

## THE IMPACT OF COVID-19 PANDEMIC ON INDONESIAN AEROSPACE (IAE) BUSINESS PROCESS

Mohamad Ikhsan Nurulloh<sup>1)</sup> Luhut Simbolon<sup>2)</sup> George Royke Deksino<sup>3)</sup>

Defense Industry Study Program, Faculty of Defense Technology, Republic of Indonesia Defense University  
E-mail: [ikhsannur1996@gmail.com](mailto:ikhsannur1996@gmail.com)

**Abstract:** The purpose of this study is to provide an overview of the impacts of the Covid-19 pandemic on the value chain in the IAe business process. The Covid-19 pandemic encourages IAe to preserve and improve its business processes. Identifying issues along the value chain could provide information about the effects of Covid-19 on the IAe business process. IAe should overview the condition of the value chain affected by the Covid-19 pandemic to evaluate its business process and utilize it as a basis for future improvements. According to the study's findings, the Covid-19 pandemic has a negative impact on the value chain activities, both primary and supporting activities, throughout the IAe business process. The organization must make continuous improvements to leverage post-pandemic opportunities by designing strategies based on the recovery plan.

**Keywords:** *Covid-19, Indonesian Aerospace, business process, value chain*

---

### 1. Introduction

PT Dirgantara Indonesia (Persero) or Indonesian Aerospace (IAe) Inc. is Indonesia's and Southeast Asia's first aircraft manufacturer. This company is an Indonesian state-owned enterprise. After a long period of deficits, IAe made a net profit of approximately \$10.6 million in 2019. Because of the Covid-19 pandemic, the global aircraft industry's situation in 2020 changed radically. The Covid-19 pandemic encourages IAe to preserve and improve its business processes. A viable business process is required to gain a competitive advantage with a high economic value.

A business process is a set of activities that lead to valuable services or goods to consumers, companies, and partners (Rainer and Cegielsk 2017). A business process can be defined as related activities that transform input and add value to produce goods or services consumers prefer (Pearlson and Saunders 2016). A good business process is required to achieve the company's goals. It can be enhanced by having an appropriate and effective value chain (Criscuolo and Timmis 2017). A decent business process will imply IAe's competitiveness in global commerce, particularly in the face of the Covid-19 pandemic.

A value chain is a collection of activities that add value to a product, such as creating, producing, marketing, delivering, and maintaining the product (Kumar and Rajeev 2016). Identifying issues along the value chain can provide information on the impact of Covid-19 on the IAe business process. A compelling value chain is essential for gaining competitive advantages and may be implemented as a basis for future improvements toward the business processes influenced by Covid-19. Enhancing the appropriate value chain will improve the business process's performance.

## **2. Research Method**

The data for this study was collected using a qualitative and descriptive method, including documentation, observation, and interviews as data collection techniques. The researcher interviewed the managers of divisions and departments of IAe in-depth. The data obtained was verified for validity using a triangulation method. Moreover, the researcher investigated the impacts of Covid-19 on the value chain in the IAe business process. Based on the findings, a conclusion and recommendations on the influence of Covid-19 on the IAe business process were constructed.

## **3. Results and Discussion**

### **3.1. Results**

#### **Indonesian Aerospace (IAe) Markets**

The aircraft industry has a small domestic market because the primary consumers are the government and several airlines. The global market is the industry's biggest market. The aircraft industry is a strategic industrial sector to boost other industrial ecosystems, significant potential growth, and global market orientation (Herranz, Estévez, and Oliva 2017).

IAe products are currently being conducted for domestic and global markets. Civil and military aircraft dominate the domestic market. Most of it comes from the ministry or a government institution in Indonesia. Global IAe customers are spread across a bunch of countries. IAe's current market focus is Asia and Africa, and it is currently expanding further into the Latin American market. IAe has delivered around 457 aircraft and helicopters, weaponry systems, aircraft components, and other services on the business side. The CN235, NC212i, and N129 are the featured products of IAe. All three types of aircraft were wholly designed and manufactured in Indonesia.

