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A Review of the Antecedents and Consequences of Digital Maturity

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Abstract

Digital maturity has become a hot topic in various fields. This paper aims to provide an integrative review of digital maturity. This paper summarizes the concept of digital maturity from the perspectives of process, degree and ability. Four categories of antecedents, namely, strategic, cultural, talent and others are gathered. Performance and Non-performance consequences are analyzed. Finally, combining the results of digital maturity, it discusses the current research shortage of digital maturity and prospects for the future research direction. The analysis of antecedents and consequences of digital maturity can provide an integrative framework of existing research on digital maturity, and also provide some reference for the research of related research.

Keywords: Digital Maturity; Concept; Antecedents; Consequences

1 INTRODUCTION

Nowadays, digitalization has increasingly become an important topic of global economic development, and the key to enter the digital economy focuses on the digital transformation and upgrading. However, digital transformation is a long-term development process. Only when the digital transformation state reaches the best, can we have the opportunity to achieve digital maturity.

In recent years, digital maturity has become a hot research vocabulary in the field of digitization. More and more scholars in many fields begin to pay attention to the related research of digital maturity, and the related research results are also emerging. Bakhtieva(2017) researched on Four Stage and Three Mature Level in the Marketing of Digital Products[1]; Englbrecht, et al.(2019) evaluated the digital ability maturity of IT security management through empirical research methods[2].Martin, et al.(2019) studied the clinical drivers of digital maturity in British medical system[3]. A few scholars review the subject of digital maturity. Schwer,et al.(2018) analyzed 15 groups of digital maturity evaluation models, and the results showed that the business level played a huge role in measuring the digital maturity of enterprises, and then mostly focused on strategy, culture and innovation[4].Teichert(2019) analyzed 22 digital maturity evaluation models, which showed that digital maturity evaluation mainly focused on digital foundation (digital ability, digital investment, technology, organization, strategy and customer experience) and transformation management capabilities (vision, culture, leadership, governance, innovation or agility) [5]. It can be seen that in the existing review, the digital maturity focuses more on the evaluation model research, and there was still a lack of relevant induction and summary on the influencing factors and results of the digital maturity.

Based on above discussion, this paper will comprehensively review and systematically combine the relevant literature, review the digital maturity from three aspects of concept, antecedents and consequences of digital maturity, and then prospect the future research on digital maturity, in order to bring some enlightenment to the research in the field of digital maturity.

2 DIGITAL MATURITY CONCEPT

With intensive study of digital maturity, scholars have expounded their concepts from different perspectives. In

general, the existing research is mainly discussed from the perspectives of process, degree and ability.

2.1 Definition of Process Perspective

Some scholars understood the digital maturity from the dynamic perspective of the process, and believed that organizations need to constantly update their evaluation of the digital maturity over time. Mettler, et al.(2009) considered digital maturity means a gradual process in implementing digital technology[6]. This is consistent with the views of Kane et al.(2017), digital maturity was a process to adapt to the growing digital environment and effective competition in the changing digital landscape, as well as opportunities for infrastructure such as digital technology to align people, cultures, structures and strategies[7] . After an interview with 157 managers from 50 enterprises, Purcarea and Negricea(2014) considered that digital maturity was a process of combining strong leadership and digital activities to better expand the business and transforming technology into change[8].

2.2 Definition of Degree Perspective

Digital maturity is not only a process. Mettler and Pinto(2018) argued that digital maturity was often used to measure the extent to which an entity contributes to better performance using digital technology[9]. Similarly, Hie(2019) thought that digital maturity was a measure of the level of digital transformation of the company. By measuring the digital maturity of the company, the company would be able to know how far it had been transformed to digital[10]. Fitzgerald et al. (2013) defined digital maturity as the level and degree of digital transformation and could be seen as an overall concept that achieves high digital maturity when organizations had a strong digital base and made full use to gain strategic business advantages[11].

2.3 Definition of Ability Perspective

Digital maturity can be understood not only as process and degree, but also as the willingness and ability of organizations to change and apply innovative technologies to maintain market competitiveness (Eremina et al. ,2019)[12]. Chanias and Hess(2016) also saw digital maturity as the ability and achievements organizations have achieved in implementing digital transformation[13].

Through the summary and comparison of the concept of digital maturity, we can see that the definition of digital maturity in the existing research focus more on the process, extent of its development, and its own capabilities and achievements.

3 ANTECEDENTS OF DIGITAL MATURITY

Reviewing scholars' research on the influencing factors of digital maturity, through carefully reading and classifying them according to the characteristics of digitalization, summarizing the key factors that affect digital maturity include strategic factors, cultural factors, talent factors and other factors, and explain them in detail.

