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Article

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Article

Organizational Strategic Intuition for High Performance: The Role of Knowledge-Based Dynamic Capabilities and Digital Transformation

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Abstract: This study investigated the role of organizational strategic intuition (OSI) and relationships with knowledge-based dynamic capabilities (KBDCs), digital transformation (DT), and high-performance organizations (HPOs). This quantitative study used a questionnaire to collect data from chief executive officers (CEOs) and engineers of various companies in the auto parts industry, a crucial income-generator for Thailand. Partial least squares structural equation modeling, which assesses reflective and structural models, was adopted to test the hypotheses. The findings revealed significant influences among the six pairs of constructed relationships. Indeed, investigations found in this study indicated that (1) KBDCs had a positive effect on DT; (2) KBDCs and DT had a positive effect on OSI; and (3) KBDCs, DT, and OSI had a positive effect on HPOs. The analytical results of this empirical study also provided information to expand the knowledge of strategic intuition (SI). The practical contribution of this study is a consolidated comprehensive framework of OSI that contained vital insights for CEOs, policymakers, and practitioners to support the creation of OSI, leading to better strategic decisions.

Keywords: knowledge-based dynamic capabilities; digital transformation; open innovation; strategic intuition; organizational strategic intuition; high-performance organization



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1. Introduction

Businesses have become riskier and more volatile, uncertain, complex, and ambiguous (VUCA) than in the past [1]. VUCA conditions have probably required a shift in decision-making approaches to manage innovation and competition [2]. Recent examples of VUCA environments include economic recessions, trade wars, and the coronavirus disease 2019 (COVID-19) pandemic. However, there are insufficient models for organizations to incrementally adapt to changes when dealing with VUCA environments. The more uncertainty within the changes in an environment, the fewer practicable strategies and business models optionally exist. Organizations might need to reshape themselves and their ecosystems to reap the full advantage of new business models [1]. They have had to promptly develop new ways of thought and operation to create strategies to succeed or survive in these VUCA environments.

As strategic decision making is an important driver of performance, organizations should constantly look for ways to improve their ability to undertake appropriate decisions, particularly in VUCA environments. The key argument underpinned in this study is how inexperienced organizations could develop their strategic decision-making processes in VUCA situations, with the need to innovate rapidly and constantly apply intuition to make good decisions [3]. Intuiting could facilitate rapid decision-making processes, often without data [4]. According to ego theory, Jung [5] described intuition as perception via

the unconscious using sense-perception to generate possibilities. Strategic intuition (SI) is described as a brain operation that linked elements of memory to form a strategy. SI applies a mental mechanism that is slow and conscious occurring in new situations where the existing expertise is insufficient. The brain responds in the form of a flash of insight [6]. This concept is interesting as, in VUCA environments, firms need to make strategic decisions. Although SI is a personal cognition, the SI of employees, from an organizational perspective, could be identified as the organizational strategic intuition (OSI) to undertake its strategic decisions. As is an integral part of resource-advantage theory, the attention paid to a firm's internal resources becomes a highlight in exploring those assets, capabilities, and competencies with the potential to gain higher competitive advantages [7]. In addition, there have been limited previous studies on SI and those studies that investigated empirical results in the organizational context. This study, therefore, attempted to fill the theoretical gap by focusing on the OSI and examining the mechanic of OSI in the input–process–output framework, or expanding from a conceptual to a practical approach.

Previous studies have identified that absorptive, cognitive, and dynamic knowledge management capabilities encourage strategic intuition capability [8]. Based on these findings, it could be confirmed that organizational capabilities in managing knowledge has an impact on the development of SI. This study, therefore, aimed to build on such empirical results, as previous studies showed insufficient evidence in knowledge management capabilities, and introduced knowledge-based dynamic capabilities (KBDCs) that comprise four sub-capabilities, including absorption, generation, storage, and adaptation. Digital transformation (DT), a set of processes to increase opportunities for growth through digital technologies as embedded in digital entrepreneurs, provides organizational benefits from virtualization, mobility, and analytic systems by leveraging strategic advantages [9]. DT has played an important role in adding value to customers, especially in the COVID-19 pandemic [10]. DT has had a positive impact on performance by improving operational efficiency [11]. However, the relationship between DT and OSI has not been studied. This theoretical gap, therefore, was assessed in this study. There are other variables affecting the development of OSI, but this study focused on KBDCs and DTs.

Performance reflects the strategy chosen. As was identified in previous studies, SI from a capability perspective, i.e., SI capabilities, facilitate organizational dynamic strategy, and support innovation performance [12] and firm performance [13]. This study focused on such a similar relationship, but changed to assess in the organizational context. Moreover, the performance variable has been adjusted to be more flexible, using the high-performance organizations (HPO) concept. Transformation to being an HPO is a significant change for an organization, and requires an increase in organizational efficiency, response to customer demands, outperformance of competitors, and long-term competitive advantage in the business environment [14], including innovation, technology, and environment as issues of research interest.

The research questions in this study included: RQ1—what factors, in the framework, are related to OSI?; and RQ2—what is the mechanism of those variables? According to these questions, the research objectives were established to understand the relationships and influences among the variables through a structural model. The research focused on small and medium-sized enterprises (SMEs) in the auto parts industry, which generates high revenue for Thailand. This study provided both theoretical and practical contributions. It expanded the theoretical concept of OSI, which had never been clarified before in the organizational context. New findings would lead to the expansion of the academic concept. Furthermore, it provided empirical evidence of the conceptual framework that facilitated improvement and development of OSI to improve strategic decision-making performance.

The rest of this paper is organized as follows. Section 2 presents the literature review and hypothesis development. Section 3 details the methodology. Section 4 presents the results, hypotheses testing, and discussions, and the results are compared with the determinants found in existing literature. Finally, Section 5 presents the conclusion.

2. Literature Review

2.1. Knowledge-Based Dynamic Capabilities

The concept of DCs was introduced by Teece, Pisano, and Shuen [15], who defined DCs as the competencies of an organization during the strategic integration of internal and external resources to respond to a rapidly changing environment. DCs, derived from the resource-based view, are divided into three categories: (1) sensing, an analytical system for learning and recognizing opportunities; (2) seizing, a design of the organizational structure, processes, business model, and motivation to seize opportunities; and (3) reconfiguring, the continuous organizational development and shaping of tangible and intangible assets [16].

