

Service Quality Improvement And Innovation Of A Local Authority And Enforcement Organization In Malaysia. A Case Study Of Tyt Authority

Abdul Rahman S Senathirajah¹, Wan Nur Syahidah Ghazali², Veera Pandiyan Kaliani Sundram³, Irwan Ibrahim⁴, Yoshiki Nakamura⁵, Norina Ahmad Jamil^{6*}

¹Lecturer, Department of Business and Communications, Faculty of Business and Communications, INTI International University, Malaysia. E-mail : arahman.senathirajah@newinti.edu.my ORCID : 0000-0001-6044-9051

²Officer, TYT Authority & Enforcement, MALAYSIA, Email: syahidahghazali2023@gmail.com ORCID: 0009-0006-5642-7144

³Lecturer, Department of Technology and Supply Chain Management Studies, Faculty of Business and Management, UiTM Puncak Alam, Selangor, Malaysia. E-mail: veera692@uitm.edu.my, ORCID: 0000-0002-2996-6381

⁴Lecturer, Department Corporate Communications, Malaysia Institute of Transport, Universiti Teknologi MARA, MALAYSIA, Department of Technology and Supply Chain Management Studies, Faculty of Business and Management, UiTM Puncak Alam, Selangor, Malaysia. E-mail: irwan623@uitm.edu.my, ORCID : 0000-0002-0887-2394

⁵Lecturer, Department of Business Administration, Aoyama Gakuin University, Tokyo, JAPAN. E-mail : nakamura@busi.aoyama.ac.jp ORCID : 0000-0003-0701-183X

⁶Lecturer. Department of Technology and Supply Chain Management Studies, Faculty of Business and Management, UiTM Puncak Alam, Selangor, Malaysia. E-mail: norina0048@uitm.edu.my Orcid: <https://orcid.org/0000-0002-3005-9025>

*Corresponding Author: Norina Ahmad Jamil

*Norina0048@Uitm.Edu.My & veera692@uitm.edu.my

Citation: Norina Ahmad Jamil, et al, (2024), Service Quality Improvement And Innovation Of A Local Authority And Enforcement Organization In Malaysia. A Case Study Of Tyt Authority, *Educational Administration: Theory and Practice*, 30(5), 2865-2871
Doi: 10.53555/kuey.v30i5.3362

ARTICLE INFO

ABSTRACT

Aim to prove the flexibility of lean six sigma using the DMAIC method in reducing the amount of time spent on findings, and reporting in a service firm. Six Sigma is a data-driven, disciplined technique and methodology for reducing defects in any phase aiming for six standard deviations between the mean and the closest design limit, modelled within the DMAIC method (Define, Measure, Analyse, Improve and Control. DMAIC is a method for improving, innovation, optimizing, and securing business processes and designs. A major component of Six Sigma tools is the DMAIC improvement phase. Research focuses on identifying the time spent on the service process of value added and non-value added. The secondary data was then collected by asking/interviewing the auditor. Using the Lean Six Sigma DMAIC approach, the information was analysed for service process quality and service time reduction. Upon the implementation of improvement solutions, the time can be reduced with the current process from the improvement stages through lean six sigma approaches.

The company was able to use its lean six sigma implementation skills to make significant improvements, saving time, and money, and improving quality. The study assesses previous research and makes recommendations for future studies aimed at sustainable growth in the industries.

Keywords- Improving and innovating, Lean Principles, LSS, DMAIC, Lean Six Sigma in Corporate Sector, Service Process Improvement, Sustainable Growth.

