THE IMPACT OF IT GOVERNANCE WISDOM ON BOARD DECISION-MAKING: A PERSPECTIVE OF THE PHILOSOPHY OF THE ART OF WAR

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Abstract

Board decision-making is a complex process. It is represented by reasoning for choosing the most suitable alternative within a series of options for the operation of the corporation. In practice, strategic decision-making is an important function of the board of directors, especially in the information age. Although there are various determinants of the board for carrying out decision-making, there has been little research concerning the impact of information technology (IT) governance wisdom on board decision-making. This study seeks to investigate the origin of IT governance and analyze IT governance wisdom from the perspective of the philosophical thinking of *The Art of War*. The analysis indicates that the concept of IT governance must have been produced no earlier than the late 1990s, highly likely at the beginning of the 21st century. In addition, this study presents the results of qualitative field research of a Chinese information and communication technology (ICT) company which indicates that it has an important meaning in explaining IT governance wisdom might have a significant influence on board decision-making. In summary, the importance of information governance wisdom in the decision-making process of the board of directors is also a reflection of intelligent management while considering the interests of shareholders in the digital era.

Keywords: Board Decision-Making, IT Governance Wisdom, Philosophy, *The Art of War*

1. INTRODUCTION

The image of 'The School of Athens' (Raphael, 1509–1511) must be still fresh in your memory. The painting was based on the anecdote of the Academy of Athens which was organized by the ancient Greek philosopher Plato. It expressed the concentrated praise of those who pursue wisdom and truth among human beings (Pezzani, 2019, p. 1). 'Love of wisdom' is one of the common

emotions of human beings. In the Eastern world, cultural celebrities from various disciplines have all demonstrated their pursuit of great wisdom. *The Art of War* by Sun Tzu is the earliest extant military book in China and the earliest military work in the world. However, it is not only a military work, but it also contains a wealth of philosophical wisdom. Accordingly, it occupies an important position in the field of philosophy. Overall, it has global implications (Li & Yang, 2017, p. 913). Thus, the importance of strategies-gathering is self-evident in the wider context, not only for the military but also for organizations, especially in a time dominated by information technology (IT).

Judge and Talaulicar (2017) stated, "In organizations larger than 'micro' status" there is a group of individuals is put in place to represent the various stakeholders engaged with the organization" (p. 53). In fact, the operation decision-making body represented by this group of individuals is known as the "board of directors" (Judge & Talaulicar, 2017, p. 53). According to Madhani (2017), "board is one of the most important internal corporate governance mechanisms used by the shareholders to monitor management" (p. 7). Broadly speaking, IT governance is an important development of corporate governance in the information age. Therefore, IT governance wisdom will inevitably affect corporate governance, and it will inevitably have an impact on board decision-making. However, until now, there are many different determinants that have been explored for board carrying out decision-making to satisfy the shareholders' interest, such as leadership style in a board of directors, a number of governance variables, a link between the formal and network positions of board members, women directors' contribution, gender policy (Nahum & Carmeli, 2020; Ruigrok, Peck, & Keller, 2006; Stevenson & Radin, 2015; Nielsen & Huse, 2010; Valls Martinez, Cruz Rambaud, & Parra Oller, 2019). But there has been little research concerning the origin of IT governance and the impact of IT governance wisdom on board decision-making. Therefore, the purpose of this research is to understand these two questions.

The rest of this study is structured as follows. Section 2 reviews the relevant literature. Section 3 analyses the methodology that has been used to conduct empirical research on IT governance wisdom from the perspective of the philosophical thinking of *The Art of War*. Section 4 puts on display the findings, Section 5 provides discussion of findings, and conclusions are presented in Section 6.

2. LITERATURE REVIEW

In 1971, Professor Myles L. Mace (as cited in Henke, 1986) in his seminal study argued that the typical board does not get involved in the establishment of objectives, strategies, and policies (p. 87). As Judge and Talaulicar (2017) stated in their research, "there are essentially two broad roles for every board. The first, and most discussed role, is its monitoring role" (p. 53). And in the second role, the board plays a vital role in the corporate decision-making at critical moments by taking on direct responsibility (Judge & Talaulicar, 2017, p. 54). Since the 1970s, crushing high-profit companies, accounting irregularities, corporate corruption, and various