Another concept of DCs, derived from the knowledge-based view (KBV) or KBDCs, is developed from knowledge management (KM), and refers to the set of processes aimed at effective management and utilization of organizational knowledge, facilitating the organization to create value, enhance performance, and gain strategies over competitors [17]. Wang, Klein, and Jiang [18] defined KBDCs as the grouping of KM activities, which comprises the transformation, renewal, and exploitation of knowledge resources. An organizational competitive advantage is built through continuous adjustments and improvements in knowledge. Accordingly, Zheng, Zhang, Wu, and Du [19] proposed that the improvements and transformations of internal competencies depend on the process for the search and acquisition of external knowledge. KBDCs are divided into three sub-capabilities: knowledge acquisition, generation, and combination. In contrast, Denford [20] classified KBDCs into eight sub-capabilities: creation, integration, reconfiguration, replication, development, assimilation, synthesis, and imitation.

KBDC overlaps with the concept of open innovation (OI). OI facilitates value creation by compounding internal and external knowledge [21,22] and relates to a combination of technology, entrepreneur, marketing, and learning [23]. Changing the business model to be open to collaboration with other organizations is essential to implementing open innovation. The organization's role in the network depends on the innovation capabilities and resources [24]. To maintain the dynamics of OI, the organization needs to manage the balance between open and closed innovation [25]. Yun, Wan, and Park [26] explained that the equilibrium of three sub-economies, namely, market open innovation, social open innovation, and closed open innovation, is an indicator of the OI dynamics. Controlling the balance not being too good or too bad has a positive effect on the dynamics of knowledge circulation. Based on strategic view, OI dynamics emphasize knowledge resources driving product identity, such as engineering open innovation strategies and customer open innovation [27]. Although OI research often emphasizes external knowledge acquisition, a combination of internal knowledge and acquired knowledge to achieve innovation is also a priority [28]. Thus, this study determined KBDCs as a set of capabilities that facilitate, develop, and maintain organizational KM activities. The authors analyzed the components of KBDCs, thereby improving Gonzalez and Melo's [29] work, revealing that KBDCs consist of four more comprehensive and concise components below.

Absorptive Capability: this relates to the acquisition, assimilation, transformation, and exploitation of external knowledge [30]. Sharing knowledge, exchanging information, and the use of available resources among partners are ways to generate novel ideas and innovations [31]. Furthermore, this capability has been strongly linked to the concept of open innovation because organizations that rely on innovation tend to analyze their environment to discover outside technology and knowledge and concurrently conduct in-house research and development (R&D) [32]. Universities and research institutes, as the sources of knowledge, support open innovation dynamics in the ecosystem [33]. R&D collaboration is also a strategy for acquiring new technologies or knowledge [22].

Generation Capability: this refers to the organizational capability to develop and refine activities and processes that facilitate the creation of new knowledge [19]. Generation capability occurs both inside and outside an organization. Internal knowledge creation is an intrafirm knowledge combination that produces opportunities for mutual learning among organizational groups and stimulates the creation of new knowledge and innovative

capability. Conversely, external knowledge creation is the recombination of the organization and partners to establish joint R&D agreements to cooperatively create new knowledge [20].

Storage Capability: this refers to the process of organizational memory creation in which knowledge is formally stored in physical memory systems and informally retained as beliefs, values, and norms associated with the organizational culture and structure. The stored information is introduced during the current decision-making process [29]. Storage capability helps maintain the completeness of knowledge, and facilitates rapid access to that knowledge in the present and future [34].

Adaptation Capability: this refers to the organizational capability in integration and application of internal and external knowledge to solve problems [19]. This capability includes organizing knowledge application, adjusting strategic directions, and coping with new challenges, and indicates the ability or expertise of employees to apply relevant knowledge. In contrast, organizational failure to apply knowledge meant less likelihood of converting knowledge into innovation [34].

2.2. Digital Transformation

The adoption of DT is presently accepted as a strategy used by organizations to maintain long-term survival. Kotler, Kartajaya, and Setiawan [35] defined Marketing 5.0 as the use of human-like technology to communicate, deliver, and add value to consumers. The possibilities of this form of marketing depend on integrating new technologies, such as artificial intelligence, augmented reality, robots, natural language processing, virtual reality, the internet of things, and blockchain, into organizational marketing process. Therefore, DT is essential for the development of organizations.

The concept of DT has been observed for over half a century. Organizations are interested in it as digital technology advancement has made the process easy to implement, particularly in the development of technologies for processing power, communication bandwidth, and storage capacity, which form the technological foundation for DT [36]. DT is concerned with changes in digital technologies which influence an organization's business model, resulting in changed products, organizational structure, and processes [37]. DT, a method in taking advantage of digital opportunities, initiates innovation, affects a business overall, and differs from digitization—*analog-to-digital conversion*, and digitalization—*digital technology is employed to drive process improvement* [38]. According to resource-based theory (RBV), DT therefore is a resource which supports organization to gain competitive advantage [7]. DT is a process combining information technology (IT), computing, communication, and connectivity to create and empower organizations. Organizations use digital technology to create value to positively affect competition, enable organizations to redefine their networks, improve channels to interact with suppliers and customers, and increase the agility and capabilities of organizations [39].

Digital technology adoption in organizations requires structural reform and overcoming organizational barriers to change [39]. DT depends on the strategic renewal of the organizational business model, collaborative approach, and culture [40]. Only few organizations can implement a digital strategy because of the inadequate knowledge among managers to develop and implement digital strategies [38]. Agrawal, Narain, and Ullah [41] summarized the barriers of DT as follows: (1) no sense of urgency (the organization takes the view that current approaches are consistent with the requirements and do not need to be changed); (2) inappropriate organizational structure (inadequate creation and sharing of knowledge, inadequate allocation of resources, and high level of hierarchy); (3) insufficient strategic orientation (employees are unable to translate innovative ideas into a framework for DT projects); (4) inflexible business processes (the current processes exhibit insufficient flexibility to respond to customer needs); (5) misaligned business objectives (there is a discrepancy between organizational and DT objectives); (6) the inability to maintain pace with digital business dynamism (the current organizational culture, concerning values and behaviors, opposes changes due to difficulty for organizations to operate DT); (7) risk of taking initiatives (lack of clarity on return on investment in technologies and resistance

from employees); (8) lack of industry-specific guidelines (no case studies to provide a roadmap for the implementation of DT); (9) complicated implementation and high cost; (10) inadequate support from top management; (11) insufficient digital skills and talent (DT is slow to implement); and (12) the fear of losing confidential information. Organizations should consider the barriers in such contexts and eliminate them to be successful in DT.