#### **The Impacts of Covid-19 Pandemic on the Indonesia Aerospace (IAe) Primary Activities**

Since the Covid-19 pandemic, the global aviation industry's condition in 2020 has changed radically. The aircraft industry has been affected by the Covid-19 pandemic, which has triggered disruptions in global supply chains and decreased productivity for most employees who work from home. The outbreak of Covid-19 decreases IAe sales and contracts with customers. Some contracts for aircraft deliveries and maintenance services have been postponed until 2022.

The existing market restrictions of IAe are budget refocusing, therefore many plans for purchasing airplanes to accommodate Covid-19. The market demand for large-sized aircraft, such as the CN235, is declining, and prospective customers prefer smaller, more affordable aircraft. The firm is struggling to acquire new contracts, rendering the company's goal difficult to achieve. To sustain the Covid-19 pandemic, the firm has migrated to a digital platform for various marketing activities such as virtual meetings, building a more attractive website for prospective customers, and being involved in a virtual exhibition.

Due to the apparent global pandemic, most countries have imposed a lockdown on the distribution of imported products essential for aircraft manufacturing, such as materials, engines, and spare parts. The global logistics impact of the Covid-19 pandemic is the delay in the shipment of airplane and helicopter products. This issue has an impact on customer satisfaction and future contracts. It affects rescheduling in the production process, but the

firm has forecast that just a few aircraft manufacturers would be disrupted. The firm digitizes the material planning process (e-planning) and monitors and manages it via digitalized logistic reporting. It is followed by increased worker skill and professionalism due to internal training and assistance initiatives. Therefore, alongside the Covid-19 pandemic, it is intended that the company's logistical capability would continue to increase.

Maintenance, Repair, and Overhaul (MRO) service have a strong position in the global market, mainly primarily to products delivered by IAe and other products collaborated with Airbus Defence and Space, Airbus Helicopters, BELL, Turkish Aerospace Industries, and Korea Aerospace Industries. Domestic demand for MRO services is modest because only the government uses MRO services from IAe, while the preponderance of commercial aeroplanes is conducted overseas. The Covid-19 pandemic condition interrupts MRO service for international customers and inhibits the supply of essential spare components for aircraft maintenance.

The covid-19 pandemic has had a significant impact on the productivity of CN235 airplanes (productivity is only 40-60 percent). It is due to several factors, including a government policy, the delayed supply of vendor goods, which restricts the manufacturing process, and the quarantine of a few employees who have been identified as being Covid-19 infected.

### **The Impacts of Covid-19 Pandemic on Indonesia Aerospace (IAe) the Support Activities**

The pandemic condition generates disruption, impacting the business environment and human resources in IAe. Employees that are infected with Covid-19 reduce company productivity. Employee activities are restricted by the government's strategy for dealing with Covid-19. Despite this, the company conducts regular recruitment processes during the pandemic.

The Covid-19 pandemic's impact on procurement includes material scarcity, extended lead times, and purchasing difficulties. The result of worldwide pandemic circumstances causes the supplier's distribution to be delayed. Raw material delays impact the company's business activities, including the production process, product delivery, and cash-in. The company can make attempts by looking for alternate materials, alternative suppliers, and manufacturing materials independently/outsourcing materials that are not main components.

Although steady, technology development keeps going during the Covid-19 pandemic. The company splits workers into those who work from home and in the office/factory for some tasks. The development of technology is stifled, for example, in ramp door modification on CN235 airplane. The firm's infrastructure is adjusting to the Covid-19 pandemic and new normal, whereby the firm must provide equipment for health protocols. It is needed to eliminate the transmission of Covid-19 among workers.

### **3.2. Discussion**

The covid-19 pandemic has significantly impacted the aircraft industry globally and locally. According to the results of this research, the Covid-19 pandemic has a negative impact on value chain activities, both primary and support activities, throughout the IAe business process. The aircraft industry cannot operate independently and must depend on other sectors to conduct their business processes appropriately.