INTRODUCTION

The Coronavirus Disease of 2019 (COVID-19) has spread rapidly across the world, causing health, economic, and social crisis. The pandemic also caused severe economic and financial effects all around the (Goodell, 2020). This is unexpected, given that private firms dominate and play a critical role in the world economy in terms of income, business growth, and investment in innovation and development (Kobe, 2012). However, because our country is currently being plagued by the pandemic, Covid-19, the company's service performance is also impacted. Because our country is currently under a Movement Control Order (MCO), most sectors have

temporarily ceased operations due to strict lockdown, except for activities classified as top priorities and essential services, which are permitted to operate throughout the MCO period but under strict Standards Operating Procedures (SOP). My workplace is no exception, as most divisions are closed for business. As a result of this circumstance, we can see that the company's performance of service delivery has become ineffective, which has restricted and limited the company's ability to give walk-in service to the customer. Employees are unable to meet the customer's needs because the majority of them are now working from home (WFH) and have insufficient resources to meet all of the requests. The company was in a disadvantageous position as a result of this unpredictability, which resulted in poor service performance.

1.0 PROBLEM STATEMENT

Quality is typically described as a measure of customer satisfaction, but different definitions have been used because, in the supply chain, quick delivery is equally important in achieving the required level of customer satisfaction (Almansur, *et al.*, 2017 & Ibrahim et al, 2019, 2022). The major problem in TYT District one of the states in Malaysia, is service performance. Low service performance is when an organization fails to meet the expectations of its customers regarding the service given, this is referred to as poor performance. A company that provides bad customer service, particularly in customer service, may pose a threat and cause harm to the company. It may have a detrimental impact on the company's image and reputation. This can also lead to low consumer satisfaction with the services provided, and dissatisfied customers will spread the word (Cabrera-Moya, 2023 & Sundram et al, 2019). When it comes to service, each service has its own set of quality standards that must be met and maintained. TYT Authority, as a local authority company that provides important services to general public and society, should ensure that its services are of the highest quality. However, recent studies have revealed that there are a few issues that occur in the service of the local authority in Malaysia. This Local Authorities under Local Government are the final tier of the government administration in Malaysia (Tun Mohd Izlizam, 2019 & Amer et al, 2020). To meet the expectations and demands of the local communities, Malaysian local governments must be more responsive, efficient, and effective in terms of service and delivery, in keeping with their responsibilities to serve society.

2.0 LITERATURE REVIEW

Six Sigma is a procedure or strategy that enables enterprises to significantly improve their core operations by designing and controlling daily business activities, as well as minimizing waste and resource consumption, while meeting and satisfying the client's needs (Al-tarawih, 2019). According to (Almansur, *et al.*, 2017 & Alajmi et al, 2022), Lean Six- sigma is a method of improving quality, reducing variation, and eliminating waste within an organization that is a hybrid of two improvement programmers.

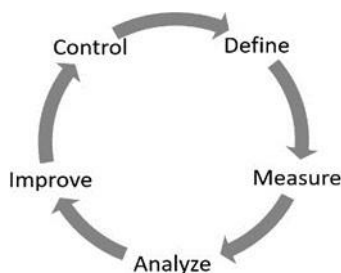


Figure 1 Six Sigma (DMAIC)

To avoid quality issues, Six Sigma focuses on the number of opportunities within a process that may result in defects rather than the number of defects themselves. In terms of methodology, this Six Sigma viewpoint recognizes the underlying and systematic DMAIC approach. The DMAIC method is intended to begin with problem definition and end with long- term improvement solutions. The DMAIC (Figure 1) above usually refers to:

STEPS	DESCRIPTION
Define	Identifying the problem and project goals.
Measure	The process of measuring and identifying waste that occurs at each stage of the manufacturing process was carried out.
Analyze	Analyze the collected data and information to determine the root cause.
Improve	By modifying or redesigning, existing processes and procedures.
Control	Maintaining the improved processes to improve them in the future.

The primary goal of the define phase is to ensure that the actions that should be taken to solve the problems are aligned with the organization's priorities, that there is management support, and that the necessary

resources are available. The measure phase is concerned with gathering information about the processes that will be improved. It consists of information required to better understand all of the processes in the organization, customers' expectations, supplier specifications, and the identification of potential problem areas. During the analysis phase, various tools and methods are used to identify root causes, assess risk, and analyze data. Several samples should be collected to confirm the analysis, and potential problems must be proven to be real problems. Improve phase's goal is to gather the necessary information to create and develop an action plan to enhance the organization's functioning, financial aspects, and customer relationship problems. The control stage verifies the quality of the improved process to determine whether the changes implemented during the improvement stage were sufficient and continuous (Smętkowska & Mrugalska, 2018 & Johan et al, 2019).