irrational operations have appeared in large numbers (Toms, 2015; Katzarova, 2019), which has begun to affect public confidence in the market and triggers a new round of attention to the governance structure. The board's responsibility to the organization has become more important, and its strategic role has been increasingly emphasized. With the continuous development of corporate governance theory (Clarke, 2004), the fully strategic involvement of the board of directors has been subject to increased scholarly attention, "known as the 'board involvement' stream" (Judge & Talaulicar, 2017, p. 54). In this regard, as Machold, Huse, Minichilli, and Nordqvist (2011) found, "involvement in strategy is increasingly viewed as a core contribution to firms' value creation processes" (p. 369). In fact, the board of directors has undergone a transition from a passive activity in the formulation of goals, strategies, and policies to fully active participation in them. As a result, what followed was the emergence of research on the determinants of board decision-making. In practice, there are indeed many scholars who have examined the factors that affect the board's strategic choice of the organization. Nahum and Carmeli (2020) highlighted their findings of "the importance of the BOD leadership style" (p. 199). Their study gave evidence that the role of the board of directors chairperson in the strategic decision-making process. There is much research done related to the impact of gender policies on board of directors (Valls Martinez et al., 2019; Amorelli & García-Sánchez, 2021; Furlotti, Mazza, Tibiletti, & Triani, 2019; Nielsen & Huse, 2010). Not surprisingly, gender diversity and the presence of women on a board of directors have shown more responsibility for business strategy and decision-making. Some scholars carried out the research board characteristics and involvement in strategic decision making (Ruigrok et al., 2006; Makhlouf, Laili, Basah, & Ramli, 2017). As we all know, the board of directors is one of the most important institutions in corporate governance. In a digital context, less examined is the impact of IT governance wisdom on board decision-making in setting organizational strategy. In the information era, information technology is regarded as an important resource that runs through the entire organization. And IT governance is a powerful tool to resolve information conflicts and improve organizational performance. Importantly, the wisdom of IT governance provides powerful intellectual support for IT governance. Facing the strategic challenges brought about by the digital revolution, the board of directors must make rational decisions. In other words, the board decision-making requires more strategic considerations from the complex situation in a digital context. Philosophically, the IT governance wisdom provides strong support for the rational analysis of the board's strategic decision-making.

Recently, a study on "firm's strategy" (Moloi & Marwala, 2021) (which mentioned the strategy of *The Art of War* by Sun Tzu for understanding the concept of strategy) provided a favorable literature basis for the research ideas of this study. *The Art of War* by Sun Tzu is called "the classic of military science", "the oldest military treatise in the world" (Tzu, 2016, p. 1). It is not only a military

work, but it also contains rich philosophical wisdom and occupies an important position in the field of philosophy. Scientific and dialectical thinking is embodied in this military monograph. People nowadays know little about such a highly generalized and highly philosophical strategic thought and rich philosophical wisdom, or they have long been sealed in memory. Through literature, we know that the wisdom of *The Art of War* might have been unknown to IT governance. The revival of the historical account of strategy for IT governance is necessary. As IT governance without wisdom will inevitably make the organization's overall governance irrational. Thus, IT governance wisdom is intellectually important for organizations. Not surprisingly, board decision-making without IT governance wisdom will inevitably make companies lose the basis for rational analysis in the digital age. And for this reason, in the information-dominant age, the board should use IT governance wisdom to comprehensively consider the current situation and situation of the organization, to make rational strategic decision-making. Therefore, research focused on the impact of IT governance wisdom on board decision-making is important.

3. RESEARCH METHODOLOGY

The general research strategy of this study is based on qualitative research. To answer the first question, namely, the origin of IT governance, we carry out an analysis through the historical retrospect of the evolution of IT governance. Practically, we overviewed the important concepts related to IT governance based on the chronological order of their historical development. And in answer to the second question, we would like to refer to the wisdom of *The Art of War*. It is a representative embodiment of Chinese culture and wisdom in the large collection of books. Taking its dialectical philosophical wisdom as the entry point, through case study methods, we analyze IT governance wisdom might have a significant influence on board decision-making, especially in a digital context from the perspective of the philosophical thinking of *The Art of War.*

For this we have designed the following questions:
• What is the origin of IT governance?
• What is IT governance good for?
• Why is it said that good IT governance is a key factor for organizational success?
• Why could the philosophy of *The Art of War* be a reference solution for IT governance?
• How can the wisdom of *The Art of War* be used for IT governance?
• Why could IT governance wisdom impact on board decision-making?

4. RESEARCH RESULTS

4.1. What is the origin of IT governance?

In the 1940s, the concept of information and communication technology (ICT) was proposed for the first time (Yang, 2019, p. 205). In the 1980s and 1990s, industrial refinement of ICT was gradually taking shape. To be specific, after the 1980s,

minicomputers led by IBM sprung up. By the 1990s, the IT industry had entered the stage of microprocessors or personal computers, and companies such as IBM and Apple had become well-deserved leaders. Since the mid-1990s, the IT industry has entered a networked stage. The development of Local Area Network (LAN), the Internet and the Internet of Things (IoT) is in the ascendant. In the meantime, IT technology has also gradually changed the organizations' existing order, from technology outsourcing to the establishment of proper IT departments, introducing information technology specifications, and paving the way for an era in the field of IT governance.

The wave of ICT technologies is inevitable and they "comprehensively represent images and expectations of the future" (Caruso, 2018, p. 379). In recent years, many government regulatory agencies and industry associations have successively issued guidelines on IT governance, and the theoretical and practical circles have also launched many discussions on IT governance. De Haes and Van Grembergen (2004) found, "In surveys, CIOs also indicate IT governance as an important management priority" (p. 27). So, what is the origin of IT governance?