Digital technology, consisting of three unique characteristics, namely, re-programmability, homogenization of data, and self-referential nature, differs from other technologies [42]. Digital technologies, divided into three distinct types, namely, digital artifacts, platforms, and infrastructure [43], are fundamental for DT and innovative organizations [44]. Briefly, each digital technology is described below:

Digital Artifacts—are defined as digital components, applications, or media contents which are part of a new product or service and offer specific value to customers. Digital artifacts could be stand-alone software or hardware components on a physical device or part of a broad ecosystem that operates on a digital platform [43].

Digital Platforms—are defined as a shared common set of services and architecture (including digital artifacts) that serves to host complementary offerings [43]. Platforms connect different actors (organizations, users, and coordinators) in an ecosystem [44].

Digital Infrastructure—is defined as the digital technology equipment and systems that improves communication, collaboration, and computing capabilities to support innovation and entrepreneurship, providing the foundation for organizational IT and operations [45].

2.3. Organizational Strategic Intuition

According to ego theory, intuition is perception via the unconscious using sense-perception to generate possibilities. This theory is the foundation of the SI concept. As mentioned in the introduction, this study considered SI from an organizational perspective by looking at the SI of employees as an OSI, the main resource to gain competitive advantage. In addition, based on the RBV, internal resources, e.g., assets, capabilities, and competencies, are important to gain higher competitive advantages [7]. Consequently, this study considers OSI as an organizational capability perceiving the strategy or decision making to respond to the VUCA situation. Due to being a new concept, it was essential to apply the SI concept to expand understanding.

Intuition, a deep sense of knowing, is the ability to be aware or instinctively understand something without having to discover, analyze, or rationalize it [46]. Intuition helps individuals to adjust to the right perspective, take the best action, discover passions, sense opportunities, and achieve goals even with limited time and resources. Intuition is the medium through which the “higher” self-communicates to a person in countless forms, such as feelings, images, and sensations [47]. Intuition illuminates insight that develops feelings, knowledge, ideas, or experience [48]. Intuition could initiate decision-making processes and allow people to undertake decisions without considering any data [4].

Intuition and rationality, two fundamentally different processes of thought, are simultaneously required for effective strategic decision making [3]. Experts are likely to derive a solution via intuition and analysis, switching between the two methods [49]. The recognition-primed decision-making model, originally developed by Klein, Calderwood, and Clinton-Cirocco [50], showed that intuition has a higher ability than analysis because deliberation tends to disrupt the naturally flowing first impression, which supports intuition. Although intuition operated in the subconscious, it did not necessarily contradict or oppose analysis. Simon [51] suggested intuition as an analysis embedded in habits and capacity for rapid response through recognition. Furthermore, intuition and analysis are mental processes notably distinguished by their speed of operation and ease of application.

Duggan [6] stated that intuition could be divided into two categories: (1) expert intuition, or the intuition generated by performing a particular activity until one becomes proficient, is a mental mechanism that is more rapid than SI and occurs in situations similar to the past; and (2) SI is also a mental mechanism, but occurs slower than expert intuition and is aroused in new situations where past mastery is inadequate. Duggan [52]

defined SI as the selective projection of past elements in a new combination as a path of action and the personal commitment to create implementation plans along the way. SI is aroused from fragments of thought derived from multiple perceptions or experiences and assembled into new components. As a result, flashes of insight are aroused in the mind. The fragments form a simple idea and take longer to form a complex idea. Existing memories stored in the brain are combined with new memories that have just been realized. The brain can quickly extract relevant memories if a human has seen or performed an activity many times. Familiar pattern recognition is a key component of expert skills. Thus, it is an expert intuition. For SI, the brain uses elements of experience to respond to an unpredictable future. Von Clausewitz [53] presented four steps in the development of stroke of the eye (*coup d'oeil*): (1) examples from history (learning from the lessons given by historical figures); (2) presence of mind or calming of the mind (an attempt to negate all prior thoughts on expectations, actions, or goals); (3) flash of insight or spark of understanding; and (4) resolution (a determination that drives actions to achieve the goal. This implies willingness to move forward without a detailed plan, and to change the path if a better opportunity appears [6]. These four elements could be applied to all fields of human endeavor, not just only a military strategy.

The main obstacle to achieving presence of mind is the mastery of relevant parts, because this builds stronger self-confidence. In unknown situations where SI is required, humans might accidentally use expert intuition to make decisions. Certain situations might look familiar, but there might be elements that make the situation different. Therefore, experts could make wrong decisions [6]. SI is linked to organizations in creating strategies and decision making under time pressure, ambiguity, uncertainty, and conditions. Simultaneously, SI acts as an early warning system and prevents mistakes [4].

2.4. High-Performance Organization

The concept of HPO originally appears in Peters and Waterman's [54] book, where an HPO is defined as an organization that maintains a strong culture and alignment among leadership, strategies, structure, and employee competencies. This concept has been developed and improved over time. De Waal [55] defined an HPO as an organization that achieves better financial results than competitors in the long run by adapting well to changes and rapidly responding to them, managing for the long term, establishing an integrated management structure, continuously improving core competencies, and treating employees as its main assets. Until recently, Amah and Oyetunde [56] defined an HPO as an organization that combines economic terms, social and environmental achievements, and actions to achieve results that consider how to preserve the social and economic environment in organizational operations. Furthermore, Do and Mai [14] summarized the HPO as an organization that continually merges a set of good practices to increase organizational efficiency, responds to market demands, outperforms competitors, and remains competitive in the business environment for a long time.