3.0 INTRODUCTION TO THE SERVICE PROCESS

The TYT Authority has a different subunit that runs a different kind of process. Process flow can provide a visual overview of all the tasks and relationships involved in the process. As you can see, most of the processes involve a face-to-face service between the employee and customer at the counter service. This is because certain activities, such as the application of 'Carian Rasmi / Carian Persendirian', must be carried out physically. The majority of the public sector now provides services to walk-in customers. Each activity has its cycle time efficiency of a process, which comprises processing and waiting time. When accepting a walk-in customer's demand at the counter, employees must identify the issues that must be passed on to the responsible unit of the department to proceed with the demand. The cycle time of the procedure between customers and employees is expected to be 10 - 20 minutes per customer. According to the diagram, the procedure is simple because it is a standardized process used by the company. Employees can devise various methods of carrying it out. A process flowchart ensures that everyone is on the same page about how the process should be carried out.

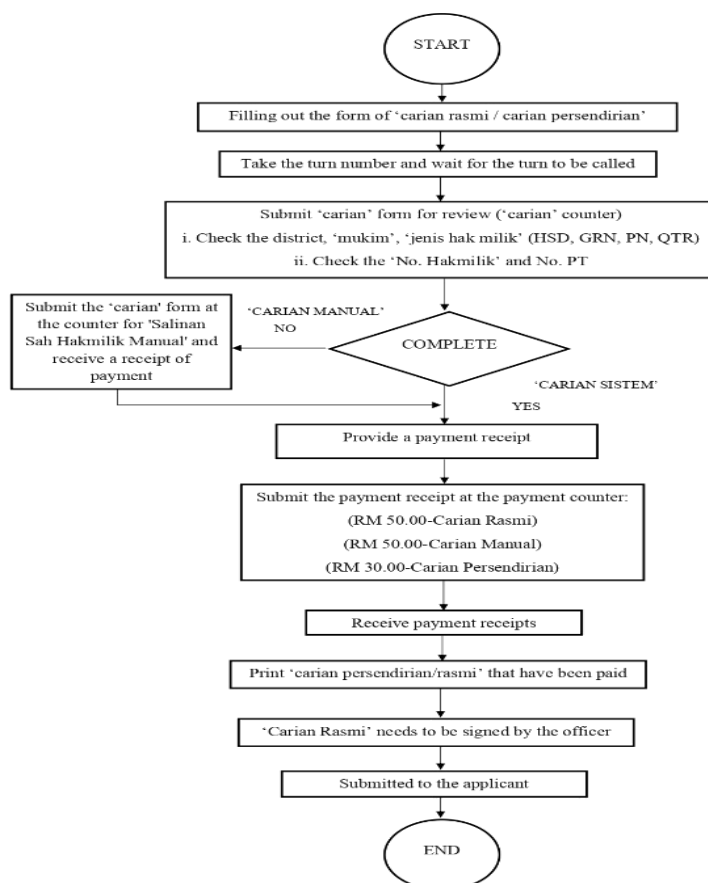


Figure 2 Service Workflow Process of 'Carian Rasmi / Carian Persendirian'

4.0 TOOLS AND TECHNIQUES

Companies have incorporated various tools into the Six Sigma technique over the years to make it more effective and to close any gaps that may have arisen during its implementation (Thakore et al., 2014 & Purnamawati et al, 2022). Flow charts check sheets, Pareto diagrams, cause and effect diagrams, histograms, scatter diagrams,

and control charts are seven basic methods to help with the quality improvement process. A flowchart is a diagram that illustrates a process or procedure by using symbols to describe the sequence of steps or phases involved. The studies showed that the defects using Pareto analysis could discover major and minor contributors to those defects. Then, using cause-and-effect diagrams, determine the root cause of each flaw. According to the study (Miski, 2014 & Rahmat et al, 2022), the cause-and-effect diagram's purpose is to summarize the major causes of each issue and identify potential root causes in a systematic and orderly manner.