4.1.1. The investigation of emergence of the IT governance concept

The emergence of IT governance seems to have no trend, but more like a sudden familiarity. According to De Haes and Van Grembergen (2004), "Precisely when this new challenge began surfacing is unknown, but it is now a discussion issue within most organizations" (p. 1). This is the reason for seeking to contribute to building comprehension. There is no doubt that its appearance is related to the concept of corporate governance and the incorporation of information technologies into corporate management. As there is no clear evidence of the exact data in relation to the origin of IT governance in the relevant literature, preliminary investigations are necessary to be conducted.

Many analysts believe that information technology is the most powerful factor that has promoted the strong development of the American economy for a long period (Freeman, 2001; Jorgenson, 2001). Then the market's demand for this emerging technology has provoked a keen investment sense, and the more prominent advantages of this emerging technology will be favored by more and more investors. The pursuit of investment value with great potential has driven more radical investment behaviors. But with the influence of technical change, it is not so much that the new technology has not been able to adapt to the 'regime of regulation' quickly and admirably, it is better to say that the pervasive information technology increased the instability of the system before a new. The changes in the 'techno-economic paradigm' were another fuse for the structurally deeper recessions of the 1970s and 1980s (Freeman & Perez, 1988, p. 38). Coincidentally, it is important to note that back in the late 1970s and early 1980s, many corporate and financial scandals have raised the significance of corporate governance and control (La Berge, 2014). In July 1988, the introduction of

the 'Basel Accord' was precise because of the collapse of two famous international banks in Germany (Herstatt Bank) and the United States (Franklin National Bank), which made the regulators begin to comprehensively examine the regulatory issues of the international banking industry (Van Roy, 2005). In 1999, the OECD signed into force the *OECD Principles of Corporate Governance* (OECD, 1999), which developed a framework for the management and control system of industry and commerce (Meyer, Zarnekow, & Kolbe, 2003, p. 445). So far, the regulatory environment from finance to corporate and finally has been fully formed.

Many large-scale corporates have initially adopted Enterprise Resource Planning (ERP[1]) or Customer Relationship Management (CRM[2]) till to the final implementation of the Integrated Office Automation System (IOAS). All realized enterprise management software is based on the development of IT technology. The enterprise started the management era based on advanced information systems in the mid to late 1990s (Sammon & Adam, 2005; Ward, 2012). In this earth-shaking process, the modern corporation has witnessed a huge impact generated by information technology for corporate operations management and business development, but the organization's benefits go far beyond these. In addition, information technology has created extremely important and added value for organizations. The most important mission of the IT department in an enterprise is to promote and implement enterprise informatization projects, and to use information technology to ensure the realization of the organization's strategic goals. Obviously, IT governance becomes a consequential part of corporate governance.

Therefore, through the carding above-mentioned timeline of corporate governance and the application process of information technology in corporations, it is not difficult to find that the concept of IT governance must have been produced no earlier than the late 1990s, highly likely at the beginning of the 21st century.

In addition to analysis of historical context, there are some of the crucial ideas for the concept development in the academic field. In 2001, IT Governance Institute[3] put forward the definition of IT governance which is with focus on the aspect of responsibilities of the decision-making level and executive management level (De Haes & Van Grembergen, 2004, p. 1). In the following year, Van Grembergen's definition of IT governance embodies the concept of organizational capacity in the fusion of business and IT (De Haes & Van Grembergen, 2015, p. 2). Furthermore,

the research project carried out by Peter Weill between 2001 and 2003 (including 32 case studies) as well as the research work conducted by Jeanne Ross on 40 cases between 1999 and 2003, has given them a deep understanding of the relationship between IT architecture and business strategy. A book titled *IT Governance: How Top Performers Manage IT Decision Rights for Superior Results* was published in 2004. The book pointed out that IT governance is to encourage the desired behavior of IT applications, and clear decision-making authority and responsible framework. Clearly, the fundamental definition was given (Weill & Ross, 2004, p. 63). In the same year, the term 'GRC' (governance, risk and compliance) was firstly mentioned by PricewaterhouseCoopers (Racz, Weippl, & Seufert, 2010a, p. 106). The concept of trinity requires IT to provide comprehensive technology as the lowest level technical support and an important guarantee for the implementation of the strategic layout for organizations. The huge demand for the overall governance of the organization has fully laid the foundations of the rise of IT governance. In all, the findings in this section are intended to help develop an analytical framework of the origin of IT governance concept.

