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A Business Model Based on the Digital Innovation Approach in the Insurance Industry

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ABSTRACT

The purpose of this study is to design a business model based on the digital innovation approach in the insurance industry. This research is a descriptive–developmental study grounded in the interpretive paradigm. The research approach is qualitative and inductive, and the qualitative strategy is based on grounded theory, using the Strauss and Corbin systematic method for data analysis. Field data were collected through semi-structured interviews with experts in business management, financial management, information technology management, executive management, and commercial management, and purposive judgmental sampling was employed. For data analysis, the coding technique was applied across four levels: first-order open codes, second-order open codes, axial categories, and selective categories. Furthermore, to assess validity, the content validity approach was used based on two criteria: Lawshe's Content Validity Ratio (CVR) and the Content Validity Index (CVI). The Lawshe statistic showed that, out of 108 second-order open codes, 102 codes achieved a CVR of 0.75 or higher, indicating that the generated codes possess strong validity. Other codes that obtained less than 0.75 were removed from the categorization process. CVI results demonstrated that, from the experts' perspective, 102 second-order open codes reflected high agreement among experts for inclusion in the study's paradigm model, and all codes were above the average threshold (= 3), confirming expert consensus. Additionally, two methods were used to assess qualitative reliability: inter-coder reliability and test–retest reliability. The test–retest reliability—performed by the researcher—was 92.65%, and the inter-coder reliability (researcher + coder) was 86.45%. Considering that both reliability values exceed the threshold of 0.70, qualitative reliability is confirmed in both methods. Findings obtained from the analysis of the collected data consisted of 429 first-order open codes, 108 second-order open codes, 27 axial categories, and 6 selective categories. Based on the systematic grounded-theory approach, these categories correspond to causal conditions (comprehensive DIBM policymaking system), contextual conditions (development of the technological organism of DIBM), intervening conditions (dynamic digital environmentalism), core phenomenon (functional epistemology of digital innovation), strategies (ecosystem of DIBM strategies), and consequences (improvement of business performance). Therefore, familiarity with the domain of digital innovation requires a "digital discourse" within the internal environment of the organization, such that the organization as a whole and its decision-making body become gradually acquainted with technological and digital topics and develop appropriate deep and contextual understanding aligned with organizational activities. The findings of this study can serve as a roadmap and an action-oriented schema for entering the field of digital innovations, leveraging these capacities within business environments, and adopting an operational model aligned with current and future digital requirements.

Keywords: Digital technologies, digital innovations, digital business model, insurance industry.

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Introduction

The accelerating diffusion of digital technologies has reshaped the foundations of contemporary business models, compelling firms across industries to reconsider how value is created, delivered, and captured in increasingly dynamic and interconnected environments. Digital business model innovation (DBMI) has thus emerged as a central driver of competitive advantage, organizational resilience, and sustainable growth in both developed and emerging economies. As ecosystems evolve, firms no longer innovate in isolation; instead, they position themselves within multi-layered digital networks shaped by interdependencies, platform dynamics, and cross-industry collaboration. These inter-organizational linkages play a critical role in fostering digital-enabled innovation and business transformation, highlighting the need for strategic alignment between technological capabilities, organizational structures, and ecosystem governance (1). The growing relevance of DBMI is especially pronounced in contexts characterized by rapid technological change and heightened competition, where firms must navigate uncertainty, leverage dynamic capabilities, and orchestrate resources effectively to sustain performance outcomes (2).

The digital transformation of business models cannot be understood without acknowledging the multiple pathways through which digital innovation shapes organizational sustainability, competitiveness, and long-term value creation. Research suggests that digital innovation pathways—incremental, modular, architectural, and radical—differ in their impacts on sustainable development and the ability of firms to align social, environmental, and economic objectives (3). Firms must therefore strategically integrate digital technologies to enable business model flexibility, adaptability, and knowledge recombination, thereby fostering dynamic innovation trajectories. These shifts are embedded within broader organizational responses to changing technological landscapes, stakeholder expectations, and environmental pressures. In this regard, external contextual forces such as regulatory transformations, market shifts, and technological turbulence exert significant influence over firms' digital innovation capacity and organizational response mechanisms (4).

As firms accumulate digital capabilities and reconfigure asset portfolios, they increasingly adopt novel business model logics grounded in data-driven decision-making, platform participation, and networked value creation. This transition facilitates more agile and sustainable strategies for enhancing digital competitiveness and operational adaptability, especially in industries undergoing profound structural shifts. In particular, the interplay between digital transformation and organizational innovation processes has been shown to significantly influence firms' competitiveness, risk mitigation, and long-term productivity (5). For firms navigating complex digital ecosystems, the challenge lies not only in adopting technological tools but also in cultivating the strategic, cultural, and relational competencies necessary to leverage them effectively.