4.1 Define

The project's focus will be on the company's service level. The interaction between staff and customers is a major element that will be considered. It will also concentrate on existing services and initiatives undertaken to satisfy customers. For example, what are the processes for taking a customer's order, the delivery process, and customer care services? The process begins when a consumer fills out the form and ends when the customer submits the form to the applicant as shown in Figure 2 above.

The SIPOC technique is used to get a high-level overview of a process, including who owns it, how input is acquired, whom the process serves, and how it produces value. SIPOC is an acronym that stands for Supplier, Input, Process, Output, and Customer.

Table 1 SIPOC

Suppliers	Inputs	Process	Outputs	Customers
Service supplier	Documentation /evidence	Service delivery with the interaction between the service provider and service- receiver	Officers' findings and recommendation Report summary	Customers
Administration support	Papers Rules, procedures, standard Customers' needs and xpectations			
	Checklist Pre-meeting with clients			

4.2 Measure

Quality Measures in Service

Service quality is a key dimension of public service performance. Many factors affect the quality of service such as customers, employees, organizations and so on. This is because public service is not for profit but serves to provide high-quality services to the people and ensure that they are satisfied with the services provided.

TQM is a customer-oriented quality management process, running continuously and involving all aspects of the organization (Zailani et al, 2023). This process aims to bring about a comprehensive change toward producing an excellent organization. Thus, TQM can be seen as a process of cultural transformation, through which existing cultural characteristics will be modified, changed, or reinforced with better new features. Those characteristics include attitudes and values, systems and procedures, practices operations, organizational structure, and so on. This quality is not only something that can be seen in the product or service but also more comprehensively covers any operations and affairs handled by an organization. At this level, the quality will be showcased through administrative efficiency, staff abilities, smoothness of operating systems, and so on.

4.3 Analysis

The cause-and-effect diagram (fishbone diagram) is used during the analysis process. It is used to identify the core cause of issues with poor service performance. To solve problems, provided factors such as machine, manpower, environment, and method are used.

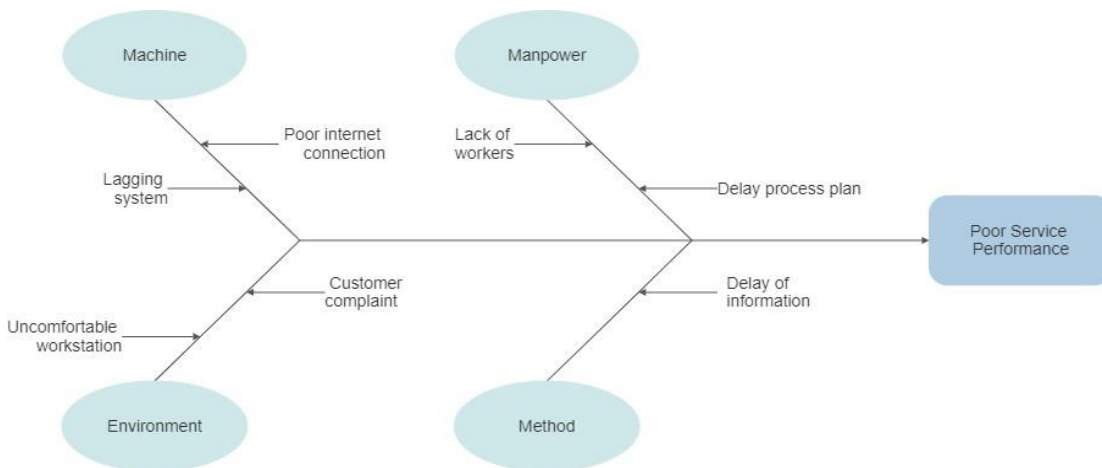


Figure 3 Root cause analysis using Fishbone diagram

It was found that the root cause analysis shown in Figure 3 above indicates a few significant problems that contribute to poor service performance. After looking at all the figures, the most frequent problem that happens