4.1.2. The high priority of IT governance from digital perspectives

With the rapid development of information technology, it has been widely applied in other fields other than enterprises, such as banking, consulting, hospitals, publishing, manufacturing, film, and television, etc. Their common characteristics are all dependent on information and information systems. IT governance is an important development and extension of governance systems of organizations in technological upgrading, which enables the application of information technologies to fulfil the mission assigned to it by the organization and ensures the realization of the organization's strategic goals. IT governance is based on information technology to optimize the relationship between the various departments of the organization and the structure design of the process to guide and control the organization to maximize the benefits of all parties. Only the all-around involvement in the informatization process can ultimately achieve the goal of value-added throughout the organization. It thence appears that IT governance is the best candidate to assist the organization in achieving this mission except for high-level decision-making. No technology can change the structure of the organization, business and even the global economy like information technology. Then, what IT governance can offer to an organization? Evidently, there are many aspects examined by previous literature, in the aspects such as leadership, organizational structures, relational mechanisms, business processes, standards, compliance and cost (De Haes & Van Grembergen, 2004; Weill & Ross, 2005; Calder & Moir, 2009; Luftman, Ben-Zvi, Dwivedi, & Rigoni, 2010; Racz, Weippl, & Seufert, 2010b; Larsen, Pedersen, & Andersen, 2006). Hereby this section mainly focuses on three highlights brought by positive outcomes of 'Industry 4.0'.

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[1] ERP systems were born in infancy in the early 1960s, which is an interactive decision-making, operation, and integrated management of main business processes. The Gartner Group first used the acronym ERP in the 1990s. By the mid-1990s ERP systems addressed all core enterprise functions. Further information is available in Harreld (2001) and Wylie (1990).

[2] The concept of CRM started in the early 1970s. Further information is available in Wingard (2016). It is a process in which a business or other organization administers its interactions with customers, typically using data analysis to study large amounts of information. Customer relationship management was popularized in 1997, due to the work of Siebel, Gartner, and IBM.

[3] IT Governance Institute (ITGI) was created by The Information Systems Audit and Control Association (ISACA). ISACA is an international professional association focused on IT governance, with the purpose of aiming to help business technology professionals and their enterprises around the world realize the positive potential of technology. ISACA got its start in 1967, now there is a network of ISACA chapters with more than 200 chapters established in over 80 countries. Further information is available in De Haes, Van Grembergen, and Debreceny (2013).

Firstly, it innovatively created added business value. Marketing has always been an indispensable and important method in economic development. In the era of rapid development of global economic informatization, people are paying more and more attention to the mode and method of information technology to enhance business value, and IT supervision is the basic basis for standardizing the implementation. Louis Boyle, former executive partner of Gartner associate once pointed out under the same strategic objectives, firms with poor IT governance have at least 20% lower profits than ones with excellent IT governance (De Haes & Van Grembergen, 2015). In addition to rethinking the profit disparity gap, it has improved the understanding of the importance of IT governance within the organization.

Secondly, it promoted the inclusion of organizational strategies to the height of digitalization. Economic profit is the basis of the most traditional corporates' decision-making, but the competition among them is becoming more and more fierce and internationalized. Whether an organization can meet the development requirements of the digital age, it is bound to formulate an overall strategy based on information technology by going across the territory. Koch stated that the importance of integrating various organizational units in the IT governance process (Wessels & van Loggerenberg, 2006, p. 3). Under the macro-trends of global economic development and international competitiveness, IT governance inherently provides technical support and guarantees for decision-making to fulfill the inclusion of organizational strategies.

Thirdly, the strategic significance of IT governance to guarantee performance mechanism within organizations. According to Machiavelli (2003), "good institutions without the help of the military are not much differently disordered than the habitation of a superb and regal palace" (p. 2). And in the same light, the scholars stated that "organizations adopt IT governance to ensure efficiency" (Wessels & van Loggerenberg, 2006, p. 1). The performance mechanism is a powerful means to improve the competitiveness of an organization and ensure the smooth achievement of the organizational goals. The efficient implementation of each segment from design, operation, feedback, adjustment to re-operation depends on excellent information resource planning and governance. It will inevitably enhance the overall competitiveness in an all-around way once the organization has realized a set of scientific, reasonable, and comprehensive performance mechanism.

4.1.3. Why is it said that good IT governance is a key factor for organizational success?

In the wake of the extensive discussion of IT governance concepts, Craig Symons as the Director Primary Research of KPMG came up with the term 'good IT governance' in the first place (Symons, 2005, p. 2). As the elevated specific requirements for upgraded compliance and risk management throughout the enterprise, especially on IT organizations, all this gave birth to the idea of further optimizing IT governance (Symons, 2005,

p. 3). What is good IT governance? When organizing and formulating a regulatory strategy, the following elements must be grasped:

First, the principle of IT governance. The key to success lies in basic rule, especially in a rapidly changing era. It is understandable that principal activities are the core of an organization, and IT governance is the fundamental supports of entirely organizational governance frameworks. IT governance should be consistent with the principle of goals of organizational governance as a whole. Because IT is an organization's higher requirement for overall governance during the digital transformation period. Once IT governance lacks principles, there will be many problems in the informatization of the organization, which will affect the realization of the overall governance of the organization. This feature is a necessary condition for formal mechanisms of IT governance.