Digital transformation research has increasingly emphasized the importance of digital knowledge-sharing capabilities, platform integration, and cross-functional collaboration as catalysts of business model innovation and international expansion. Empirical findings reveal that digital platforms and digital business infrastructures enhance firms' ability to expand into global markets by enabling resource integration and facilitating scalable innovation processes (6). These mechanisms further serve to strengthen firms' ability to explore new market opportunities, restructure value propositions, and enter foreign market ecosystems. Studies of digital transformation in Sub-Saharan African firms demonstrate that knowledge sharing and digital transformational leadership significantly improve innovation capability, especially in environments characterized by structural and infrastructural constraints

(7). These findings underscore the role of leadership and managerial cognition in shaping organizational responses to digital transformation challenges.

In the banking and financial services sector, the integration of digital technologies has fundamentally altered value creation mechanisms, reshaping customer engagement strategies, risk management frameworks, and operational processes. The introduction of digital channels, automation, artificial intelligence, and data analytics has transformed the drivers of business model innovation, enabling financial institutions to deliver more personalized, flexible, and scalable services (8). Parallel trends in manufacturing, retail, and service industries highlight the role of digital leadership, process redesign, and ecosystem collaboration in driving strategic renewal and competitive differentiation (9). These sector-wide shifts suggest that digital transformation is not merely a technological change but a strategic reorientation that requires deep organizational learning, leadership commitment, and coordinated resource orchestration.

Research on small- and medium-sized enterprises (SMEs) further confirms the significance of digital infrastructure, relational linkages, and complementary assets in enabling DBMI. Digital infrastructure investments enhance manufacturing SMEs' capacity to design, modify, and implement new business models by facilitating data integration, strengthening supply chain coordination, and improving real-time responsiveness (10). Similarly, external social networks and ecosystem partnerships allow SMEs to leverage shared knowledge and external resources, enabling innovation scaling and business model experimentation in digitally transforming markets (11). Among Chinese SMEs, complementary assets and entrepreneurial orientation have been found to mediate the relationship between digital platform capabilities and business model innovation performance, illustrating the relational and cognitive dimensions of digital transformation processes (12).

Digital innovation intermediaries also play a critical role in lowering the barriers associated with capability development and cross-industry collaboration. Such intermediaries enhance firms' absorptive capacity by cultivating awareness capabilities, enabling knowledge transfer, and coordinating innovation activities across organizational boundaries (13). This intermediary function becomes vital as firms increasingly rely on collaborative ecosystems rather than internal R&D to generate digital innovations. A similar emphasis on cross-sector collaboration appears in recent work examining the interdependencies between digital transformation, big data analytics, and SME innovation performance, demonstrating how digital maturity contributes to enhanced value creation and competitive agility (14).

Within digitally dynamic environments, top management teams (TMTs) also shape the strategic direction and innovation potential of firms, particularly through their influence on organizational memory, decision-making processes, and strategic flexibility. Studies reveal that TMT transactive memory systems foster digital business model innovation by improving knowledge coordination and enhancing the firm's capacity to respond to environmental dynamism (15). Likewise, managers' digital literacy, mental readiness, and strategic foresight contribute significantly to how effectively organizations navigate digital transformation challenges and leverage emerging opportunities (16). As digital ecosystems grow more complex, leadership's cognitive frameworks and strategic orientation become increasingly integral to innovation outcomes.

Digital infrastructure and digital innovation are also essential components in mitigating the risks associated with uneven technological development and knowledge fragmentation. Scholars examining the digital divide argue that strong digital infrastructure, combined with digital innovation and e-knowledge systems, reinforces innovation performance and enables more equitable access to technological opportunities across regions and sectors (17).

Government venture capital initiatives, particularly in high-tech SMEs, further demonstrate how public policy can promote business model innovation by reducing financial constraints, lowering innovation risk, and stimulating evolutionary learning processes (18).

Environmental sustainability and resilience have become integral elements of digital business model design. Research demonstrates that sustainability orientation enhances firms' resilience through its interaction with digital business model innovation, digital orientation, and environmental dynamism, suggesting that firms capable of embedding sustainability principles into DBMI are better positioned to withstand disruptive shocks (19). These sustainability-driven digital models are increasingly relevant for industries facing climate-related pressures and shifting regulatory landscapes.

In addition to organizational and environmental predictors, technological integration pathways significantly shape digital transformation outcomes. An evolutionary process model of SMEs shows how digital technology integration drives business model innovation for carbon neutrality, supporting both economic viability and environmental responsibility (20). Similarly, studies of digital transformation in emerging markets illustrate how external social networks and digital platforms facilitate innovation by promoting resource recombination and enhancing strategic adaptability (21).