According to theorists, although the HPO is classified into many components, most studies have usually cited de Waal [55]. The HPO is divided into five dimensions: (1) management quality, believing and trusting in others, and fair treatment among employees; (2) openness and action orientation, listening to the opinions of employees, and allowing them to be involved in important organizational processes; (3) long-term orientation, maintaining stakeholder relationships, customer value creation, and creating a safe workplace; (4) continuous improvement and renewal, developing process alignment, and creating organizational innovation to gain competitive advantage; and (5) workforce quality, recruiting and gathering flexible teams, and developing their skills and abilities. Subsequently, the concept of HPO, as well as the environmental aspect, has become more important. As stated in Amah and Oyetunde's [56] work, HPO is divided into three areas: (1) economic and internal factors (managing organizational finance and other departments in the organization, such as employee satisfaction, marketing, and HR management); (2) social factors (focusing on stakeholder relationships); and (3) environmental factors (conserving the environment

and managing other parts outside the organization). This study considered the HPO notion as organizational performance and attempted to present new interesting perspectives, such as innovation, technology, and environment, while retaining the traditional concept; therefore, there are four components of an HPO as follows:

Innovation Generation. In rapidly changing environments and unpredictable global economic conditions, the organization maintains a competitive advantage through continuous innovation creation [57]. Innovation increases profits by introducing new or improved products to the market and decreases costs by implementing new or improved methods to produce goods [58].

Technology. The organization employs technology to support its operations effectively. Furthermore, the organization uses IT to facilitate the exchange of information among people to generate knowledge [59]. Currently, many technologies promote organizational operations, such as social media that promotes and supports communication between users [60], and artificial intelligence robots that create substitutes for humans in the context of brain work and physical labor [61].

Internal Environment. The organization supports training and workshops to enhance employee skills and create a good environment to optimize working conditions [62], promote creative ideas, and retain talented employees.

External Environment. A network system between organizations and partners is essential for obtaining useful information, knowledge, and business opportunities [63]. Furthermore, organizations should enhance community engagement by listening to the community's requirements, conducting corporate social responsibility, or conserving an environment.

2.5. Hypotheses Development

DT strategies have significant implications for managerial action and the development of DCs [39]. Successful DT requires organizational development in various capabilities, which may differ depending on the particular sector and specific needs of the organization [64]. Such developments require knowledge as a foundation. The main reason for the failure of DT is inadequate knowledge regarding the development and implementation of digital strategies [38]. KBDCs, the grouping of KM activities that entail the transformation, renewal, and exploitation of knowledge resources [18], ensure the development of digital knowledge in an organization [65]. According to the KBV, knowledge supports organizational processes; thus, this study advances the following hypothesis:

Hypothesis 1 (H1). *KBDCs have a positive effect on DT.*

Duggan [52] stated that SI was developed by von Clausewitz's [53] development approach, which considers learning from historical examples as the first step. It includes learning from the lessons provided by any individual and their sharing of knowledge and experiences. Based on the KBV, KBDCs, which are KM activities that comprise the transformation, renewal, and exploitation of knowledge resources [18], can support the development of OSI in this step. Absorptive and generation capabilities collect data and knowledge from outside and inside the organization to create new knowledge [20]. Storage capability helps maintain knowledge's completeness and facilitates rapid access to knowledge [34]. Briefly, these capabilities support organizations in accessing knowledge to develop OSI; therefore, this research advances the following hypothesis:

Hypothesis 2 (H2). *KBDCs have a positive effect on OSI.*

In an organization, DT is a process that improves and combines IT, computing, communication, and connectivity [39]; it is a method that leverages digital opportunities, drives innovation, and affects a business [38]. DT facilitates the transformation of tacit knowledge into explicit knowledge and vice versa [66]. This knowledge is embedded in the memories of the organizational members; this is consistent with the first stage of SI development.

Furthermore, in the last stage of OSI development, that is, resolution—the determination that drives actions [53]—DT efficiently supports the strategy that the organization needs to implement using digital technologies, such as digital artifacts, platforms, and infrastructure [43]; this is because DT connects with the change in the organizational business model that affects changed products, organizational structures, and processes [37]. According to the RBV, DT is an organizational resource supporting capabilities, including OSI, to achieve a sustainable competitive advantage [7]. Therefore, this study advances the following hypothesis:

Hypothesis 3 (H3). *DT has a positive effect on OSI.*

An organization must transform isolated knowledge into a cohesive knowledge base to introduce innovation, support decision making, solve business problems, provide inputs for training, automate business routines, and improve organizational efficiency [17]. An organization with strong KBDCs will have a competitive advantage by leveraging knowledge to create new knowledge and organizational value [20]. According to the empirical study of Zheng et al. [19], KBDCs directly promote innovation. Individual and group knowledge must be integrated with a combination of mechanisms and technologies to improve organizational performance [67]. KBDCs relate to the open innovation concept, which supports the organization in analyzing the environment to discover outside technology and knowledge and concurrently perform in-house R&D [32]. Based on the KBV, knowledge is the most strategically significant resource, and is the major determinant of sustained competitive advantage and superior corporate performance; therefore, this study advances the following hypothesis:

Hypothesis 4 (H4). *KBDCs have a positive effect on HPO.*

DT refers to the changes in digital technologies that develop an organization's business model [37]. Digital technologies open up fascinating innovation opportunities and can become the dominant source of innovation [68]. Digital infrastructure supports communication, collaboration, and computing capabilities to enhance innovation and entrepreneurship [43]. Furthermore, DT combines IT, computing, communication, and connectivity. Organizations use digital technology to create value to positively affect competition, enable organizations to redefine their networks, improve the channel to interact with suppliers and customers, and increase the agility and capabilities of organizations [39]. Owing to digital technologies, the organization will develop into an HPO. From the RBV, strategists estimate potential resources deployed to gain superior performance [7]. Therefore, this study advances the following hypothesis:

Hypothesis 5 (H5). *DT has a positive effect on HPO.*

Innovation is derived from personal intuition leading to individual entrepreneurs, regardless of being self-employed or not. Innovation develops through a creative combination of past elements in a new and valuable way; this is the SI method [6]. Intuitive decision making in an environment context comprises an organization's internal factors, such as its decision-making culture, time pressure, market conditions, the regulatory environment, and external factors, such as shifts and disruptions in the market [4]. In an actual data context, intuitive decision making plays the most significant role in organizational responsiveness and performance [69]. Based on the RBV, OSI is an important capability intended to lead an organization to a competitive advantage [7]; therefore, this study advances the following hypothesis:

Hypothesis 6 (H6). *OSI has a positive effect on HPO.*

3. Methodology

3.1. Research Design

This work is a causal study that collects data in a cross-sectional survey format. The quantitative research focuses on Thai SMEs in the auto parts industry as a research population, a vital sector that generates high revenue. Furthermore, government policies support this industry by exempting corporate income tax import duties on machinery and restricting imports by increasing duties. Given the growing trend of electric cars, the study thus focuses on SMEs instead of large and multinational corporations, which tend to operate according to the headquarters' policies.