3.1 Strategic Factor

MIT Sloan Management Review concluded that effective digital strategy was more closely related to digital maturity compared to technology. From a long-term strategic perspective, businesses that wanted to leverage digital trends should not start with research technology, but first imagined the impact of digitization on the industry, especially the customer experience over the next decade or more (Kane et al., 2015)[14] .Catlin et al. (2015) illustrated appropriate digital strategy was extremely important through case studies of Ping An Bank, British Department Store, Bauer Media Group and Disney, and successful digital strategy will make differentiated management intervention more clear[15]. Kane et al.(2017)and MIT Sloan Management Review on the third study of the global digital business had always concluded that strategy was the strongest differentiation factor of digital mature companies, to develop a long-term effective strategy and connect it with the overall business objectives, was still one of the biggest challenges to improve the digital maturity of the company [7]. Blagoeva et al. (2017) believed that digital strategy was the vision of the organization 's use of digital means of solutions and technologies, and should focus on the opportunities and challenges, governance and risk management issues of the organization' s digital activities[16].

3.2 Cultural Factor

Creating an effective digital culture is an intentional job. Digital mature companies are constantly cultivating their culture. A series of studies by Kane et al. showed that organizational culture was crucial to effectively reaching digital maturity. Before reaching a high mature digital level, it might need to change the existing organizational culture thinking, and to overcome the aversion to risk may be the most important feature of digital mature culture. Catlin et al.(2015)showed despite the importance of digital skills by using the simple indicator of 18 practices in diagnosis [15]. However, enterprises can focus to some extent on four key areas, external direction, risk preference, mass testing and learning, and internal cooperation, to stimulate the overall missing organizational culture. The MIT Sloan Management Review survey found that the cultural similarity of enterprises at different levels of digitalization was very high compared to the digital strategy. At present, most enterprises had made systematic changes in the ways to develop a culture and experience with digital thinking. The study also found that digital mature companies were more likely to take positive steps to further improve their digital culture than those that have their lower digital maturity. Hie(2019) conducted an empirical study of the Bank of Indonesia[10]. The results showed that changing organizational culture also had a positive and obvious influence on digital maturity. Changing organizational culture involved engaging all employees in the organization's digital vision by inspiring and building digital work with them. Irimias and Mitev(2020) studied the relationship between Hungarian enterprise change management and digital maturity through empirical research methods[17], which showed that change management was also part of corporate organizational culture, and more actively promoted digital maturity through internal driving forces.

3.3 Talent Factor

Kane et al.(2015) believed that another factor affecting digital maturity was the training of digital technical professionals[14]. Generally, employees in digital mature enterprises though the most important digital skill were not entirely technical, but use digital trends to understand the current business and become familiar with the business processes. More importantly, it was necessary to cultivate the digital ability of the internal employees, so that the digital talents can contribute their higher skills to the digital maturity of the organization. Catlin et al.(2015) also showed that in addition to strategy, competence, culture, etc, leading enterprises by digital maturity had also carried out a series of practices in talent factors[15]. Kiron et al.(2016) considered talent development an important part of digital mature organizations. Digital mature organizations were more confident to have enough digital talent within their workforce[18]. The survey found that employees prefer to work for digital mature companies, as they are five times more likely to offer employees opportunities than companies at the early stage of the digital level.

3.4 Other Factors

For digital maturity, functions such as large-scale capabilities that laid the foundation for critical processes were more important. Attract customers and improve performance through data-based decision-making, connectivity, automated processes, and modular IT platforms (Catlin et al., 2015)[15].

Kane et al. (2017) argued that organizational structures focused on interconnections collaboration were considered key to maturity in a digital environment. Organizations with high digital maturity saw cross-functional collaboration as a cornerstone of the way they operate[7]. Combining flexible ways of thinking with collaboration-based organizations enables organizations the ability to respond to digital trends and become more digital.

Digital transformation governance also had a positive impact on digital maturity. Compared with the changing organizational culture, digital transformation and governance had a greater impact on digital maturity. Digital transformation and governance can guide the company's digital activities to improve the digital maturity. In the digital transformation and governance, the decisions in the organization should also be adjusted to achieve the effective action of the whole organization. This meant leaders get more efficient when they focused on digital transformation governance. The results also showed that digital transformation governance may affect organizational cultural transformation (Hie, 2019)[10].