Second, the horizontal comparison of IT governance. The learning and idea exchanges of IT governance in the inter-sector, using for reference of good methods in the region, and the updating of global supervision information, all help organizations maintain a clear direction and vision of IT governance. Only when we know well ourselves and others and take more effective measures in a timely manner can we improve and grow.

Third, the flexibility of IT governance. The established regulatory strategy is of course prominent, and it is necessary to ensure the continuity of implementation. However, the market environment is changing all the time, and timely warning and timely adjustment of the organization's proper strategies are particularly critical. The goal is not only ahead, but also under the feet.

4.2. Why could the philosophy of *The Art of War* be a reference solution for IT governance?

The Chinese culture is extensive and profound. Five thousand years of Chinese civilization gave birth to Chinese culture, which is, even more, a large gem of the world. And books are especially important carriers of culture and the best tools for understanding cultural heritage. *The Art of War* by Sun Tzu is a pinnacle of global pragmatism at the time when the book was written. This work predated Carl von Clausewitz's *On War*[4] about more than two thousand years ago and is known as the 'sacred book of military science' (Tzu & Griffith, 2005, p. 5). Because it was the earliest essay to reveal the most profound and abundant adaptable wisdom, "Sun Tzu has clearer vision, more profound insight, and eternal freshness" in the field of pragmatic books (Tzu & Griffith, 2005, p. 5). Different and more valuable is that Sun Tzu's *The Art of War* is a caution for arising a war and if it is inevitable, one should strive to win with wisdom not reckless (Tzu & Griffith, 2005, p. 5). Lundvall (2007, p. 108) expounded that knowing and learning are important for the analysis of innovation systems. Today's society is in the era of the learning

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[4] *Vom Kriege*, is a book on war and military strategy by Prussian general Carl von Clausewitz (1780–1831), written mostly after the Napoleonic wars, between 1816 and 1830, and published posthumously by his wife Marie von Brühl in 1832.

economy, but it is more an era of wisdom. The value of knowledge and learning lies in certainty, and the value of wisdom lies in guiding more rational trade-offs in practice with critical thinking and spirit (Tzu & Griffith, 2005, p. 5). *The Art of War* of Sun Tzu is a philosophical book of military strategists that demonstrates wisdom. As Yuen (2014) found, "Chinese strategic thought is ground-strategic and systemic in nature" (p. 14). This paper intends to introduce the thinking framework of Sun Tzu's *The Art of War* into the organization's IT governance thinking system, generating inspiration to serve the practice of IT governance with the philosophy of Sun Tzu's *The Art of War*.

When the Gulf War[5] broke out in 1990, there were two books on the writing desk of the US President Bush, one was *Caesar* and the other was Sun Tzu's *The Art of War*. According to media reports, in this war, a 90-page English translation version was shipped to the desert of Saudi Arabia for the combatants to read. *The Art of War* was set as one of the required courses by the United States Military Academy at West Point. So, is *The Art of War*, which was born more than 2500 years ago, still has use value? The answer is "Yes". Across all the ages, military strategists of all generations have used this law in which the wisdom has been verified countless times. *The Art of War* of Sun Tzu is a very comprehensive and complete system, and its basic principles for demonstrating great wisdom still have certain guiding significance in various fields.

Even in the era of peace, international competition has never stopped but has intensified, having formed a competitive trend in the development of global information technology. Facing the current complex business environment, an organization needs to have well-addressed strategies. Whether it can have a panoramic view of international information? Whether it can effectively implement IT governance? It must devote particular care to methodology, rather than relying on pure information technology because the smallest unit is not an organization but a person especially who fulfil IT governance at the forefront of information technology. They are the organizational innovative design engineer, and the most important thing is their thinking angle, way and how to act for providing support for the governance of the entire organization with good information technology governance.

4.3. How can the wisdom of *The Art of War* be used for IT governance?

Taking history as a mirror, we can know the rise and fall. The wisdom and value of the masterpieces in history are not only the art itself but also how people use and interpret it because many ideas and wisdom are inspired by each other. The three points discussed in this paper are extracted from Sun Tzu's wisdom on *The Art of War*, then, is governed by five constant factors (Tzu, 2016, pp. 1–2). to be taken into account in one's deliberations, when seeking to determine the conditions obtaining in the field. In the age of digital prosperity, the bigger the organizations, the more important IT governance is. If there is no game theory guided by wisdom

value in process of implementing IT governance, it will eventually be attacked by the network that itself participates in the construction. Precisely this section focuses on three points to interpret the application of the wisdom of Sun Tzu's *The Art of War* in IT governance.