Understanding how macro-level factors, such as digital ecosystems and institutional structures, drive DBMI is crucial for comprehensively capturing the mechanisms of digital transition. Institutionalisation processes, including the role of digital innovation intermediaries and regulatory systems, support firms' abilities to manage inter-organizational dependencies and foster innovation at scale (22). Organizational capabilities, such as dynamic capabilities, further mediate the relationship between digital transformation investments and digital innovation outcomes, particularly when moderated by social media use (23, 24).

External pressures, including market volatility and technological change, compel firms to innovate continuously to sustain digital competitiveness. Evidence suggests that organizations must not only incorporate external environmental cues into strategy formulation but also cultivate mechanisms for inter-organizational coordination that facilitate more responsive and integrated innovation practices (3). These dynamics illustrate the interdependence between ecosystem-level governance structures and firm-level innovation activities.

As digital transformation becomes more deeply embedded in organizational operations, firms must navigate complex trade-offs between technological capability development, knowledge orchestration, and stakeholder alignment. These shifts underscore the need for a comprehensive theoretical and empirical understanding of the processes underlying digital-enabled business model innovation, especially in sectors undergoing rapid digital transition such as insurance, finance, and technology-driven services.

Accordingly, the aim of this study is to design a business model based on the digital innovation approach in the insurance industry.

Methods and Materials

Given the aim of designing a business model based on the digital innovation approach in the insurance industry, this research is classified as developmental and is grounded in the interpretive paradigm. The research approach is qualitative and inductive, and the qualitative strategy is based on grounded theory, using the Strauss and Corbin systematic approach for data analysis. Grounded theory, as a qualitative research method based on interviews with individuals, extracts codes and categorizes them in an attempt to generate the constructs needed to explain the

phenomenon under investigation. Through grounded theory, open, axial, and selective coding were conducted in relation to "designing a business model based on the digital innovation approach in the insurance industry," and based on this process, the paradigm model of the study was developed. Field data were collected through semi-structured interviews with experts in business management, financial management, information technology management, and executive and commercial management. Purposive judgmental sampling was used for the selection of participants. Table 1 presents the demographic and professional characteristics of the interviewees.

Table 1. Characteristics of Interviewees

Row	Gender	Age	Education	Specialization	Job Position
1	Male	51	PhD	Business Management	Faculty Member
2	Male	48	PhD	Business Management	Faculty Member
3	Male	43	PhD	Financial Management	Deputy of Planning and Information Technology
4	Female	42	PhD	Business Management	Faculty Member
5	Male	46	PhD	Executive Management	Director of Planning and Development
6	Male	45	PhD	Information Technology Management	Faculty Member
7	Male	44	PhD	Public Administration	Deputy of Human Capital and Support
8	Female	36	PhD	Systems Management	Faculty Member
9	Female	39	PhD	Business Management	Deputy of Marketing
10	Male	42	PhD	Strategic Management	Director of Personal and Liability Insurance
11	Male	40	PhD	Business Management	Faculty Member
12	Female	38	PhD	Business Management	Director of Systems and Innovation

For validity assessment, the content validity approach was used based on two criteria: Lawshe's Content Validity Ratio (CVR) and the Content Validity Index (CVI). For this purpose, the 108 second-order open codes obtained from the study's findings were evaluated by eight experts using a five-point Likert scale ranging from "highly relevant" to "not relevant at all." The Lawshe statistic for the basic themes showed coefficients of 0.75 or higher for all themes, indicating that the extracted codes possess high validity; in other words, all categories scoring above 75% adequately represent the paradigm of the study. In the CVI calculation, the favorable ratings for each category—those marked as "highly relevant" and "relevant"—were summed and divided by the total number of experts. The CVI results demonstrate that, from the experts' perspective, the intended themes exhibit high agreement for inclusion in the study's paradigm model, and all themes scored above the average threshold (= 3), confirming consensus among expert evaluations.

To calculate interview reliability using the test–retest method, four interviews were selected from the total interviews conducted, and each was coded twice by the researcher with a 25-day interval between the two coding stages. The test–retest reliability was calculated as 92.65%, indicating a high level of dependability in the researcher's coding process. Additionally, two coders (the researcher and an external coder) independently conducted coding. For this purpose, a PhD student in management familiar with the coding process was invited to participate. Ultimately, the result for inter-coder reliability was also acceptable at 86.45%. Table 2 presents the reliability calculations for inter-coder agreement and test–retest reliability.