during the service process is when the lagging system. An outdated system is the next most common cause of poor service performance. In the company, there are out-of-date systems, particularly in the Information System (IT). The outdated system raises the risk for the company because it can cause operations and processes to become non-functional, resulting in an inability to capitalize on new opportunities, slowing growth, and decreasing productivity, which can lead to incompetent quality and poor service performance. From the findings of a study, digital transformation is specifically looking to assist businesses in digitally transforming, creating new value for customers, and thus improving their business outcomes (Martina, 2019).

The second is the delay of information. The employees have to wait for documents or information from sources such as customers and superiors to complete a task before a process begins. This is because the manual record-keeping system is one in which records are kept by hand rather than using a computer system. When staff is not in the office, traditional document filing has limited accessibility.

Lastly, the firm currently lacks workers and delays the process plan to do its job. Since Covid-19, most organizations have encouraged employees to Work from Home (WFH), while other companies are still running at normal daily but with a reduced number of employees and a tight timetable by rotating staff. It will be more difficult for employees to obtain the necessary materials or data in greater detail. As a result, it may reduce productivity and cause in delay the process plan.

4.4 Improve

This section focuses on the most common causes of consumer complaints. The table below highlights the potential solutions for each issue.

Cause of complaints	Improvements
Customers' Communication Is Poor	- Teach employees how to handle client calls, orders, and inquiries more quickly. - After each customer call, introduce service feedback from the customer. Establish "excellence in service awards".
Low service process	-Make a new strategic plan for their services. -Improving the more integrated company's financial system. - Reinforce the process and system of work.
Low-skilled labor force	Empowerment of human resources. Retain the skilled employees in the company. Hiring a skilled workforce.

Customers' Communication Is Poor

- The implementation of a new communication system between departments will make the procedure of transferring calls from one representative to another easier. Customers will have less time to wait as a result of this. It is also critical to train personnel on how to answer customers' phone calls, process inquiries, deal with unsatisfied consumers, and so on. Awards presented to the best employees will foster a healthy competitive climate within the company, ensuring the highest performance from every employee and, as a result, increasing customer satisfaction.

Low service process

- The organization must develop a new strategic plan for its services while maintaining high Total Quality Management (TQM). The company can increase its governance, finance, and information technology to create a conducive, integrated, and dynamic organization. Besides, the company also makes improving the more integrated company financial system such as Develop E-Procurement System, E-Billing, Innovation and Recycle Program, and Saving Campaign to reduce expenses cost. Reinforce the work process and system, which should give a pleasant working environment to increase the efficiency of the work process.

Low-skilled labor force

- A firm must have a skilled workforce to be competitive. Human resource empowerment is the appraisal of human resource demands such as training programs, skill development, and personnel selection. However, it is critical to keep skilled employees in the organization so that the company may prosper in a challenging and continuously changing industry. It begins with top management as employers establishing a good relationship with their staff. Furthermore, hiring a skilled worker can easily boost the values of productivity, efficiency, quality, loyalty, and a harmonious workplace. Similarly, the organization should provide further training to staff to increase their skills and knowledge.

4.5 Control

Based on the process flow in Diagram 1, the company can take a flexible approach to create new technologies

as new alternatives to make the process smooth and have fewer mistakes. Self-service kiosks are one type of technology that can be considered. Self-service kiosks have become a common and worthwhile investment for most organizations over time. Fast food restaurants, such as McDonald's, already use these kiosks for customers to order rather than ordering at the counter. Customers may not have to wait in huge lines, which makes the process more convenient and saves time. Self-service kiosks are simply fixed-point screen device that displays information or facilitates action and comes in a variety of shapes and sizes (Lumsden, 2019). Customers can also use this self-service kiosk rather than stand in line at the counter to make payments, check information, search data, print essential documents, or perform any other easy activity. This provides visitors with better comfort in terms of reduced wait times, while also reducing stress for any remaining counter staff. More individuals can be served, resulting in increased efficiency and profitability. Additionally, it can enhance the customer experience by offering them control over information retrieval and a variety of features and functions.

