Analysis of Technological Disruption on The Implementation of Competitiveness in The West Java Province

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Abstract. The objective of this research is to understand how a government agency can have and gain competitive advantage through technological changes. This study uses digital innovation and business adaptation as mediating variables. The method used in this study is to verify the description using the analytical tools of Model 6 according to Hayes' theory. The unit of analysis was six development zones in West Java province with 38 government agencies, thus the sample size was 228 employees. The results obtained from this study are firstly that technological breakthroughs have a positive impact on competitive advantage and technological breakthroughs have a positive and significant impact on competitive advantage through digital innovation. Second, technological breakthroughs have a positive and significant impact on competitive advantage, mediated by business adaptation. Third, technological disruption has a significant and positive impact on competitive advantage, which in turn translates into digital innovation and business adaptation.

Keywords: Technology Disruption, Digital Innovation, Company Adaptation, Competitive Advantage.

1 Introduction

In the era of industrial revolution 4. 0 and society 5.0, marked by increasingly fierce business competition, life systems in many fields have changed. An organization, company or agency must respond to these changes with the right strategy to create a competitive advantage [1]. The Industrial Revolution 4.0 can truly be considered a rapid cultural and social change that concerns the basic needs of the community. The path to change in the ongoing revolution can be planned without violence or through violence, [2]. Competitive advantage in government refers to the government's ability to create and maintain a superior position in various aspects, including public service efficiency, policy innovation, transparency, public participation, and economic resilience, [3].

Disruption has initiated the birth of a "new" way with a new business process model as well, with an emphasis on strategies that are more innovative, creative, and disruptive. The scope of change stretches without knowing the boundaries of space and time. The phenomenon of disruption has brought competitive advantage to those who are adaptive and have a digital vision, who have developed into digital leaders, and who are able to direct all organizational

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resources to win the competition by translating the vision into various concrete action plans that are up-to-date and adaptive to change. [4]–[6].

Industrial Revolution 4. 0 with the development of information and communication technology, especially with the increasingly massive internet penetration in various digital-based communication channels, has caused drastic changes in governance, which has the function of serving the community. [7], [8]. The effects of this broad disruption will eventually spread to the work patterns of the bureaucracy and the government system. Disruption, which is always associated with the emergence of increasingly developing technologies, can form a pattern of "disturbances" in systems within a business or government organization. Call it a change in technology that uses analog, which is currently developing into digital technology. These changes certainly have a big impact on the life of the nation. Bureaucratic reform, which is the hope of the people in realizing a clean, accountable, and efficient government and creating an optimal and better public service, is required to adapt and keep up with current changes. [9]–[11].

Currently, the application of information technology has been deployed in many different areas within the Government system. We hear the term e-government quite often, especially in relation to bureaucratic processes or public services. However, the term e-government, which generally refers to the process of using information technology as a tool to help manage government systems more effectively, is currently not up to the challenge and has not met expectations of people. [12]–[14].

Digital governance is electronic or internet-based governance in which the implementation of public services can be carried out without having to meet face-to-face. The emergence of digitalization as a disruption certainly needs a positive response for the government to carry out bureaucratic reforms that lead to digital services. Digitalization-based services are, of course, a challenge for the bureaucracy to form breakthroughs and innovations so as to achieve the country's goals for the welfare of society.

Research related to the effect of technological disruption on competitive advantage has produced varied findings. Existing technological changes will enable public and private sector organizations to create sustainable competitive advantage. Technological changes such as artificial intelligence (AI), Internet of Things (IoT), financial technology (FinTech) and blockchain have enhanced the performance and living standards of businesses. Additionally, the transition from Industry 4. 0 to Industry 5. 0 will make the world a better place through the idea that technology should complement people rather than replace them in the workplace. [15]. Same with the research that was done [16], [17] which states that technological change is expected to increase productivity and competitive advantage, it will lead to rapid transformation of the workforce, and will evolve with high levels of uncertainty. To facilitate business survival, the public and other entities must monitor progress and pay attention to key trends in technological evolution. However, different results were found by [18], [19] which clearly states that the development of digital technology has a detrimental effect of its own when it comes to robots replacing people in the workforce. Robotics is beginning to take the place of humans in the workforce poses a significant threat to many different professions around the world.