Relation (1): M (Agreed Codes), n1 (Researcher's Codes), n2 (Coder's Codes + Second-Stage Codes)

$$PAO = 2M / (n1 + n2) \times 100$$

Table 2. Inter-Coder Reliability and Test–Retest Reliability

Inter-Coder Reliability				Test–Retest Reliability (Researcher)			
Interview No.	Total Codes (Researcher)	Total Codes (Coder)	Agreed Codes	Interview No.	Total Codes (Stage 1)	Agreed Codes	Disagreed Codes
Interview 2	44	42	39	Interview 3	39	38	36
Interview 4	41	38	34	Interview 6	40	38	35
Interview 9	37	33	30	Interview 7	38	37	36
Interview 11	21	17	15	Interview 10	22	20	19
Total	143	130	118	Total	139	133	126

Inter-Coder Reliability (percent): 86.45% = 100 × (130 + 143) / (2 × 118)

Test–Retest Reliability (percent): 92.65% = 100 × (133 + 139) / (2 × 126)

Findings and Results

In the first stage of coding, the researcher categorized the data in two stages called first-order open coding and second-order open coding. In this way, after transcribing the interviews and extracting the first-order open categories, the codes were extracted at the paragraph level. That is, in accordance with each question posed, the answers were transcribed and the codes for each paragraph that had a semantic relationship with the topic of the digital business model and digital innovations were written. Then, in the second stage, to classify the open categories at the second order, it was necessary to complete all interviews and finish the first stage of open coding. After obtaining the first-order open codes, the researcher conducted a semantic categorization of the codes, and those codes that were conceptually close to one another were placed in a single group. The number of open codes obtained in the first stage of coding was 429. Of this number, 367 first-order open codes that had semantic proximity with one another were identified and categorized into 108 second-order open codes. In the next stage, that is axial coding, the 108 categories obtained from the previous stage were refined to another level of categorization, and ultimately 27 axial categories were obtained. In the final stage of coding, that is selective coding, the axial categories were grouped into 6 final categories. Part of the coding process resulting from the interviews is shown in Table 3.

Table 3. Sample Coding Derived from the Interviews

Expressive Statements	First-Order Open Codes	Second-Order Open Codes
For insurance companies to be able to use the potential of digital innovations in their business environment, they must gain a deep and precise understanding of the technological ecosystem and the innovative ecosystem. In the technological ecosystem, insurance companies must precisely examine the level of technology used in processes and in the design of services, what technological capacities they possess, which staff and specialists are active in this field, how many resources have been allocated to the technology domain, what kind of support they provide for the development of technology-based services, and fundamentally what the organization's attitude is toward the technology domain and the digital transformations that have taken place in the insurance industry.	• Deep and precise understanding of the technological ecosystem • Deep and precise understanding of the innovative ecosystem • Level of technology used in service processes • Level of technology used in service designs • Active workforce • Active specialists	Understanding the elements of the technological ecosystem
	• Organizational attitude toward the technology domain • Organizational attitude toward ongoing digital transformations	Attitudinal alignment with technological service development
One of the strategic actions in this area is the notion of open innovation thinking in the digital domain. In fact, if insurance companies intend both to exploit the opportunities of digital innovations and to create significant developments in their business, they must cultivate a	• Open innovation thinking in the digital domain • Cultivating a culture of open innovation thinking • Openness of organizational boundaries to developments in the digital domain • Allowing the entry of	Developing a culture of open digital thinking

culture of open innovation thinking and remove their organizational boundaries against any kind of development in the digital domain, allowing new and novel elements to enter the organization, and then, through the screening and processing carried out in this field, select the most appropriate course of action.	new innovative elements into the organization	
	• Selecting the most appropriate action through innovative screening • Selecting the most appropriate action through innovative processing	Optimal innovative choices

In the table below, the coding process based on the Strauss and Corbin approach is presented.

- In the core phenomenon, 14 second-order open codes and 3 axial categories were grouped under the selective category of the comprehensive DIBM policymaking system of the organization.
- In the causal conditions, 24 second-order open codes and 7 axial categories were grouped under the selective category of the development of the technological organism of DIBM.
- In the contextual conditions, 22 second-order open codes and 6 axial categories were grouped under the selective category of dynamic digital environmentalism.
- In the intervening conditions, 13 second-order open codes and 4 axial categories were grouped under the selective category of the functional epistemology of digital innovation.
- In the strategies, 13 second-order open codes and 4 axial categories were grouped under the selective category of the ecosystem of DIBM strategies.
- In the consequences, 16 second-order open codes and 3 axial categories were grouped under the selective category of improving business performance.