The Thai auto parts industry is divided into three tiers. The first tier includes high-quality manufacturers that directly produce standards from automotive manufacturers. The second- and third-tier manufacturers, mainly Thai SMEs, have lower investments in technology R&D than those in the first tier. As a result, they have difficulty accessing the original equipment manufacturer (OEM) market. Therefore, most of them supply or prepare raw materials to feed first-tier companies or produce for the replacement equipment manufacturer (REM) market, which comprises various channels such as wholesale–retail stores, auto dialer service centers, and garages; this is the nature of the auto parts industry in Thailand.

The research commenced with an identification of the significance of the study. The hypothesis development and questionnaire were developed from the literature review. The question items for KBDCs were created by reviewing Gonzalez and Melo's [29] work because we wanted a more comprehensive study than existing research. The KBDCs consist of four sub-capabilities: absorption, generation, storage, and adaptation. The management items for DT were adapted from Nambisan [43] to measure digital technology usage and Agrawal, Narain, and Ullah [41] to measure encouragement and barrier elimination. We wanted to assess this variable on the usability of digital technologies and facilitation and barriers to DT support. The items for OSI were developed based on the work of Von Clausewitz [53] and Duggan [6], tailored to fit the organizational context. The items for HPO were adapted from Rahimnia and Molavi [58] to measure innovation generation, Nieves and Osorio [59] to measure technology, and Amah and Oyetunde [56] and de Waal [55] to measure the environment. We would like to expand the original concept to include innovation and technology as key performance drivers.

The questionnaire estimated content validity by five experts who had in-depth knowledge of innovation management, DT, and organizational development. The questionnaire had five parts: organizational characteristics and question items on KBDCs, DT, OSI, and HPO. The items were measured on a 5-point Likert scale (from strongly disagree "1" to strongly agree "5"). To test the appropriateness of the questionnaire, the pilot test was operated by inspecting Cronbach's alpha coefficient from thirty companies. Each question item had a value greater than 0.8. Therefore, the questionnaire was confirmed to be valid and reliable. From July to September 2020, the survey operated via mail and email. During this period, there was a pandemic of COVID-19 in Thailand. The authors used a simple random sampling technique (probability sampling) to gather the sample from about 1500 SMEs. Chief executive officers (CEOs) and senior engineers were the priority selection because they comprehensively know the insides covering the context of the study. They were considered for suitability again after describing the research by telephone. After that, the questionnaire was directly sent to the responses. The questionnaire had variable definitions to establish an apparent perception. The sample size was calculated by the inverse square root and gamma-exponential methods [70]. The lowest sample sizes (minimum path coefficient 0.176 at 70% statistical power and 0.05 significance level) required 152 samples (inverse square root method) and 141 samples (gamma-exponential method). Thus, a total of 163 responses was sufficient for analysis. The bias was inspected by collating between the first and final times of 30 datasets. The finding reported that the data had a nonresponse bias. The sample characteristics are listed in Table 1.

Table 1. Characteristics of the samples.

Measure	Value	Frequency	Percentage
Focused market	REM	127	77.91%
	REM and OEM	36	22.09%
Operation period	Under 5 years	13	7.98%
	5 to under 10 years	36	22.09%
	10 to under 15 years	46	28.22%
	15 to under 20 years	30	18.40%
	20 years and above	38	23.31%
Respondents	CEO	89	54.60%
	Engineer	58	35.58%
	Senior Technician	16	9.82%

3.2. Data Analysis Methods

Partial least squares structural equation modeling (PLS-SEM) was used to analyze the conceptual model in this study. Initially, the authors considered the overall goodness-of-fit (GoF). Thereafter, the reflective measurement model assessment considered the form indicator loading, internal consistency reliability, convergent validity, and discriminant validity. There was proving of collinearity. The R^2 value, predictive relevance (Q^2), and PLSpredict were evaluated for predictive power. Eventually, the results of analyzing the structural model and effects among the four constructs confirmed the validity of the research hypotheses.

4. Results and Discussions

4.1. Goodness-of-Fit

The standardized root mean square residual (SRMR), geodesic discrepancy (d_G), and unweighted least squares discrepancy (d_{ULS}), which were below the 95% or 99% quantile of the corresponding reference distribution, were considered to evaluate the GoF. The results indicated that the model had a good fit (Table 2).

Table 2. Model fit assessment.

Discrepancy	Value	HI ₉₅	HI ₉₉	Conclusion
SRMR	0.062	0.060	0.065	Supported
d_{ULS}	0.404	0.384	0.439	Supported
d_G	0.185	0.212	0.229	Supported

4.2. Reflective Measurement Models

In the reflective measurement model evaluation (Table 3), the factor loading, a value higher than 0.707, was examined to ensure the construct could explain over 50% of the indicator variance. The results met the criterion, providing acceptable reliability for each observable variable. After that, the internal consistency reliability was considered using Cronbach’s alpha (α), rho_A (ρ_A), and rho_c (ρ_c or Jöreskog’s composite reliability); rho_A between the values 0.700 and 0.900 presents the internal consistency reliability of a construct [71]. The finding was within the given criterion; therefore, every indicator had correlations to determine the identical construct. In the following step, convergent validity was evaluated from the average variance extracted (AVE), which should be higher than 0.500. The findings followed the criteria; therefore, the construct could explain over 50% of the variance of its indicators. Finally, the discriminant validity assessment (Table 4) ensured that the different constructs measured different characteristics. The AVE values in the Fornell–Larcker matrix presented in the diagonal were higher than the correlation values in the same column and row. Furthermore, every heterotrait–monotrait (HTMT) ratio of the correlations was less than 0.850; therefore, each construct in the model measured different characteristics.

Table 3. Measurement model evaluation.