Figure 1. The three essences of Sun Tzu's *The Art of War*
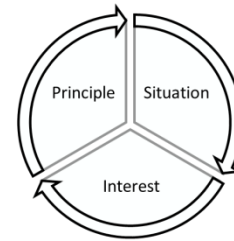
'道' (*dào*), the so-called '*Principle*'. This is what Giles in 1910 translated as "discipline" and "the moral law" (Tzu, 2016., p. 2). Here, it is the same essential point we would like to explain, just the way of expression is different. The paper combines two aspects with one word. The reason why we use 'principle' is, on the one hand, from the macro-level, that is, from the perspective of all organizations as "discipline", on the other hand, from the micro-level, that is, from the perspective of people as "the moral law". Every organization has its proper rules. This is a big norm and a principle with overall significance. At the same time, more crucially, everyone must have their own personal principles to consciously abide by professional ethics and organizational discipline. As the opinion of Sun Tzu, "the moral law causes the people to be in complete accord with their ruler, so that they will follow him regardless of their lives, undismayed by any danger" (Tzu, 2016, p. 2). Of course, if one is engaged in IT governance today, he cannot talk about the level of ignorance of his life, but he must also adhere to his own principles, otherwise, the magnificent IT governance layout will be ruined, and all previous efforts will be lost. The two complement each other and are indispensable. The more advanced the civilization of organizations generates more power. And the deeper the understanding of the organization's rules creates overall comprehensive combat capabilities for organizations. Generally, the strong spiritual power of an organization stems from consciously abiding by the rules, which in turn produces strong team cohesion. The principle ensures stability of organizations and the continuity of policy implementation, which greatly reduces organizational costs can have the opportunity to obtain greater benefits. The organization itself consumes resources that form costs and especially the organization's huge investment in information technology so that resources can be used more effectively instead of on internal consumption (Williamson, 1981, p. 549). Only through IT governance, and only when IT governance abides by the principles, can resources be used more effectively instead of increasing the cost of the organization. Furthermore, since "governance is about oversight" (Calder & Moir, 2009, p. 12), IT governance is more obligated to perform

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[5] Further information is in Smith (2012).

comprehensive oversight work based on information technology system.

'势' (*shi*), the so-called '*Situation*'. It emphasizes a holistic view, and what it expresses is to interpret the current situation in depth. Sun Tzu said, "it is the rule in war, if our forces are ten to the enemy's one, to surround him; if five to one, to attack him; if twice as numerous, to divide our army into two" (Tzu, 2016, p. 5). Looking at oneself and the external environment as Sun Tzu said "Heaven" and "Earth", there is always a difference in overall strength (Tzu, 2016, p. 2). Each organization's situation is various. When should an organization invest in IT? How much should an organization invest? Whether the investment has reached the corresponding expectations, namely if the interests of all parties involved in the informatization process are maximized? All depend on the organization's own situation and external circumstances. According to Calder and Moir (2009), "IT governance… brings a competitive edge to organizations — those with good IT governance frameworks are likely to emerge from the recession faster and fitter than their competitors" (p. 15). Are you really clear about the IT governance requirements (role, structure, process, operation, management, and controls) of your organization? To what extent does IT governance affect the overall governance system of the organization? Do you know the IT governance work of your peers? What progress have they made in IT governance recently? Does the IT governance of my organization need to be adjusted? If so, how should it be adjusted? Questions are more important than answers. Only through questions can we understand both ourselves and the external environment related to IT governance situation. Only by clearly predicting the direction of development IT governance, can the organizational governance master the initiative and further seize the opportunity to act better. Ren Zhengfei, the founder of Huawei[6], assessed the situation and used Sun Tzu's *The Art of War* to the extreme.

'利' (*li*), the so-called '*Interest*'. It can be explained as flexible strategic ability. It revealed the perspective on the method of thinking. Namely, it is necessary to respond flexibly to uncertainties according to specific circumstances to take corresponding preventive and response measures. For the same reason, IT governance should also have this awareness of striving for a preemptive opportunity in the epoch of 4IR. Moreover, the advantages of IT governance are by no means limited to the overall improvement of the organization's work performance. From another point of view, if IT governance must be done for organizations that have not fully initiated IT governance or adjusted for improvement for organizations that already have implemented IT governance, it is necessary to make quick decisions to make a favorable plan but with control of costs just as "the control of military expenditure" (Tzu, 2016, p. 2). Silicon Valley's culture of breaking things provides an advocacy for a flexible way of thinking (Stryker & Stryker, 2020). Only by understanding the essential laws and interest

relationship of the matter can we further adopt flexible strategies to adapt to changes. On the other hand, find your own strong "power" in the constant changes of the external environment and make full use of it, even if it is only temporary and partial. Sun Tzu said, "Whoever is first in the field and awaits the coming of the enemy, will be fresh for the fight; whoever is second in the field and has to hasten to battle will arrive exhausted" (Tzu, 2016, p. 9). The success of Lei Jun's Xiaomi[7] is the success of this strategic thinking. Even Lei Jun himself does not think that Xiaomi can fly so high but Xiaomi has taken advantage of the opportunity and position. With its own unique business model and values, Xiaomi has successfully achieved the reversal from the development of smartphones to electric vehicles.