Table 4. Framework for Data Categorization

Major Category	Selective Category	Axial Categories	Second-Order Open Codes (Non-Repeated)
Causal Conditions	Comprehensive DIBM Policymaking System	Facilitation of decision-making & operational system	New decision-making perspectives aligned with environment; facilitation of decision cycle; optimal innovative choices; new operational perspectives aligned with environment; effective environmental presence
		Empowering the digital operations framework	Operational opportunity-orientation; sustainability orientation in operations; enhanced analytical capability; development of operational adaptability
		Digital functional maturity	Evolutionary business growth; discovery/testing of new digital combinations; intrinsic improvement of business model; efficient redesign of products/services; revitalization of business value chain
Contextual Conditions	Development of the Technological Organism of DIBM	Revisiting operational policies	Revisiting environmental scenarios; structural evaluation of business model; adding novel architectural elements; revisiting digital business goals; internal alignment of goals with culture
		Redesign of value-oriented service chain	Redesign of design/supply chain; digital redefinition of value-delivery structures
		Transformation of traditional assumptions	Fundamental shift in business logic; ineffectiveness of traditional models; structural transformation of business behaviors
		Alignment of strategic actions	Strategic changes in digital offerings; alignment with complex environment; attitudinal alignment with technological development; alignment in external engagement; alignment in investment/financing; internal strategic coordination
		Design of central digital ecosystem	Creation of digital innovation core; understanding technological ecosystem elements
		Competitive digital vision design	Digital technology vision; digital competitive vision
		Digital knowledge-oriented culture	Knowledge investment in digital domain; development of open digital thinking; development of digital acceptance; expanding scope of digital activities

Intervening Conditions	Dynamic Digital Environmentalism	Digital participatory culture	Innovative/creative work culture; digital ideation framework; intra-organizational participation; information sharing
		Digital literacy of workforce	Mental readiness of managers/leaders; strengthening digital literacy; empowering digital human resources
		Development of digital knowledge & skills	Internal product knowledge growth; digital & innovation knowledge development; analytical capability development; technological skills development; distinctive innovative capability
		Experimentation with digital innovations	Testing innovative operational models; eliminating process asymmetries; result-oriented evaluation of innovative projects
		Establishing cybersecurity systems	Centralized cybersecurity system; data protection system
		Digital infrastructure configuration	Integration of information systems; market/customer data processing; generation of customer/market insights; platform connectivity & integration; digital automation
Core Phenomenon	Functional Epistemology of Digital Innovation	Monitoring digital transformations	Digital effects on social environment; technological environment challenges; environmental process renewal; macro-environmental ambiguities
		Competitiveness of digital markets	Market digitalization; digital linkage effects; resource combinations; digital transformation in customer preferences; competitive digital tendencies
		Business social standing	Business social capital; business credibility & reputation
		Environmental competitiveness orientation	Inclination toward modern business approaches; technological optimization of operations
Strategies	Ecosystem of DIBM Strategies	Multifunctional digital service capacity	Business attractiveness; complementary digital services; product/service diversification; expansion/combination of innovative digital resources
		Digital value-chain entrepreneurship	Digital entrepreneurial behaviors; key value-creation features; sustainability-oriented digital values; industrial value-chain creation
		Digital customer orientation	Adaptation to consumer behavioral change; perception of customer needs; digital alignment with customer demands
		Digital pricing/cost redesign	Redesign of pricing structure; redesign of cost-correction policies
Consequences	Improved Business Performance	Improved environmental performance	Strengthened operational sustainability; facilitation of adaptation; environmental adaptive measures; long-term business protection; increased ambiguity tolerance
		Enhanced competitive performance	Growth in competitiveness; strengthened organizational credibility; digital value-creating structure; customer orientation
		Improved operational performance	Performance growth; elimination of repetitive/parallel processes; task specialization; increased revenue capability; reduction of errors/fraud; operational risk estimation; internal alignment

Based on the findings presented in the tables above, the paradigm model of the study was designed and presented as shown in Figure 1.

1– **Definition of the Causal Category (Comprehensive DIBM Policymaking System):** This category refers to the policymaking structure of DIBM at the macro-organizational level. In fact, this structure determines and guides all organizational actions and decisions, both within the internal environment of the organization and within the industry environment, in relation to DIBM. The comprehensive policymaking system acts as a guiding beacon, such that by returning to it in complex and ambiguous situations, it places the correct path before the organization and helps the business adopt appropriate positions regarding various internal and external phenomena related to digital innovations. Moreover, this comprehensive policymaking system creates a horizon and a vision of alignment with the philosophy and assumptions of digital innovations in the organization through fundamental managerial and policy-oriented revisions. Therefore, businesses, based on the specific orientations, beliefs, attitudes, and

perspectives they follow in the industry environment and digital space, must proceed toward integration and unification of policies and business model strategies with digital innovations.