From these findings, it is known that more research emphasizes technological change in influencing competitive advantage in the industrial sector and SMEs. Therefore, to fill this

research gap, we use the concept of technological change and include mediating variables from digital innovation and organizational adaptation as the novelty of our research.

Based on some of the novelties previously described, including: (1) incorporating the concept of technological disruption; (2) there is a mediating variable from digital innovation and organizational adaptation; (3) as well as exploring the government sector. In order to bolster this study's originality, the data analysis technique employed was Hayes' 6 model, commonly known as process analysis.

2 Related Work

The capacity of contemporary organizational procedures and advancements has increased as a result of the substantial influence that globalization has had on alterations in several areas. where the organization currently plays a major role in the development cycle life of an organization or an individual, where technology is a basic component or can be considered as something that adds value to changes and the growth of individuals. [20], [21].

Since the word information cannot be separated from language connected to technology, the phrase information technology was created to refer to the hardware and software that businesses need in order to accomplish their objectives. Due to the ability of digital technology to alter global processes, the era of digital disruption is one of innovation and significant change. Robots taking over occupations is one instance of how the advancement of digital technology is also having a detrimental effect. A serious threat to a wide range of professions worldwide is the possibility that robots will eventually replace people in labor-intensive positions. [18], [19]

Information and communication's function With today's technology, a community or individual can share knowledge with people who live in distant places, allowing them to continue sharing knowledge even in the face of challenges or difficulties. In a virtual community, there are two ways to interact: in-person and online meetings. Thus, it might be a means of engaging in social trade. [22]–[24]

Digital innovation is the process of producing or effectively adopting, assimilating, and exploiting digital technology for innovation. Digital innovation is a way for entrepreneurs to leverage digital technology and gives businesses the opportunity to expand their product and service portfolio. [25].

The use of digital technology to create new market services, procedures, or business models is known as digital innovation. [26]. A wide range of innovation results are covered by their definition, including new consumer experiences, platforms, products, and services, among other value streams. The adoption of digital technologies and procedures makes these feasible. Furthermore, it creates a framework that gives businesses a thorough understanding of digital innovation and aids in the direction and monitoring of those efforts. The key components of this framework are user experience, value proposition, digital evolution analysis, skills, and improvisation. [25].

Unexpected world is entering an era full of turmoil and unexpected events can happen under any circumstances. Today, companies no longer question their ability to keep production costs

down or compete in the local market. With leaps and bounds between countries and developments in information technology, creating business adaptation within a very broad scope of business. [27], [28]

Adaptability is key to governance in good times and bad. The economy will always change periodically, but the secret lies in a period of time. Not those who can sustain sales growth, but those who can adapt to change through a structured plan. [29], [30].

Competitive advantage, namely a series of activities that contribute to the final value or services sold to consumers. [31]. To achieve competitive advantage, companies must carry out competitive strategies appropriately. The main key to achieving and maintaining a competitive advantage is to analyze the sources of these advantages. A business must be able to study every business activity and interaction of one party with another to create competitive advantage, both in the form of low-cost advantage and low-cost advantage of differentiation. chemistry. Competitive advantage is a corporate strategy designed to create something new and different that cannot be imitated by competitors, is valued with added value, and is acceptable to the market to achieve profitable opportunities, which can be done through innovation, quality, and cost strategy. [32].

Based on the literature review and the problems encountered, the researcher explains the conceptual framework in Figure 1.

