceed the 0.95 benchmarked value depicting an excellent comparative fitness among hypothesised and research model. Bentler (1990) and Hu and Bentler (1999) recommended CFI ≥ 0.95 for excellent fitness. The model indices describe the data significantly better than an independence model.

Table 3 shows that RMSEA ≤ 0.06 suggests good fit (≤ 0.08 acceptable) and Standardised Root Mean Square Residual (SRMR = 0.056) falls within the recommended range of <0.08 (Groskurth et al., 2024), confirming low residual discrepancies between observed and predicted correlations (Bretzfield, 2018; Ramírez et al., 2025).

Overall, the model indices show a robustness and variables strong integration which depicts an excellent model fit based on the values exceeding cutoffs. The GFI, AGFI, TLI, NFI, CFI, RMSEA and SRMR values evidence that the hypothesised model represents the observed data accurately and is statistically sound.

We conducted a thorough assessment of discriminant validity to ensure that the constructs investigated by our instrument are distinct from each other. We verified that each construct was distinct and not strongly correlated with the others by comparing (AVE) values to the squared correlation. All AVE values surpassed their squared correlations, therefore satisfying the criterion set by Claes Fornell and David F. Larcker (1981). This demonstrates the discriminant validity of our instrument by indicating that the constructs being assessed are clearly separate and distinct from each other. The results of Discriminant validity are shown in table 4.

Table 4
Discriminant Validity

Variable	Org. Structure	Org. Culture	Tech. Infra.	Knowledge Sharing	Process Impr.	Org. Innovation	Prod. Innovation
Organisational Structure	*0.775*						
Organisational Culture	0.452	*0.806*					
Technological Infrastructure	0.532	0.554	*0.761*				
Knowledge Sharing	0.426	0.638	0.526	*0.837*			
Process Improvement	0.484	0.583	0.511	0.627	*0.794*		
Organisational Innovation	0.529	0.644	0.574	0.652	0.661	*0.824*	
Product Innovation	0.471	0.562	0.545	0.613	0.633	0.697	*0.788*

Source. Own research

Structure Equation Modeling

The relationship between Process Improvement (PRI) and Product Innovation (PIN) is statistically significant, as indicated by a β value of 0.323 and $p < 0.000$. This indicates that implementing Process Improvement (PRI) techniques enhances the development of new and improved products. The study confirms a significant correlation between Organisational Innovation (OIN) and Product Innovation but with a positive significance as β coefficient of 0.251 signifies the 25.1% change in one variable gives rise to this extent to the other value. This demonstrates that the implementation of organisational innovation enhances the development of product innovation. The available evidence indicates that Knowledge Sharing (KWS) and Process Improvement significantly mediates the connection between Organisational Culture (OGC) and Product Innovation, as demonstrated by a β= 0.204 @ p 0.000, signifies around 20.4% change in one variable Organisational brings about same change in another variable. This indicates that Knowledge Sharing and Process Improvement act as intermediaries in facilitating the favourable impact of Culture on Product Innovation. The link between Organisational Structure and Product Innovation is highly influenced by Knowledge Sharing and Process Improvement, as indicated by a β=0.186 @p value of 0.000, signifies around 18.6% change in one variable brings about same change in another variable. This demonstrates that enhancing organisational structure leads to an increase in product innovation by promoting knowledge sharing and process improvement. Knowledge Sharing and Process Improvement act as a significant media-

tor between Technological Infrastructure and Product Innovation, as evidenced by a β coefficient of 0.224@a p-value of 0.000. Product innovation is enhanced by a stronger technological infrastructure through the use of mediators.

Table 5
Path Analysis

Hypotheses		β	SD	T Values	P values	Results
H1	PRI -> PIN	0.323	0.031	8.20	0.000	Accepted
H2	OIN-> PIN	0.251	0.041	6.964	0.000	Accepted
H3	OGC -> KWS -> PRI -> PIN	0.204	0.026	5.123	0.000	Accepted
H4	OGS -> KWS -> PRI -> PIN	0.186	0.029	4.621	0.000	Accepted
H5	TIf -> KWS -> PRI -> PIN	0.224	0.032	6.324	0.000	Accepted
H6	OGC -> KWS -> OIn -> PIN	0.383	0.042	10.502	0.000	Accepted
H7	OGS -> KWS -> OIn -> PIN	0.352	0.036	9.812	0.000	Accepted
H8	TIf -> KWS -> OIn -> PIN	0.301	0.031	7.643	0.000	Accepted
H9	KWS -> PRI -> PIN	0.282	0.034	6.706	0.000	Accepted
H10	OIn -> PRI -> PIN	0.338	0.047	8.065	0.000	Accepted
H11	KWS -> OIn -> PIN	0.407	0.044	10.202	0.000	Accepted
H12	KWS -> OIn -> PRI -> PIN	0.114	0.016	4.706	0.000	Accepted

Source. Own research

The data provides strong evidence that Knowledge Sharing (KWS) and Organisational Innovation (OIN) significantly mediate the association between Organizational Culture and Product Innovation, with a β=0.383 @ p-value of 0.000. This hypothesis exhibits the highest β value, which suggests a significant positive mediation effect. The association between Organisational Structure and Product Innovation is significantly influenced by Knowledge Sharing and Organisational Innovation, as indicated by a β= 0.352 @p value of 0.000. The presence of effective mediation indicates that the Organisational Structure has a favourable impact on Product Innovation by facilitating KWS practices with OIn techniques. Based on the findings, the link between Knowledge Sharing and Product Innovation is considerably influenced by Process Improvement. The β value for this mediation effect is 0.301, and the p value is 0.000. The positive correlation between Knowledge Sharing and Product Innovation is facilitated by Process Improvement. The relationship between Organisational Innovation and Product Innovation is highly influenced by Process Improvement, as indicated by a β value of 0.338 and a p value of 0.000. Process improvement can help to mitigate the positive effects of organisational innovation on product innovation. The findings suggest that Organisational Innovation acts as a mediator between Knowledge Sharing and Product Innovation, with a β= 0.264 @p-value of 0.000. Knowledge sharing enhances product innovation by fostering organisational innovation. The relationship

between Knowledge Sharing and Product Innovation is supported by the presence of Organisational Innovation and Process Improvement, which act as mediators. This is evidenced by a β= 0.407 @p value of 0.000. Knowledge sharing can enhance product innovation by facilitating organisational innovation and process improvement.

