IIUM Journal of Case Studies in Management: Vol.15, No.1, January 2024, pp.1-6
ISSN: 2810-2327 e-ISSN: 2710-7175
Received: 23 August 2023 Reviewed: 18 September 2023 Accepted: 18 September 2023

# Innovation is a way forward: Possibility of Adopting Robotic Process Automation (RPA) as the solution at ABC Industry Sdn. Bhd?

Zaini Zainol
Department of Accounting
Kulliyyah of Economics and Management Sciences (KENMS)
International Islamic University Malaysia, Jalan Gombak, 53100 Kuala Lumpur
Email: zzaini@iium.edu.my

## ABSTRACT
The case study highlights the obstacles faced by supply chain management (SCM) cycle in the automotive industry, which are caused by various factors including human inconsistency. The industry operates in a dynamic ecosystem where customer preferences constantly change, necessitating a more reliable and less human-dependent approach to enhance market response. As the government advocates for Industry 4.0 to embrace technology and reduce dependence on intensive labor, innovative solutions like Robot Processing Automation (RPA) offer a potential remedy.

**Keywords:** Robot processing automation (RPA); automotive industry; innovation; industrial revolution 4.0 (IR 4.0), supply chain management (SCM).

---

## Introduction
The tension was palpable in the logistics operation room of ABC Industry Sdn. Bhd (not a real name)., affectionately known as the "war room" by the workers. The room was abuzz with discussion about an issue letter from their major customer, XYZ Berhad (an automotive manufacturer), which had complained about the company's failure to deliver the necessary materials on time, resulting in a four-hour halt in production. The root cause of the problem was human error, including a failure to monitor and organize orders, production, material supplies, and manpower readiness. This had been an ongoing issue for the past seven years, causing considerable frustration for Mr. Johan, the Head of the Production Department. The customer was demanding a penalty of 7 million ringgit for the company's inability to deliver as per the contract. Even though the issue would be resolved, Mr. Johan knew that it was not going to go away anytime soon.

During a walk along the assembly line, Mr. Johan observed a welding shop assembly line where twelve expensive robots from Germany were flawlessly performing their assigned tasks. He recalled the issues the company had faced with human workers, such as high turnover, inconsistent quality, frequent injuries, and difficulty finding replacements for resigned staff. Mr. Johan realized that adopting robots could solve these issues, and wondered if they could be used in his own department. With the government promoting the digitalization of operations in accordance with the Industrial Revolution (IR) 4.0 blueprint, Mr. Johan knew that he had to

innovate and develop a proposal to get approval from top management. He recognized the need to research topics related to innovation, robotics, and other relevant areas to implement a new approach to production and logistics operations. While government campaigns on innovation, particularly on IR 4.0, were prevalent in various media, he diligently conducted research on the subject.

By scouring seminar papers, articles, online news, and other resources, he gleaned crucial insights on innovation. However, the demands of his core work meant he had limited time to pursue his project, leaving him feeling overwhelmed. To progress, he delegated the preparation of the proposal, including selecting the most suitable technology, to his subordinate, Mr. Amran. In his mind, the solution involved replacing humans with robots, with robotic processing automation (RPA) being the most promising option. The proposal now hinges on whether RPA is a justifiable choice, and Mr. Amran will need to complete the detailed proposal accordingly ranging from the need for innovation to RPA application.

**Innovation in general**

In the current era, innovation has never been more critical to mankind's history. The innovation process requires a blend of knowledge and technology and is a vital component of the modern economy (Ghaffari et al., 2017). Numerous definitions of innovation exist, such as Roger's (2010), who defined it as any new idea or form of adoption, and Dosi's (1982), who saw innovation as a historical process. Schumpeter (1939) viewed innovation as different from invention and identified three characteristics: building a new plant or material, launching a new institution, and new leadership of men. Anthropologist Barnett (1953) referred to innovation as any new idea, behaviour or object that is significantly different from existing ones.

Digital innovation can be defined as a continuous process of using technological support to solve human problems. Yoo et al. (2010) described it as a system that produces a new or novel product through a compilation of digital and physical elements. Physical products are digitized to make more sense in terms of programming, addressing, communicating, and tracing (Yoo 2010).

In today's economy, innovation is crucial at every level, from international to individual, and is equally important for the government and private sector. According to UNESCO, the top five leading performers in terms of research and development (R&D) expenditure are the United States, China, Japan, Germany, and the Republic of Korea, all of which are large economies and developed countries. In 2016, the US allocated $145.2 billion for R&D, a 6.4% increase from the previous year (Budget of USA FY 2016). Japan's allocation in financing innovation amounted to 4.4 trillion Yen (US$ equivalent 36.1 billion) in 2017 (Budget of Japan 2017). The Australian government allocated $10.3 billion for research and experimental development (R&D) in the 2017-18 national budget, a 2.3% increase from the previous year (Budget of Australasia for 2017-18).

As an emerging developing economy, Malaysia has adopted Transformasi Nasional 2050 (TN50) in 2017, with the main objective of becoming a top 20 developed nation by 2050 through economic development, social advancement, and innovation. Prior to this, Vision 2020 aimed to make Malaysia a developed country, with innovation as one of its top priorities (Budget 2016, Ministry of finance Malaysia). In 2016, the Malaysian government allocated RM1.5 billion

under the Ministry of Science, Technology, and Innovation (MOSTI) and launched a range of initiatives to promote innovation, including double tax benefits for Small and Medium Enterprises with an R&D investment exceeding RM50,000, RM50 million allocated to the Public-Private Research Network, and RM100 million to the Malaysian Innovation Agency (MIA).