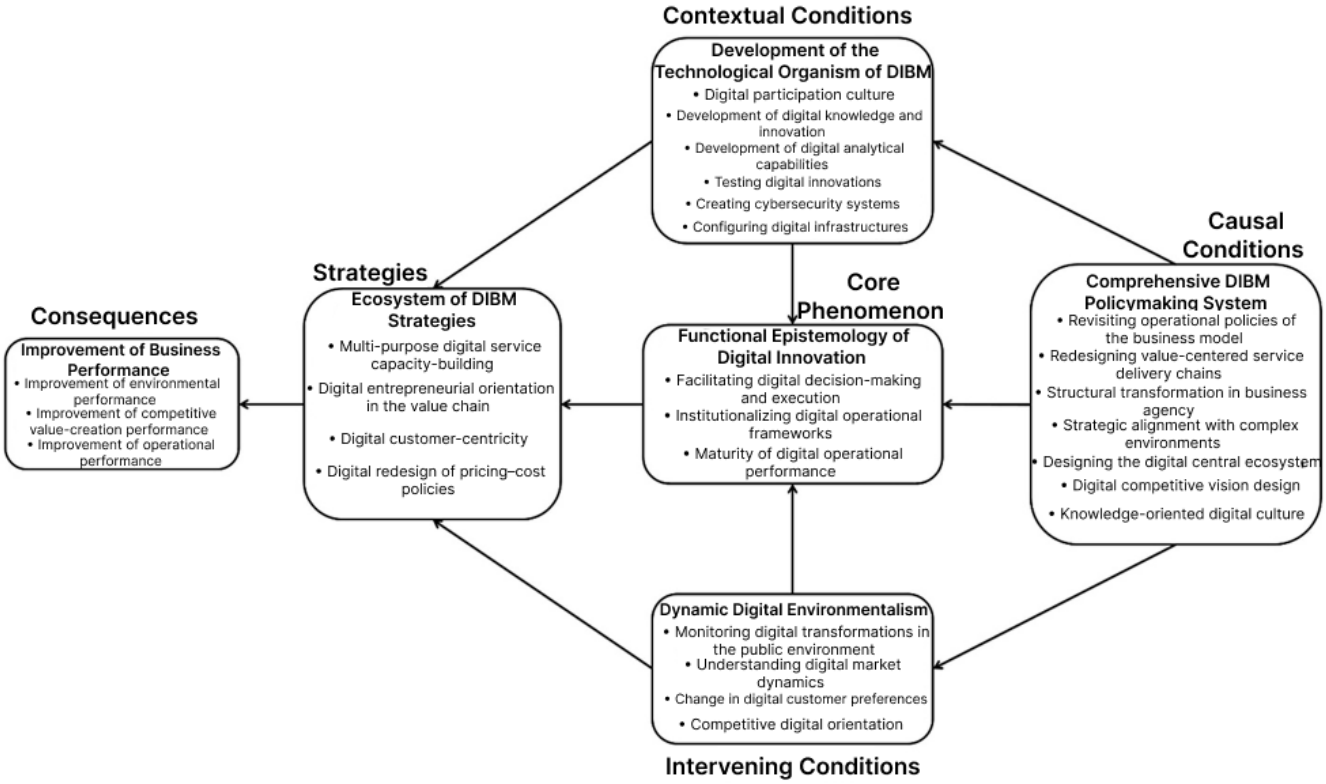

Figure 1. The Paradigm Model of "The Business Model Based on the Digital Innovation Approach in the Insurance Industry"

2– **Definition of the Contextual Category (Development of the Technological Organism of DIBM):** This category refers to the contextual suitability of the organization's internal environment within a technological and digital living space. In other words, the organization transforms into a digital entity and experiences a technological and digital life. Consequently, the actions and activities occurring within this organism must reflect this technological and digital existence. The development of the technological organism of DIBM goes beyond mere technological and digital alignment; rather, it aims at a transformational state and focuses on ensuring that the components and elements of an organization generate a fundamental change in the digital world. It is only then that the work they perform precisely and explicitly reflects a business model based on the digital innovation approach—not a situation in which the organization attempts to assess how closely its actions align with the ideological foundations of digital innovations. Thus, the technological organism signifies a business with technological life experiences.

3– **Definition of the Intervening Category (Dynamic Digital Environmentalism):** This category refers to the general and specific external attentions directed toward the business. These attentions broaden the perspectives of policymakers and organizational decision-makers, helping them to view and analyze issues and phenomena differently. Particularistic attention enables deeper internal alignment between organizational goals and events occurring in the environment, as well as foreseeable developments. With increased internal alignment, strong connections can form across operations and interdepartmental activities, preventing fragmented and ineffective actions and enabling more efficient operational coherence. Furthermore, environmentalism leads to a dynamic digital signal-detection capability for businesses, enabling them to identify emerging developments and unique

opportunities earlier than competitors and simultaneously design the operational mechanisms required inside and outside the organization.

4– **Definition of the Core Phenomenon (Functional Epistemology of Digital Innovation):** This category refers to the semantic flourishing of the concept of digital innovations at the core of business activities. In other words, the ultimate purpose of inclinations toward and applications of diverse concepts within organizational spaces is nothing other than achieving completeness in theoretical knowledge, and the category of "functional epistemology of digital innovation" directly points to this knowledge and its main pillars. That is, the "functional epistemology of digital innovation," as the most central gear, connects all conditions necessary for the emergence of the concept of digital innovations within the business model and reflects the main purposes toward which this digital epistemology is directed.