Construct and Indicators	Loading	VIF	α	ρ_A	ρ_c	AVE
Knowledge-based Dynamic Capabilities			0.840	0.847	0.893	0.676
Absorptive Capability	0.827 ***	1.860				
Generation Capability	0.769 ***	1.629				
Storage Capability	0.864 ***	2.099				
Adaptation Capability	0.827 ***	1.907				
Digital Transformation			0.853	0.853	0.911	0.773
Digital Technology Usage	0.908 ***	2.575				
Encouragement	0.871 ***	2.107				
Barrier Elimination	0.858 ***	1.937				
Organizational Strategic Intuition			0.802	0.814	0.883	0.716
Learning from History	0.878 ***	1.879				
Business Strategy Creation	0.856 ***	1.758				
Resolution	0.802 ***	1.608				
High-performance Organization			0.819	0.828	0.881	0.649
Innovation Generation	0.813 ***	1.755				
Technology	0.707 ***	1.484				
Internal Environment	0.854 ***	2.119				
External Environment	0.842 ***	1.987				

Note: *** $p < 0.001$, one-tailed test.

Table 4. Discriminant validity.

Constructs	Fornell–Larcker Criterion				HTMT			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
(1) KBDCs	0.822							
(2) DT	0.388	0.879			0.454			
(3) OSI	0.538	0.620	0.846		0.644	0.744		
(4) HPO	0.414	0.478	0.511	0.806	0.498	0.571	0.624	

For the predictive power of the structural model, three instruments were evaluated: R^2 , Q^2 , and PLSpredict (Table 5). The R^2 value was considered from a guideline: R^2 values of 0.75, 0.50, and 0.25 can be assessed as substantial, moderate, and weak, respectively [71]. The results of R^2 showed that the explanatory power of DT was extremely weak, while those of OSI and HPO were weak. However, the R^2 value only indicated the model’s in-sample explanatory power. Accordingly, it was impossible to estimate the predictive power using only R^2 [72].

Table 5. Assessing structural model.

Construct and Indicators	R ²	Q ²	Q ² _{predict} (PLS-SEM)	PLSpredict	
				MAE (PLS-SEM)	MAE (LM)
Digital Transformation	0.151	0.110 (low)	0.133	All PLS-SEM less than LM (high)	
Digital Technology Usage			0.087	0.367	0.370
Encouragement			0.105	0.348	0.351
Barrier Elimination			0.108	0.320	0.323
Organizational Strategic Intuition	0.489 (weak)	0.333 (medium)	0.276	Majority of PLS-SEM less than LM (medium)	
Learning from History			0.293	0.230	0.233
Business Strategy Creation			0.166	0.263	0.266
Resolution			0.119	0.274	0.274
High-performance Organization	0.325 (weak)	0.191 (low)	0.152	Majority of PLS-SEM less than LM (medium)	
Innovation Generation			0.096	0.343	0.349
Technology			0.057	0.311	0.311
Internal Environment			0.138	0.343	0.341
External Environment			0.092	0.363	0.370

Note: PLSpredict is the comparison of the MAE values between PLS-SEM and LM. The bold numbers indicate the higher values for each indicator.

4.3. Structural Model

Structural model coefficients explaining the relationship of couple constructs originate from assessing regression equations; therefore, the collinearity had to be considered to ensure no bias. Predictor variables could not independently predict the dependent variable value when the regression models correlated. A variance inflation factor (VIF) less than 3 was utilized for the investigation. According to the results, every VIF value (Table 3) met the defined criterion.

The predictive accuracy assessment of the model can be considered from the Q² value estimated using the blindfold technique. This method predicted the data points removed for all variables. The differentiation between the predicted and original values was cracked to a Q² value, indicating predictive accuracy. The Q² value combined the aspects of out-of-sample prediction and in-sample explanatory power [73]. The Q² combined the in-sample explanatory power and out-of-sample prediction perspectives [73]. The value was evaluated from a guideline: Q² values of 0.5, 0.25, and 0 are high, medium, and low predictive relevance of the PLS-path model, respectively [71]. The findings of Q² showed that the predictive accuracy of OSI was medium, but those of DT and HPO were low.

PLSpredict was developed for out-of-sample-based predictions using PLS-SEM. Initially, the Q²_{predict} value, evaluated to confirm that the model outperformed the most naïve benchmark, must be greater than zero. Considering that the prediction errors were highly unsymmetrically distributed, the mean absolute error (MAE) was used to compare the values between PLS-SEM and the naïve benchmark (linear regression model, LM) [74]. The results showed that the predictive power of DT was high, but those of OSI and HPO were medium.

4.4. Hypothesis Testing

This study used PLS-SEM to compute the structural equation to test the hypotheses on the relationships and influence of KBDCs, DT, OSI, and HPO. The results of the structural model are shown in Figure 1. The findings (Table 6) show that KBDCs had a significant positive effect on DT ($\beta = 0.388$, $t = 4.913$, and $p = 0.000$). Thus, H1 was supported. The principal cause of DT’s failure was a lack of knowledge of the progress of digital strategies [38]. The results empirically confirmed that, the higher the KBDCs, the better the DT, irrespective of creating or deploying digital technology in digital artifacts, platforms, or infrastructure. This concurs with Alvarenga, Matos, Godina, and Matias’s [75] work. They studied the relationship between the implementation of DT and the use of KM practices in public organizations and concluded that KM was a critical factor in the success of DT. The bibliometric analysis by Di Vaio, Palladino, Pezzi, and Kalisz [76] suggested that knowledge management systems (KMS) were crucial in ensuring the optimization of technologies and

resources. Simultaneously, the technologies adopted in the KMS develop the processes to be optimized. Furthermore, the digital platform fosters open innovation activities to develop novel qualitative features and highly reduces the overall cost of innovation [77].