**The Need for Manufacturing Innovation**

Manufacturing innovation stands as a compelling pathway for Malaysia's economic advancement. With manufacturing serving as a pivotal driver of the economy, and employing a substantial labor force, the imperative of unceasing innovation looms large to ensure sustained competitiveness within the swiftly evolving economic landscape. Through diverse governmental channels, notably the Ministry of Trade and Investment, resolute efforts have been consistently channeled towards catalyzing indigenous manufacturers to imbue innovation into their operational paradigms.

Relying heavily on foreign labor as a cost-effective workforce proves unsustainable over prolonged periods due to a medley of challenges. Thus, pivoting towards innovation and substantial investment in high-end technologies, as envisioned by the IR4.0 blueprint, emerges as the logical trajectory. This direction is particularly pertinent for tasks characterized by iterative processes necessitating unwavering adherence to stringent benchmarks of quality, timeliness, and expertise. In this context, the adoption of Robotic Process Automation (RPA) emerges as a viable and propitious solution.

The crucible of manufacturing evolution entails not only technological ingenuity but also transformation in work processes and the behavioral patterns of organizations. These facets collectively compose the constituents of Manufacturing Process Innovation (MPI) as studied by Yamamoto and Bellgran (2013). This holistic framework encompasses not only technological metamorphosis but also product and process innovation (Knight, 1967), alongside administrative and technical advancement (Evan, 1966).

**The Case is known as ABC Industry Sdn. Bhd.**

The case refers to a top-level supplier of a Malaysian car manufacturer. Being a 1st tier vendor, the case holds the responsibility of ensuring timely supply of components from its sub 2nd tier vendors (approximately 50 vendors). The components are welded further for final assembly at the main production line of the primary customer.

**The current ordering system**

Following the post-COVID 19 period, the economy has demonstrated a positive growth with a significant increase in vehicle orders in Malaysia, rising from an average of 500,000 to over 600,000. Due to its prominent reputation as a primary vendor for metal components, the case has been involved in the automotive industry since its establishment. The Logistic Department manages the transportation of components to and from the main customer (refer to XYZ Berhad – an Automotive Manufacturer).

As a first-tier vendor for metal components, the case is accountable for overseeing more than 50 sub-vendors that supply loose metal components to its production line. These loose components

are processed further and welded together by an advanced robotic welding shop to manufacture larger components. However, complications arise when human actions still play a significant role in recording and managing the flow of components, despite the use of the current enterprise resource planning (ERP) of Baan system. Even though the workers are trained beforehand, errors still occur when handling over 1,000 metal components on a daily basis. These components are named according to a numeric code, which makes them difficult to identify.

Additionally, the various models produced by the main customer lead to drastic changes in the required components. The inputting of the wrong code leads to discrepancies in the actual number of components manufactured, which can severely impact the final production line at the main customer's facility. As per the contract, any disruption to the main customer's production line due to component shortages can result in penalties amounting to the value of the final products supposed to be produced, which can amount to millions of ringgit.

**The way forward**

Mr. Johan, who is in charge of the Logistics Department, is considering the implementation of RPA to address the persistent issues. In general, robotics refers to the utilization of sophisticated machines that emulate human functions to carry out repetitive tasks. This technology has been adopted by numerous organizations worldwide. Recently, he attended a knowledge-sharing session on RPA where a company shared its experience and revealed that adopting RPA had eliminated human errors. This success story has motivated Mr. JOHAN to propose RPA for his department. Is his proposal justified?

**Discussion Questions**

1. Enumerate a few difficulties associated with overseeing the supply chain in a highly unpredictable sector like the automotive industry.
2. What is your view on the necessity of continuous innovation, as encouraged by the government through grants, seminars, conferences, etc.?
3. Is RPA a component of digital transformation? Provide an explanation.
4. What are some of the benefits that companies worldwide have reported after adopting RPA? Provide examples.
5. What are some of the challenges that organizations face when implementing RPA?
6. When choosing between a private network or cloud-based storage for RPA data, what are the advantages and disadvantages of each option? Discuss.
7. What changes need to be made to an organization's IT ecosystem to accommodate RPA? Provide examples.
8. What are the advantages and disadvantages of using RPA versus human labor, and how might this affect employment opportunities? Discuss.

**References**


Barnett, H. G. (1953). *Innovation: the basis of cultural change*.

Ministry of Finance, Malaysia. (2016). *Budget 2016.* Ministry of Finance, Malaysia.

Dosi, G. (1982). Technological paradigms and technological trajectories: A suggested interpretation of the determinants and directions of technical change. *Research Policy*, 11(3), 147–162.

Evan, W. M. (1966). Organizational Lag. *Human Organization*, 25, 51.

Ghaffari, S., Arab, A., Nafari, J., & Manteghi, M. (2017). Investigation and evaluation of key success factors in technological innovation development based on BWM. *Decision Science Letters*, 6(3), 295-306.

Knight, K. E. (1967). A descriptive model of the intra-firm innovation process. *Journal of Business*, 40, 478-496.

Malaysian Administrative Modernization and Management Planning Unit. (n.d.). *ICT Strategic Plan*. Retrieved from http://www.mampu.gov.my/en/ict-strategic-plan

Rogers, E. M. (2010). Diffusion of innovations. Simon and Schuster.

Schumpeter, J. A. (1939). *Business cycles (Vol. 1, pp. 161-174)*. New York: McGraw-Hill.

Yamamoto, Y., & Bellgran, M. (2013). Four types of manufacturing process innovation and their managerial concerns. *Procedia CIRP*, 7, 479-484.

Yoo, Y., Henfridsson, O., & Lyytinen, K. (2010). Research commentary—the new organizing logic of digital innovation: An agenda for information systems research. *Information Systems Research*, 21(4), 724-735.