5– **Definition of the Strategy Category (Ecosystem of DIBM Strategies):** This category refers to the set of strategic orientations of businesses for operationalizing organizational goals and intentions in the domain of digital innovations. However, for strategic actions to be felt within the organization, they must be viewed through an ecosystem lens, and the macro-strategic structure of the organization must be framed based on digital innovation. In this manner, when signs, indicators, and principles of digital innovation are discussed in the company, employees and units will have awareness and experience regarding them and fully understand what is expected to occur, what their role is in projects and operations based on digital innovations, and how they must act.

6– **Definition of the Consequences Category (Improvement of Business Performance):** This category refers to the results and outcomes of modeling the business based on digital innovations and the achievements that can be expected. The importance of consequences lies in the fact that businesses can evaluate the extent to which goals have been realized and the degree of performance success achieved. Therefore, outlining expected and attainable outcomes constitutes one of the essential steps in designing business models based on the digital innovation approach.

Discussion and Conclusion

The findings of this study provide a comprehensive understanding of how digital innovations fundamentally reshape the architecture, processes, and outcomes of business models in the insurance industry. The results indicate that digital innovation is not a peripheral mechanism but a central epistemological foundation embedded in the operational, strategic, and environmental layers of organizational functioning. This outcome aligns with the growing body of research arguing that firms increasingly rely on digital restructuring and data-driven resource orchestration to support business model innovation, enhance competitiveness, and foster sustainable performance (1). In particular, the study identified that a comprehensive policymaking system grounded in digital philosophy serves as the causal condition enabling firms to navigate ambiguity, align strategic actions, and cultivate organizational coherence in the face of ongoing digital disruptions. Such alignment resonates with findings from manufacturing and service sectors, where the integration of digital innovation pathways significantly improves sustainability-oriented outcomes and reinforces strategic adaptation mechanisms (2).

One of the core insights emerging from the results is the prominence of digital innovation as a functional epistemology shaping the interpretive frameworks through which insurance firms conceptualize their digital transformation efforts. The central phenomenon identified here mirrors earlier studies emphasizing that organizational understanding of digital innovation influences the degree to which firms adopt innovative business

logic, redesign value mechanisms, and restructure their strategic approaches to market competition (3). Furthermore, the identification of contextual conditions relating to the development of a technological organism shows that digital transformation is more than technological assimilation; it involves a holistic metamorphosis in processes, structures, values, and capabilities. Parallel insights are found in research emphasizing that external environmental forces—such as regulatory shifts, digital turbulence, and technological infusion—hold significant influence over the readiness and responsiveness of firms undergoing digital innovation (4). This perspective helps explain why insurance firms in this study were compelled to integrate digital readiness, ecosystem orientation, and capability development into their business model redesign.

The results also highlight that firms exhibit stronger performance outcomes when their digital business model innovation is supported by sustained internal resource orchestration and platform-enabled collaboration. This finding aligns with evidence demonstrating that digital transformation enhances organizational competitiveness and adaptability by enabling firms to redesign their operational foundations, restructure customer engagement processes, and establish more resilient value chains (5). The insurance context further reinforces that digital maturity enables more effective risk estimation, improved process automation, enhanced customer-centric delivery models, and greater precision in service operations. Moreover, the study's emphasis on deep digital knowledge suggests that knowledge-sharing platforms, digital business infrastructures, and collaborative data environments significantly facilitate the internationalization and expansion of digitally enabled firms, consistent with prior studies on digital platform strategies in knowledge-based enterprises (6).

A particularly relevant contribution of this study lies in identifying the role of digital transformational leadership and knowledge-sharing cultures as intervening conditions that strengthen innovation capability and drive business model renewal. These findings are consistent with research demonstrating that leadership commitment, digital vision, and interactive knowledge climates enhance firms' ability to navigate ecosystem complexities, especially in regions with infrastructural challenges and digital divides (7). The insurance sector mirrors this trend: leadership teams that cultivate technological literacy, encourage cross-functional collaboration, and promote digital ideation frameworks accelerate the assimilation of digital innovations and improve overall innovation performance. Such outcomes support earlier work in the financial and banking sectors, where digital leadership and transformation programs significantly altered the mechanisms of value creation and business model design (8).

Additionally, this study found that strategic redesign, resource realignment, and operational restructuring are essential components of digital business model innovation in insurance companies. This is consistent with prior evidence suggesting that digital transformation initiatives necessitate systematic process redesign, automation, and adoption of customer-centric models to enhance the agility and competitiveness of firms operating in heavily regulated industries (9). In SMEs and manufacturing settings, digital infrastructure, ecosystem participation, and complementary assets have similarly been shown to support experimentation and scaling of digital business models, indicating that the insurance sector follows comparable patterns of digital reinvention (10). Such parallels underscore the cross-sectoral relevance of digital transformation frameworks for enabling business resilience and value creation.