The digital maturity process involves multidisciplinary activities. And with the implementation of IT4.0, technical factors become one of the most important areas of demand. At the same time, all medical systems increasingly rely

on health information technology to provide high-quality, efficient, and safe medical services. Higher digital software input and the higher intensity of digital applications can positively affect the development of digital maturity (Mettler et al., 2018)[9]. In terms of digital input, Irimias et al.(2020) also believed that corporate investment in digital development will also affect the digital maturity[17].

Diller et al. (2020) had focussed on psychological factors. The relationship between internal motivation and digital maturity of German tax consultants in the accounting background was studied[19]. To believe that digitalization was not only digital skills and business model innovation, but also the ability to adapt and promote change. Personality example was part of personal internal motivation, and also an important driving force for digital maturity.

Each influencing factor is essential to achieve a high digital maturity. Digitalization requires cultural change. If you ignore the digital culture of the organization and only focus on digital technology, it will not achieve the expected effect. Similarly, only pay a single attention to professionals, strategy or organizational structure and other factors, can not effectively achieve digital maturity. In order to achieve the digital maturity, the organization should fully consider the professional quality, internal motivation and other personal factors, and combine the organizational strategy, culture, structure, technology and other organizational factors.

4 CONSEQUENCES OF DIGITAL MATURITY

Digitalization is a way for enterprises to improve process efficiency, enhance the marketing strategy, and improve the competition barriers in the global competitive pattern.

As digitization evolved, Baltic business had recognized the importance of digitization. Studies examined the impact of digital maturity on sales performance and financial indicators (Eremina et al., 2019)[12]. The results showed that digitally mature organizations can expand their sales and distribution channels, while establishing new communication channels with their customers, which can greatly increase the sales volume and support the sustainable growth of the company's market share. So digital maturity can increase the organization's sales.

Because digital maturity was not fully reflected in the company's net earnings, nor the total returns, digital maturity was also negatively related to shareholder returns. In the initial stage of digital maturity development, more investment was needed, not only in technology, but also in time, manpower and resources. Increase gains from current strategic assets when digital maturity was embedded into a broader corporate strategy. Irimias et al (2020) believed that investment in infrastructure and digital transformation to operations and strategy was essential to improve business performance[17]. Therefore, digital maturity had a positive impact on enterprise performance, but it was not a main factor in improving business performance.In medical care, digital maturity also affects multiple outcomes.

Digital maturity also affected key clinical outcome indicators. Studies by Martin et al.(2019) confirmed that risk-adjusted long-term hospitalization and harmless care were significantly associated with organizational digital maturity [3]. Hospitals with high digital maturity not only provided more care, but also significantly increased the risk of experiencing long hospitalization.The following year, Martin et al. (2020) also described the impact of digital maturity on the quality of medical services through the perspective of regulatory agencies[20]. Digital high maturity had the potential to improve the quality and safety of care. But it can also bring new risks and cause unintentional harm to patients and organizations. It was also emphasized that digital technology was often related to the negative consequences of patients and staff. Therefore, all stakeholders must keep pace with digital technology change and learn from the experience of other organizations and departments to ensure patient safety.

5 CONCLUSION

In summary, technology is a key factor in promoting organizational and social development. An important aspect of the widespread application of technology is digitization. Digital maturity is the core goal of the current organizational development pursuit. Therefore, with digital maturity in recent years, it has attracted wide attention from social organizations and research scholars, and relevant research has constantly emerged.

Focusing on the core element of digital maturity, this paper comprehensively analyzes the influencing factors and

analyzes the results brought by digital maturity. Although the current digital maturity has achieved relatively fruitful development, it can be found that the existing research is still insufficient from many aspects.

Therefore, in order to promote further development of digital maturity research, this paper believes that it needs to be further improved in the future. First, the existing research has focused more on the business field. Driven by Industry 4.0, scholars initially focused more on digital maturity in the manufacturing sector. However, with the enhanced penetration of technology, all walks of life gradually have embedded digital ability, to promote them to carry out digital maturity research. At the same time, with the complex transformation of the market environment, the demand for education, medical care and service-oriented government promotes the digital maturity research of various industries. Second, carry out the digital maturity evaluation and influencing factors research at different stages. There are different standards for digital maturity of organizations at different stages of development. Although digital maturity at different stages has commonsimilarities, future studies can be based on their differences. The evaluation system and influencing factors are discussed at different stages, and such research needs to be further expanded. Third, the digital maturity can be further subdivided to improve its universality. In the future research, it is necessary to take into account the characteristics of different industries and the characteristics of different enterprises in the same industry, to make the concept more reasonable and effective. For other areas, such as medical care, education, government, etc., further research should be needed according to their field characteristics.

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