Discussion

The structural equation modeling reveals strong connections between the investigated hypotheses, which demonstrates a significant correlation between Process Improvement and Product Innovation, confirming the conclusions of Nuria López-Mielgo et al. (2009) that process improvements enhance innovation. Fariborz Damanpour and Deepa Aravind (2012) signified the relationship between Organisational Innovation and Product Innovation (H2) and concluded that there existed a positive correlation between the two, that also indicate that Knowledge Sharing and Process Improvement have a mediating role in the relationship between Organisational Culture and Product Innovation, which also support the findings of Brian D. Janz and Pattarawan Prasarnphanich (2003). This study also finds that there is a significant mediation function of Knowledge Sharing practices and Process Improvement techniques in the relationship between Organisational Structure and Product Innovation. Best managerial practice in the support to bring about necessary structural and process changes to nurture best organisational cultures in order to let the innovation flourish, and these findings supports the findings of Tom Burns and G. M. Stalker, (1961). There is a positive relationship between Technological Infrastructure development, means advancing organisational knowledge level through technological advancement and, Product Innovation, as indicated by the mediators, which aligns with the findings of Paul A. Pavlou and Omar A. El Sawy (2006). As long as technological advancements are not brought in the organisation and technological infrastructure is not updated, employees' stereotypic behaviour is not mitigated, innovation and innovative process might fail. Statistical findings in this research fully support these prepositions and hypothese.

The association between Knowledge Sharing and Organisational Innovation has a considerable positive impact on both Organisational Culture and Product Innovation, which corroborates the findings of previous researches such as Mary M. Crossan (1996) or Ikujirō Nonaka and Hirotaka Takeuchi (1995). The significance of the mediation of Knowledge Sharing and Organisational Innovation between Organisational Structure and Product Innovation is confirmed and validated as this supports various past researches including (Daft, 1978). The relationship between Knowledge Sharing and Product Innovation (H8) is influenced by Process Improvement, as indicated by a β value of 0.197. This finding supports the findings of Heeseok Lee and Byounggu Choi (2003). Like Mary J. Benner and Michael L. Tushman (2003), Pro-

cess Improvement acts as a mediator between Organisational Innovation and Product Innovation. The association between Knowledge Sharing (KWS) practices and Product Innovation (PIN) techniques are mediated by Organisational Innovation, as supported by Tsai (2001). The statistical analysis shows that there is a substantial and significant relationship between Knowledge Sharing and Product Innovation, with Organisational Innovation and Process Improvement acting as mediators. This finding support and validate the previous research conducted by Maurizio Zollo and Sidney G. Winter (2002).

Conclusion

This study's empirical, industrial, economic, and theoretical contributions to understanding organisational product innovation characteristics are grounded on the Resource-Based View (RBV). A statistical analysis provides evidence that organisational factors have an impact on Product Innovation. The study demonstrates to practitioners that Process Improvement, Organisational Innovation, and Knowledge Sharing are key factors that contribute to Product Innovation. This information may be used to make informed strategic decisions within organizations.

The study highlights the advantages of investing in organisational processes and structures that enhance innovation capabilities, potentially resulting in competitive advantages and improved performance in dynamic marketplaces. The study provides evidence in favour of the Resource-Based View, which emphasises the importance of internal organisational resources and capabilities in achieving long-term competitive advantage. This study utilises the Resource-Based View (RBV) framework to analyse the impact of Organisational Culture, Organisational Structure, and Technological Advancement by updating technological presence and Infrastructure development on Product Innovation. It specifically examines how Knowledge Sharing practices and Process Improvement practices mediate this relationship.

The findings of this study offer both theoretical and practical insights for managers who aim to promote innovation in their organisations. The study reveals the intricate connections between organisational factors and product innovation, highlighting the potential implications for managers. This study can provide valuable insights for strategic efforts aimed at utilising corporate resources and competencies to promote innovation and maintain market sustainability in the face of growing competition and rapidly changing environments.

Although this study yielded substantial information, it is important to acknowledge many limitations. The study is limited in establishing causal linkages due to the use of cross-sectional data. Longitudinal or experimental investigations can enhance the establishment of causation. Furthermore, the study's specific business or environment may restrict the capacity to apply the findings to a broader context. Future research may enhance outcomes across various settings by incorporating numerous industries or or-

ganisational environments. Self-reported data can potentially introduce common method bias, so it may be necessary to employ multi-source data gathering methods.

Subsequent investigations could focus on exploring supplementary factors that might influence interactions, acting as either moderators or mediators. In order to have a deeper comprehension and insight of the dynamics of organisational innovation, it is necessary to analyze leadership styles, employee's engagement, organisational scale, and external environmental elements which directly influence the internal culture. Conducting comparative study across different areas or countries could provide insight into the impact of cultural differences on organisational factors and product innovation. Qualitative research tools, like as case studies and in-depth interviews, can enhance quantitative analysis by uncovering the underlying factors driving organisational innovation. To overcome these restrictions and pursue these future research directions, we can gain a better understanding of the intricate connection between organisational factors and Product Innovation.

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