4.4. Why could IT governance wisdom impact on board decision-making: Evidence from a study of Huawei

Huawei is "a successful Chinese mobile communication enterprise" (Feng, Zhang, & Fan, 2017, p. 106). Huawei's development has gone through a process from localization to internationalization finally to globalization. After decades of development, Huawei has become the world's largest manufacturer of telecommunications equipment (Feng et al., 2017, p. 106). Since Huawei is a technology and innovation-led company, most leaders have engineering backgrounds. They are more keenly aware of changes in the industry's current situation. Li Shufu, chairman of Geely Holding Group, was extremely impressed after reading a study on the international development of Chinese companies. He believes that modern military warfare serves modern commercial warfare, and Huawei people must have a very thorough understanding of this. Although this is in contradiction with the direction of human civilization, it is in these contradictions that human beings continue to make progress. In the final analysis, Huawei's success is the flexible use of the core ideas of Sun Tzu's *The Art of War*. These are: 1) The moral law; 2) Heaven; 3) Earth; 4) The commander; 5) Method and discipline (Tzu, 2016, p. 2). As we said before, in fact, it is not only Huawei, the United States Military Academy at West Point and Harvard Business School have listed *The Art of War* as a must-read. In fact, Ren Zhengfei applied the ideas of Sun Tzu's *The Art of War* to all aspects of Huawei's management.

Even though Huawei has achieved much today, it is still worth reviewing many problems many years ago, especially in terms of IT governance. IT governance is a crucial part of the governance systems of organizations in the digital age. Who is responsible for IT governance? There is no doubt that the board of directors, which is the mainstay of corporate governance, will ultimately be solely responsible for IT governance. The board of directors of Huawei, who is aware of this importance, put forward clear requirements in the IT governance of Huawei.

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[6] Huawei is the world's leading provider of ICT (information and communications) infrastructure and smart terminals. It is China's largest private technology company. Further information is available in Su and Chen (2014).

[7] Xiaomi is a global mobile Internet company that focuses on the research and development of smart hardware and electronic products. It is also an innovative technology company that focuses on the construction of high-end smart phones, Internet TVs, and smart home ecological chains.

With the continuous progress and development of the times, the current market structure has undergone earth-shaking changes. How should companies face the challenges of digital transformation? This is a critical issue facing all enterprises. As a globalized multinational company, Huawei needs to answer this question without exception. In the data-driven information age, only by managing core business data well can companies optimize products, develop new market channels, and build their core competitiveness. It is not an exaggeration to say that data governance is the ultimate manifestation of the entry of information technology into IT governance. Huawei knows that the digital dock is the key to supporting Huawei's business operations. Huawei's board of directors put forward a clear goal of digital transformation. In 2007, Huawei began to fully implement data governance.

The IT governance department keenly finds the pain points and challenges of data governance and sorts out the data management structure and strategy. All these have laid a solid foundation for Huawei's data governance. The data governance work echoes the foresight of the board of directors and provides a strong guarantee for the board of directors in corporate governance and strategic decision-making. After two stages of continuous change (2007–2016, 2017–today), Huawei has systematically established a data management system and fully realized digital governance and digital operations (Huawei Data Management Department, 2020). As a result, Huawei has further achieved internal operating efficiency, and at the same time, the company's operating performance has also been greatly improved.

5. DISCUSSION

This section summarizes findings from the above examinations. Principally, there are two principally important findings. Through an overview of the history of the evolution of IT governance, we discovered that the period when the origin of IT governance concept must have been produced no earlier than the late 1990s, highly likely at the beginning of the 21st century. Then we have argued the application of Sun Tzu's *The Art of War* wisdom to IT governance thinking from three aspects to optimize organizational governance. And through the case study of Huawei's IT governance, we found that the IT governance wisdom might have a significant influence on board decision-making from a philosophical perspective of the ancient Chinese thinking — *The Art of War*. In other words, IT governance wisdom has become one of indispensable cores for board decision-making, especially in the cyber context.

Sun Tzu, a Chinese military strategist used *The Art of War* — a treatise on military philosophy, which is known as the sacred canon of military strategies, to reveal the laws of war and competition especially on the high unification of theories and methods. This is also the main reason why *The Art of War* certainly has been always respected by militarists and all over the world with its enduring appeal. Philosophy is known as the source of the great ratio and the intellect of the encyclopedia. Since information technology is an interdisciplinary

science, the issues related to this field can inevitably be systematically recognized with the help of philosophical thinking. *The Art of War* is a strategy, and it is one of the military books that most generals, literati, and emperors in ancient times must have read. It is the embodiment of Chinese military culture, and it also embodies the great wisdom of Chinese traditional culture. And Chinese culture is the culture of the world. China's traditional philosophical wisdom should also be known to the world. Moreover, the important value of *The Art of War* in "the firm's strategy" has been confirmed again by the latest research (Moloi & Marwala, 2021). In the stage of globalization and inclusive development, especially at the critical moment of digital transformation, the philosophical thinking of *The Art of War* brings wisdom value for the organization's IT governance and board decision-making.