The study's findings related to absorptive capacity and cross-industry collaboration also align closely with research demonstrating that digital innovation intermediaries play a decisive role in strengthening firms' awareness capabilities and facilitating knowledge recombination processes (13). The insurance companies investigated here likewise benefit from intermediary-enabled practices that improve their ability to integrate digital resources, respond

to regulatory shifts, and leverage inter-organizational networks. Furthermore, the results reinforce the notion that digital ecosystems shape organizational innovation by fostering modular resource integration, co-creation mechanisms, and platform-based value configuration strategies—consistent with findings from Chinese manufacturing and platform-based innovation ecosystems (11, 12).

Results also demonstrate that digital transformation strengthens operational efficiency, strategic flexibility, and customer-driven alignment in insurance companies. This corresponds with studies showing that big data analytics and digital transformation interdependencies enhance innovation performance, responsiveness, and organizational agility (14). As digital ecosystems expand, firms increasingly rely on integrated digital infrastructures, communication networks, and automated processes to coordinate operations and scale innovation efforts. The essential role of top management teams observed here aligns with research illustrating how transactive memory systems and strategic flexibility contribute to the successful adoption of digital business model innovation (15). Such alignment confirms that leadership cognition and strategic awareness play a central role in navigating digital dynamism.

The finding that digital innovation contributes to bridging technological inequalities and strengthening access to digital opportunities also resonates with prior evidence showing that digital infrastructure and knowledge systems mediate the impact of innovation divides on business model performance (17). Similarly, the study's identification of government influence and policy-related triggers for DBMI aligns with evolutionary models demonstrating how public funding, institutional incentives, and regulatory frameworks stimulate digital business experimentation and innovation in SMEs (18). These structural factors further emphasize the broader institutional ecosystem within which insurance companies operate.

Environmental sustainability considerations identified in the findings also align with research highlighting that sustainability orientation strengthens digital resilience by shaping business models capable of adapting to environmental dynamism and strategic uncertainty (19). The insurance industry, given its direct exposure to environmental risk markets, climate volatility, and regulatory pressures, relies heavily on digital tools that enhance predictive modeling, customer risk profiling, and sustainability-oriented service innovation. These parallels underscore the multidimensional nature of digital transformation across industries.

The study further confirms that technological integration processes significantly shape DBMI trajectories. This finding reflects the evolutionary process models showing that digital technologies drive business model innovation for carbon neutrality and long-term competitive viability (20). Similarly, social network integration and digital platform interactions were found to facilitate the development of innovative and externally oriented business models, consistent with findings on digital transformation in emerging economies (21). The cumulative insights derived from this study reinforce the importance of resource orchestration, strategic adaptation, and cross-organizational collaboration in shaping the digital transformation of business models.

Finally, the results underscore the need for firms to embed dynamic capabilities into their digital transformation efforts, urging stronger attention to capability alignment and continuous innovation. This conclusion aligns with evidence demonstrating that dynamic capabilities significantly influence digital innovation, particularly when enhanced by strategic social media utilization and knowledge integration (23, 24). Collectively, the findings confirm that digital transformation in the insurance industry is a multifaceted, interdependent process requiring internal capability development, strategic ecosystem alignment, and sustained leadership commitment.

This study is limited by the qualitative nature of its methodology, which restricts the generalizability of findings. The interviews, although extensive, were conducted with a relatively small pool of experts, potentially limiting the

diversity of perspectives. The context-specific nature of the insurance industry may also constrain the applicability of results to other sectors, and the rapidly evolving digital landscape means that new technologies emerging after the data collection phase may not be fully reflected in the findings.

Future research should consider adopting mixed-method approaches to validate and extend the findings across larger and more diverse populations. Comparative studies across industries or countries could further clarify contextual differences in DBMI processes. Longitudinal research designs may also be beneficial for capturing the dynamic and evolving nature of digital transformation over time. Additionally, future studies could explore the role of regulatory frameworks, artificial intelligence, and ethical considerations in shaping next-generation digital business models.

Organizations should prioritize developing digital capabilities, fostering digital leadership, and cultivating an innovation-oriented culture to support business model transformation. Firms should also invest in ecosystem collaboration, platform integration, and knowledge-sharing mechanisms to accelerate innovation. Managers are encouraged to adopt strategic foresight tools and establish organizational structures capable of responding effectively to rapid technological changes, customer expectations, and emerging digital opportunities.

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Authors' Contributions

All authors equally contributed to this study.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

All ethical principles were adheried in conducting and writing this article.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

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