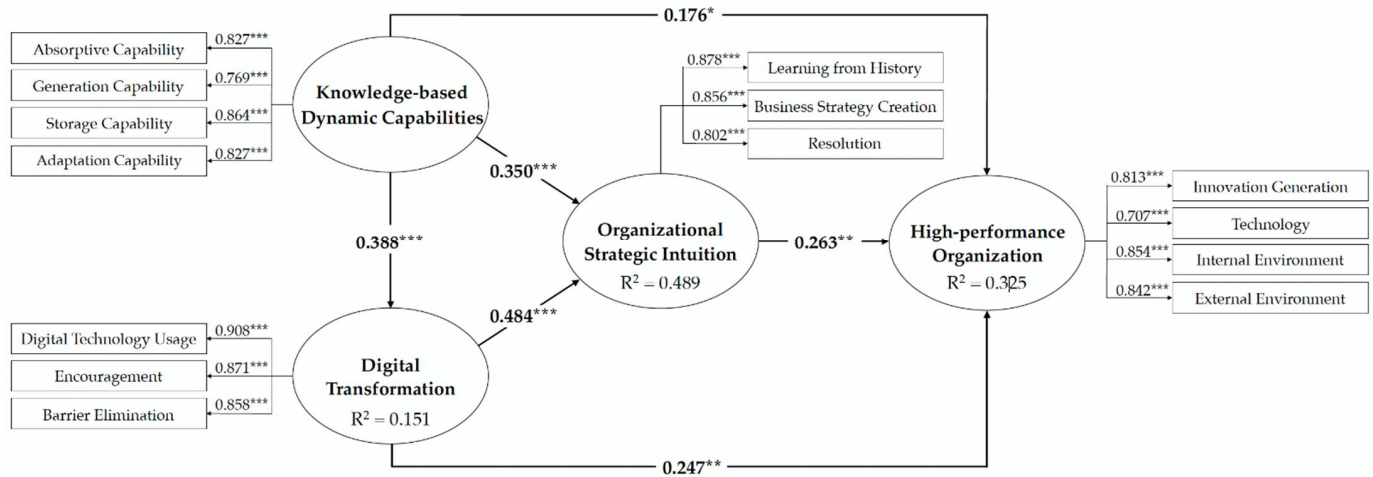


Figure 1. Results of the structural model. Note: * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$, one-tailed test.

Table 6. Summary results.

Hypothesis	Relationships	Effects	β	t-Values	p-Values	Fail to Reject H ₀
H1	KBDCs -> DT	Direct	0.388 ***	4.913	0.000	YES
H2	KBDCs -> OSI	Direct	0.350 ***	5.285	0.000	YES
		Indirect	0.188 ***	3.440	0.000	-
		Total	0.538 ***	9.699	0.000	-
H3	DT -> OSI	Direct	0.484 ***	6.885	0.000	YES
H4	KBDCs -> HPO	Direct	0.176 *	2.190	0.014	YES
		Indirect	0.237 ***	3.583	0.000	-
		Total	0.414 ***	5.885	0.000	-
H5	DT -> HPO	Direct	0.247 **	2.597	0.005	YES
		Indirect	0.127 **	2.376	0.009	-
		Total	0.374 ***	4.072	0.000	-
H6	OSI -> HPO	Direct	0.263 **	2.545	0.005	YES

Note: * $p < 0.05$, ** $p < 0.01$, and *** $p < 0.001$, one-tailed test.

KBDCs had a significant positive effect on OSI ($\beta = 0.350$, $t = 5.285$, and $p = 0.000$). Thus, H2 was supported. The results supported the idea that organizational KBDCs assist in the development of OSI. Absorptive and generational capabilities promote the acquisition of new knowledge. Storage capability encourages the maintenance of complete knowledge and facilitates rapid access to knowledge. These capabilities reinforce learning for generating OSI. Adaptation capability implies organizing the application of knowledge, adjusting strategic directions, and coping with new challenges. This concept is reinforced by prior studies concluding that KMS plays a vital role in supporting managers in decision-making processes [76]. According to an empirical study, dynamic KM capability significantly affected SI [8]. In addition, KBDCs had an indirect significant positive effect on OSI ($\beta = 0.188$, $t = 3.440$, and $p = 0.000$), and DT functioned as a partial mediator of this relationship; this follows the conclusions of Di Vaio et al. [76] that digital technologies provide efficient KM; therefore, companies can enhance the use of KMS to support strategies and decision making.

DT had a significant positive effect on OSI ($\beta = 0.484$, $t = 6.885$, and $p = 0.000$). Thus, H3 was supported. DT facilitates the creation of OSI and decision making. According to a

study on the impact of DT, digital marketing encouraged strategies for promotion, brand positioning, and e-business development [78]. Shen, Hua, Huang, Ebstein, and Yu [79] suggested a KM-based digital platform for strategic solutions in property management. Thus, existing literature can interpret this in two ways: (1) DT contributes to choosing a consistent strategy, or (2) DT influences OSI to create a strategy. Further studies are required to investigate this; many studies have confirmed the importance of the DT strategy. For example, a study on the effects of DT on the Indian manufacturing industry showed that strategic alignment positively affected DT and performance; this highlights an understanding of the organizational process for designing and translating an appropriate DT strategy prior to transformation [80]. Although the current research on the relationship between DT and OSI is ambiguous, the results serve as a starting point for extending the literature in this area.

KBDCs had a significant positive effect on HPO ($\beta = 0.176$, $t = 2.190$, and $p = 0.014$). Thus, H4 was supported. The findings correlated with empirical research in which Sayyadi [81] concluded that managers could build an HPO through KM to develop a good understanding. The organization must transform isolated knowledge into a cohesive knowledge base to introduce innovations, support decision making, solve business problems, provide inputs for training, automate business routines, and improve organizational efficiency [17]. In addition, KBDCs had an indirect significant positive effect on HPO ($\beta = 0.237$, $t = 3.583$, and $p = 0.000$), and OSI functioned as the partial mediator of this relationship. It can be interpreted that KBDCs directly support HPOs and produce knowledge that stimulates the creation of strategies that result in the HPO. Although no study confirms the effect of this indirect correlation, the results provide new knowledge that can be expanded.

DT had a significant positive effect on HPO ($\beta = 0.247$, $t = 2.597$, and $p = 0.005$). Thus, H5 was supported; this was an expected result, as the usage of innovation and technology was considered to describe HPO. Therefore, the implementation of DT is an accelerator for introducing them into the organization. According to Wang, Feng, Zhang, and Li [82], DT significantly influences organizational functions such as IT, information systems, and business operations. These effects change in business models, structures, and processes. Thus, the implementation of DT is strategic to improve organizational performance. In addition, DT positively correlates with short- and long-term financial performance. The results correlated with Sousa-Zomer, Neely, and Martinez's [83] work in that DT capability directly affected firm performance. Conversely, the empirical results revealed that DT had no significant direct effect on firm performance; however, it had an indirect effect (smart technologies are mediators). In addition, the results showed that DT directly affected the development and usability of smart technologies applied to improve organizational performance [84]. Furthermore, DT had a significant positive indirect effect on HPO ($\beta = 0.127$, $t = 2.376$, and $p = 0.009$), and OSI functioned as the partial mediator of this relationship. The study observed a direct effect between DT, OSI, and HPO. The indirect effect can expand the learning that DT is an organizational transformation that leads to more diversified strategy approaches to develop into HPO.