Through the above analysis of IT governance wisdom and Huawei's case study, on the one hand, it shows that the dialectical philosophical wisdom in Sun Tzu's *The Art of War* has greatly affected Huawei's IT governance. On the other hand, the finding suggests that the strong effect of IT governance wisdom on board decision-making may directly affect the business strategy of the company and may indirectly improve the company's performance. That is, IT governance should fully integrate into business digital transformation to better support the company's strategy and goals, and better meet business needs. From the perspective of IT governance, the main responsibility of the board of directors is to ensure that the IT strategy is consistent with the business strategy. At the same time, IT governance wisdom is not only an important prerequisite for enhancing the corporate governance performance but also as a rational analysis guarantee for the board's major strategic decisions in a data age. Of course, our revival of Sun Tzu's *The Art of War* shows the wisdom of philosophical thinking and is only the theoretical enlightenment obtained from the cases of Chinese company. More important is how to apply it to your own specific practice. This requires various companies or organizations to absorb inclusive thinking and then to apply the traditional Chinese wisdom to their own governance and decision-making. As mentioned in the translation, "according as circumstances are favorable, one should modify one's plans" (Tzu, 2016, p. 2). Flexibility once again reflects the wisdom of Sun Tzu's *The Art of War* with profound philosophical principles.

6. CONCLUSION

The origin of the concept of IT governance indicates that it is aimed at better serving the overall governance of organizations. The realization of organizational governance needs to be achieved through the implementation of IT governance. The implementation of IT governance should take the principle as the starting point, the overall vision as the focus, flexibility as the implementation capability, and wisdom as the guide. As IT governance is a repeatable, rational process to collect ideas, select projects and prioritize the implementation of these ideas and projects

(Hites & Block, 2010). And IT governance is due to support the organization in achieving its strategic objectives (Bhattacharya, 2018; Wautelet, 2019). Therefore, IT governance with philosophical wisdom is essential to the organization's strategic implementation. In addition, we are entering the second phase of digital transformation, and the exploration of IT governance is also ongoing. At this critical moment, we aim to introduce a philosophical perspective to help organizations especially the board make decisions in this field more rationally and more wisely. We have all reasons to believe that the wisdom of IT governance will bring out a huge impact on the overall governance of the organization in the IT era.

The Art of War of Sun Tzu is an important part of world culture. The organization absorbs it as an element into the IT governance wisdom, so as to integrate this IT governance wisdom into the thinking mode of the board of directors' decision-making. With the rapid development of modern information technology and the continuous deepening of board involvement in strategic decision-making, IT governance wisdom is becoming more and more important in the organizational system. And the board decision-making is becoming more and more dependent on the wisdom of IT governance in a manner of wisdom expansion to rationally respond to challenging changes in the digital age. The importance of IT governance wisdom in the decision-making process of the board of directors is also a reflection of intelligent management while considering the interests of shareholders. Only wisdom can understand the overall situation. Undoubtedly, the board decision-making requires the contribution of IT governance wisdom in a cyber-war age. As Merendino et al. (2018) argued, boards need to develop cognitive capabilities and find new ways to make decisions in the Big Data era (p. 67). We believe that this study can give a new method from a philosophical point of view to arouse the attention and in-depth study of the impact of IT governance wisdom on the decision-making of the board of directors.

However, the limitations address further investigation as the following points:

• *More explorations to be carried on.* Obviously, there are still many aspects of Sun Tzu's strategies to continue to explore. Here we give an example related to one aspect of "five constant factors" said by Sun Tzu. The reason why we did not make a specific analysis is because this factor is really variable. We know that people are the most complex factor in an organization, and 'leaders' in each organization have their own backgrounds and unique governance styles. Thinking of the importance of IT governance work layout planning, we can't help but reflect the expression of "The Commander stands for the virtues of wisdom, sincerity, benevolence, courage and strictness" (Tzu, 2016, p. 2). How could be a qualified leader with the virtues he needs to possess for a team? Thus, how should IT governance be an excellent leadership within the allover organization? It is possible to ascertain the essence of wisdom that is more suitable for any organization itself because the development stage of each organization and the core problems encountered are so different, they cannot be treated in the same way. This is also one of the quintessence emphasized by Sun Tzu's *The Art of War*.

• *Deeper comparison to be carried out.* We hope that this contribution will serve as an inspiration to future research, which can be carried out through further comparative analysis of the guidance of philosophical thoughts in different countries for IT governance. This is also the embodiment of Sun Tzu's wisdom about the "method" (Tzu, 2016, p. 2). IT governance has its own way, and the research on IT governance must continue to expand methods.

• *More case studies to be replicated.* Could the explanations gained through research on Chinese company be extended to more different cultures or different regions? The cultures of all countries are part of the world's culture. The reproduction of the explanation of the case study requires more cultural inclusion. Therefore, the inclusiveness of multiculturalism is crucial to the next step of the case replication.

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