The Covid-19 pandemic has shown a massive effect on aircraft industry. First, the company faces limitations in plant operation, a decrease in worker productivity, and supply

chain restrictions. Second, the company tries to address the problem by re-evaluating its plans, cancelling orders, adjusting the delivery schedule, and deferring delivery to the following period. Despite the decrease in productivity, the company's business contract remains intact in the next few years, giving the company a stable situation. The global aircraft industry, such as Airbus, is also being affected by the worldwide aircraft industry, which has decreased aircraft production capabilities (Liptakova, Kolesar, and Keselova 2020).

The market situation that has started to recover from the Covid-19 outbreak is a chance that must be grasped. The firm undertakes a recovery plan by seeking out new prospects who are not on the company's target list. Furthermore, the recovered market provides opportunities to improve capability in maintaining different aircraft types beyond the existing capabilities. The Covid-19 pandemic forces the company to innovate on the digital platform to provide further engaging promotional strategies for prospective clients. Due to the delayed supply chain and production process, the company is seeking alternative methods of manufacturing processes, including using health protocols and alternative raw materials. Human resources management must be prepared for their ability and capability to face the current opportunities after the pandemic. The Covid-19 pandemic implicitly encourages the company to implement new methods and improve proficiency in primary and support activities of the value chain throughout the company's business process. This condition will improve the efficiency of the company's business value chain, which will remain to be implemented and improved even after the pandemic is over. Continuous improvement must be focused on the firm, prioritizing activities that are important in increasing the value of a product or service. Continuous improvement is essential to achieving the company's competitive advantage. (Agrawal, Rezaee, and Pak 2006).

Since the company's activities have implemented a digitalization system, technological advancement throughout this pandemic becomes vital. The company's focus has shifted from aircraft manufacturer to aircraft business, so no unit conducts technology development, mainly for aircraft development. The most efficient strategy is to incorporate existing potentials, including universities, research institutes, and government, in developing technology in the company. It should be supported by an air transportation construction policy for IAe technology development to be more directed.

The company must establish strategies by the recovery plan and focus on market expansion and supply chain recovery. IAe should create business strategies based on the activities in the value chain. A continuous improvement strategy that focuses on the critical activities involved in increasing the value of a product or service is needed.

#### **4. Conclusion**

The Covid-19 pandemic has a negative impact on value chain activities throughout the IAe business process, both primary and supporting activities. The company must make a continuous improvement to achieve a competitive advantage on post-pandemic opportunities by developing strategies according to the recovery plan.

#### **Reference**

Agrawal, Surendra P., Zabihollah Rezaee, and Hong S. Pak. 2006. "Continuous Improvement: An Activity-Based Model." *Management Accounting Quarterly* 7(3):14–23.

- Criscuolo, Chiara, and Jonathan Timmis. 2017. "The Relationship Between Global Value Chains and Productivity." *International Productivity Monitor* 32(Spring 2017):61–83.
- Herranz, Rubén Elvira, Pablo García Estévez, and María Auxiliadora de Oliva. 2017. "Leveraging Financial Management Performance of the Spanish Aerospace Manufacturing Value Chain." *Journal of Business Economics and Management* 18(5):1005–1022.
- Kumar, Dilip, and P. V. Rajeev. 2016. "Value Chain: A Conceptual Framework." *International Journal of Information Engineering and Management Sciences* 7(1):74–77.
- Liptakova, D., J. Kolesar, and M. Keselova. 2020. "Challenges to The Global Aerospace Industry Due to The Pandemic Epidemy of COVID-19." Pp. 155–58 in *NTinAD 2020 - New Trends in Aviation Development 2020 - 15th International Scientific Conference, Proceedings*.
- Pearlson, Keri E., and Carol S. Saunders. 2016. *Managing and Using Information System: A Strategic Approach (6th Edition)*. Hoboken, NJ: Wiley.
- Rainer, R. Kelly, and Casey G. Cegielsk. 2017. *Introduction to Information Systems*. 3rd ed. Hoboken, NJ: John Wiley & Sons, Inc.