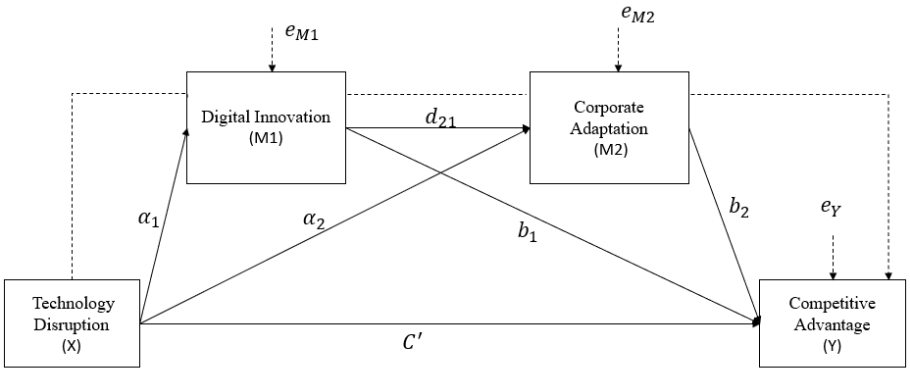

Figure 1: Conceptual Framework

Based on figure 1 of the conceptual framework, the following hypothesis is proposed:

H1: Technological breakthroughs have an impact on competitive advantage through digital innovation.

H2: Technological breakthroughs have an impact on competitive advantage, mediated by business adaptation.

H3: Technological breakthroughs influence competitive advantage through digital innovation and serial adaptation by businesses.

3 METHODS

This study takes the West Java provincial government as its unit of analysis. The subjects of this study are agencies in West Java province, specifically 27 district capitals with 38 offices, thus there are 1026 offices in West Java province. The sample taken was 27 cities and counties, divided into 6 development zones (WP), thus the sample taken was 228 agencies distributed in 6 development zones. Specifically, two mediating variables are employed in the descriptive verification research approach with model 6 using Hayes' PROCESS macro-analytic testing tool. The foundation for data collection in this study is four variables, each with multiple dimensions and indications. Cost, quality, consumers, laws, and resources are the five factors that will help explain technological change, [33] while digital innovation is presented by five dimensions , which are user experience, value proposition, digital evolution analysis, skills and improvisation [25]. The organizational adaptation dimension includes aspects of flexibility, organizational learning, innovation, collaboration, change management, structural adaptability, and customer orientation [34]–[36]. At the same time, competitive advantage is reflected in the aspects of public service efficiency, policy innovation, transparency and accountability, community participation, crisis resilience and risk management. risk as well as human resource management. Social protection and poverty reduction, economic empowerment and entrepreneurship. [32], [37]–[40].

4 EXPERIMENTS

- **Experimental Data**

Table 1 shows the data processing results. The direct impact of technological disruption on competitive advantage is 0. 3332, indicating that technological disruption has a direct effect on competitive advantage. Hypothesis 1, that technological disruption has an impact on competitive advantage through digital innovation, is supported by the estimate of 0. 0881, the SE of 0. 0251, the BootLLCI of 0. 0387, and BootULCI is 0. 1362. Since LLCI and ULCI values do not contain zero, this confirms that digital innovation plays a mediating role in the relationship between technological breakthrough and competitive advantage. Furthermore, Hypothesis 2, which states that there is an impact of technological breakthroughs on competitive advantage through firm adaptation, is supported by an estimate of 0. 0579, SE of 0. 0255, BootLLCI is 0. 0111 and BootULCI is 0. 1115. Since LLCI and ULCI values do not have zero between them, this confirms that firm adaptation plays a mediating role in the relationship between technological breakthrough and competitive advantage. Hypothesis 3, which posits that there is an impact of technological disruption on competitive advantage through digital innovation and serial adaptation by the firm, is supported by an estimated value of 0. 0571, SE of 0. 0264, BootLLCI is 0. 0116 and BootULCI is 0. 1228. Since the LLCI and ULCI values do not have zero between them, this confirms that digital innovation and business adaptability deeply interfere with the relationship between technological disruption and competitive advantage. Overall, the impact of technological disruption on competitive advantage brought about by digital innovation and business adaptation is 44. 73%. For more details, see Figure 2 for the conceptual framework and hypothesized results.