OSI had a significant positive effect on HPO ($\beta = 0.263$, $t = 2.545$, and $p = 0.005$). Thus, H6 was supported. Using the right strategy at the right time ensures good organizational performance. Intuitive decision making occasionally leads to great strategies to achieve good organizational responsiveness and performance [69]. Consistent with an empirical study, the results showed that SI capability significantly and positively affects firm performance. In this study, the researchers focused SI on personal capability. They explained that entrepreneurs should focus on their individual development to make decisions based on a state of mind that consciously thinks of processes that help acquire knowledge [13]. However, the authors took a wide perspective on SI in this study. Although SI is an individual capability, an organization comprising employees with high SI will produce high OSI. Consequently, the organization can achieve high performance. The findings show that KBDC and DT will support the development of OSI and drive an organization towards HPO.

5. Conclusions

This study in the Thai auto parts industry led to an understanding of the mechanisms of the research framework and answered the research questions. The first research question is “What factors are related to OSI?”. Given the research questions, the relationship between variables was examined. The outcome presents KBDCs, DT, and HPO as related to OSI. The second research question is, “What is the mechanism of those variables?”. According to investigated influence between variables, the findings show that OSI empowers an organization to become an HPO. KBDCs and DT directly support the development of OSI, drive the organization towards becoming an HPO, and indirectly contribute to HPO via OSI.

5.1. Theoretical Contributions

First, this study contributes to new knowledge on OSI. Expanding the concept boundary revealed that SI is considered not only an individual capability [8,12,13] but also an organizational capability. Second, this empirical research is consistent with the resource-advantage theory. Organizational resources, assets, capabilities, and competencies increase competitive advantages [7]. KBDCs, DT, and OSI consider organizational capabilities to support the organization’s becoming an HPO. Third, the study is in line with existing research on how knowledge management capabilities positively impact the development of SI capability [8]. This study expanded the composition of KBDCs by considering four sub-capabilities, namely, absorption, generation, storage, and adaptation, which are important for knowledge management, resulting in the model being more comprehensive than existing models. Finally, the study reinvents the conceptual framework of the HPO in which innovation and technology play an increasingly important role. Innovation or technology often drives competitive advantage and performance [57], but is not yet covered by the HPO concept. Therefore, including innovation and technology into components of the HPO adds a new dimension to the concept of the HPO.

5.2. Practical Implications

This causal research empirically confirms that KBDCs and DTs support the development of OSI and lead to HPO. Therefore, the organization wishing to become an HPO has better support activities or investments to advance KBDCs and DTs. KBDCs are necessary to support KM activities effectively and comprehensively [19,20] by developing the absorptive capability to bring external knowledge, generation capability to create, combine, and integrate knowledge, storage capability to securely maintain knowledge and facilitate rapid access to that knowledge, and adaptation capability to use knowledge in any situation [29]. DT provides virtualization, mobility, and analytics systems that act as equipment or channels to determine or expand the feasibility of a strategy and extend the organizational potential. OSI is essential to drive the organization towards becoming an HPO. The recruiting process needs to increase the consideration of the SI dimension because the SI capability of personnel is an indicator of OSI. Developing SI for employees is another approach to accumulating OSI potential. An existing study explains that KBDCs are the basis of intelligent development, and thus wisdom will merge with the mind of concentration to form SI capability [8], but practicing mindfulness meditation is hard to measure concretely and takes a long time to perform. This point may be the main obstacle in the development of OSI.

5.3. Limitations and Future Research

This study had limitations that may require caution when adapting the results. First, this research is a cross-sectional study surveyed during the COVID-19 outbreak, and the findings may interpret the results in a specific context. It is possible that the causal relationship is different from normal circumstances. Second, this study was population-specific in the auto parts industry which intensively focuses on cost strategy; as a result, the industry was conducive to incremental findings. Finally, the inadequate knowledge and research regarding SI resulted in the evolution of knowledge from the literature review,

which was the basis for achieving research objectives. Furthermore, there exists inadequate empirical research to compare the findings. However, this research elucidated SI to facilitate future research.

The authors recommend future studies to investigate the emergence of SI in different ways, such as via Buddhism or Zen, which may expand the view and components of OSI. Researchers can study variables that may promote OSI occurrence from new and interesting perspectives, such as big data analytics, organizational culture, leader characteristics, or cognitive activity. The outcome variable can be adjusted; for example, this can occur in the case of value capture, innovation agility, marketing strategy, or competitive advantage. In addition, the original framework may be reviewed in different environments or industries to compare research findings and expand OSI knowledge.

5.4. Conclusion

This study builds on and expands the understanding of SI. Companies can use OSI to make strategic decisions in the VUCA environment, particularly in unknown situations. The brain uses elements of knowledge and experience to respond to an unpredictable future. The notion of SI is refined in an organizational context. Briefly, OSI is caused by learning from history, creating business strategies, and resolutely executing the strategies of all employees. This study highlighted that developing knowledge and DT can support OSI. Companies can enhance KBDCs by increasing the potential for KM in all aspects: absorbing external knowledge, generating new knowledge, storing it in physical memory or organizational culture, and integrating and applying internal and external knowledge to obtain solutions. The phrase “knowledge is power” is not an exaggeration. The efficient operation of every process was developed based on organizational knowledge. Companies need to support digital technologies, such as digital artifacts, platforms, and infrastructure, including DT, to increase new opportunities and use the technologies to improve functional performance. In this case, during the COVID-19 pandemic, it was apparent that certain companies using digital technologies to create or modify the existing business processes were likely to maintain a good performance and grow faster than others. Both approaches contribute to acquiring knowledge and developing digital technology to support OSI and help reform the company into an HPO. In addition, OSI contributed to the evolution of organizational performance by creating strategies that appropriately responded to situations, although some situations have never occurred. This research requires executives, business owners, or policymakers to recognize the importance of OSI development, because the world may repeatedly face VUCA situations, such as pandemics or trade wars. OSI will be a compass to maintain businesses and turn crises into opportunities.

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