Table 1: Results for hypotheses

Models	Mediation	Point Estimates	SE	BootLLCI	BootULCI
DT → CA	ID	0,0881	0,0251	0,0387	0,1362
	CAD	0,0579	0,0255	0,0111	0,1115
	ID & CAD	0,0571	0,0264	0,0116	0,1228
	Total Indirect Effect	0,1531	0,0390		
	Direct effect on CA	0,3332	0,0557		
R2		0,4473			

Notes : DT (Distruption Technology); ID (Inovation Digital); CAD (Corporate Adaptation); CA (Competitive Advantage).

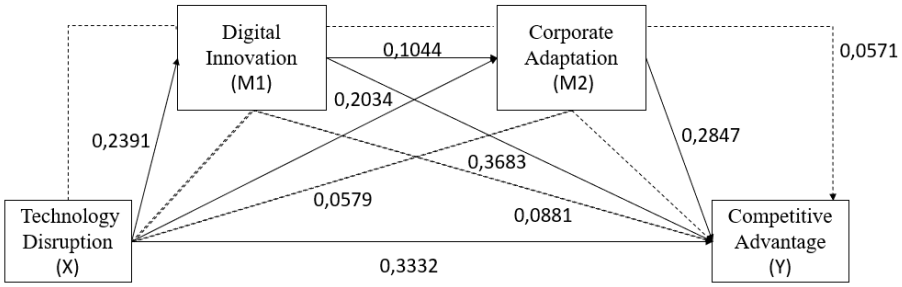

Figure 2: Conceptual framework and hypothesized results

Based on hypothesis 1, according to which the impact of technological breakthrough on competitive advantage is mediated by digital innovation, it is asserted that it has a significant impact. issued by the management board. Innovations made by government agencies must be easily used by the community so that services provided to the community based on technology can accelerate the quality of services. Therefore, it can be said that digital innovation as an intermediary variable is consistent with the concepts discussed above. These findings are consistent with research suggesting that digital innovation can mediate technological change so that firms can gain competitive advantage. [41]–[44].

Hypothesis 2 asserts that there is an impact of technological breakthroughs on competitive advantage demonstrated through firm adaptation. In this case, government agencies will have significant influence, suggesting that with adaptation, government agencies can make strategic changes to these technological changes. The ongoing technological changes must be seen immediately as a positive response due to the very rapid changes so that agencies develop the correct strategies to be able to survive and win the competition. Painting to serve the community. These results are consistent with previous research showing that adapting to change is the main gateway for agencies to respond to ongoing changes to be able to develop and enhance competitiveness in the future. great globalization. Social era 5.0. [32], [45]–[47].

Hypothesis 3 asserts that there is an impact of technological disruption on competitive advantage through digital innovation and business adaptation, which is found to have a systematically

significant impact. This indicates that for a company to gain a competitive advantage through technological change, it must benefit from contributions from digital-based innovation and stay adaptive to current changes. in. The changes that are happening today are very rapid, which is why government agencies not only wait for changes to happen but also need to read these changes quickly by always adapting to the environment. and observe changes in developing and developed countries. The greatest influence on the contribution of technological change to competitive advantage is that generated by digital innovation versus innovation driven by business adaptation. This is based on the fact that rapid technological changes have prompted leaders to try to shift policies to be more digital and prepare more digitally competent staff to can adapt to changes in the environment, including with technology.

5 CONCLUSION

This study analyzes how the influence of technology disruption on increasing competitive advantage is mediated by digital innovation and company adaptation in the Provincial Government of West Java. This research at least provides some additional insights into the knowledge as well as the empirical literature. First, the results of this study indicate that technological breakthroughs have a positive impact on competitive advantage and technological breakthroughs have a positive and significant impact on competitive advantage through technical innovation. Second, technological breakthroughs have a positive and significant impact on competitive advantage, mediated by business adaptation. Third, technological disruption has a significant and positive impact on competitive advantage, which in turn translates into digital innovation and business adaptation. Thus, the results of this study indirectly present a complete mediation model and support the competitive advantage theory.

This research has limitations, namely only using 38 agencies in 6 development areas in West Java Province, so that further research can use all cities and districts in West Java Province, namely 27 cities and districts. To determine the consistency of research results, other analytical methods such as SEM AMOS, PLS, or Stata can be used

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