Depending on the organization and our present pandemic condition, self-service kiosks may be worth the investment. Also, governments encourage most sectors to have employees work from home (WFH), rotate shifts, and reduce interaction with people. Finally, there are numerous advantages to implementing self-service kiosks in the workplace. The advantages of self-service kiosks enable the organization to provide a more efficient and effective approach for customers and employees. The implementation of new technology in an organization gives a range of benefits, including a long-term competitive advantage, cheaper production and labor costs, and increased productivity (Adam Wong, 2018).

5.0 CONCLUSION

In conclusion, the goal of the study was to identify the issue that had happened in the organization, with the study focusing on operations management as it related to the company's service quality. The investigation was carried out using student observations and secondary data that had been gathered. The study's findings indicate that there are a few factors that have been influencing the company's services to the customer.

The implementation of DMAIC methodologies has given the company a new opportunity for quality improvement, not just in terms of the service process, but also in terms of the tools' potential application in other areas. Six Sigma should currently be considered as a company strategy to increase profitability by removing waste, lowering expenses, and improving efficiency and effectiveness to meet consumer expectations (Kowalik & Klimecka- Tatar, 2018). The ever-changing environment and increasing customer demands need ongoing development. Moreover, the study revealed that management must be effective, and staff at all levels must interact and engage (Jiang, et. al., 2023 & Mishra & Sharma, 2014). This study also reveals how Six Sigma can be applied to a low-volume service industry.

On the other hand, this industrial training program taught final-year students a crucial lesson by providing them with additional knowledge, meaningful experiences, and important skills that will help them survive in the real world. It also helped a great deal for students to understand more about the organization's operation management and can implement the knowledge that they gained into practice, especially for Operations Management students. Last but not least, trainees had the opportunity to learn more about the company's management and administration.

6.0 REFERENCES

1. Adam Wong, P. N. (2018). Factors That Affect The Acceptance Of New Technologies In The Workplace: A Cross Case Analysis Between Two Universities. *Journal of Education and Development using Information and Communication Technology*, 209-222.
2. Almansur, A. M., Sukardi, S., & Machfud, M. (2017). Improving the performance of the biscuit production process through lean six-sigma at PT XYZ. *Indonesian Journal of Business and Entrepreneurship (IJBE)*, 3(2), 77-77.
3. Al-tarawneh, R. M. (2019). The Effect of Using the Six Sigma Approach in Improving the Quality of Health Services in the Jordanian Ministry of Health. *International Business Research*, 12(12), 1-11.
4. Cabrera-Moya, D. R. R., Vasudevan, H., & Prieto-Rodriguez, G. (2023). KASH training models: increasing levels of commitment and organizational effectiveness. *Business: Theory and Practice*, 24(1), 239–249. <https://doi.org/10.3846 /btp.2023.17480>
5. Erbiyik, H., & Saru, M. (2015). Six Sigma Implementations in Supply Chain: An Application for an Automotive Subsidiary Industry in Bursa in Turkey. *Procedia- Social and Behavioral Sciences*, 195, 2556-2565.
6. Jaffal, M. S., Korkmaz, I. H., & Özceylan, E. (2017). Critical success factors for Six Sigma implementation in Gaziantep carpet companies. *Industrial Eng. Let*, 7(2), 83-92.
7. Jiang, Yuling, Abdullah, Siti Intan Nurdiana Wong, Lim, Bernard Heng Jit, Wang Ruiyun, Phuah, Kit Teng. (2023). The Role Of Marketing Stimuli And Attitude In Determining Post-COVID Buying Decisions Toward Organic Food Products: Evidence From Retail Consumers In Beijing, China . *Frontiers in Sustainable Food Systems*, 7 2023

8. <https://www.frontiersin.org/articles/10.3389/fsufs.2023.1051696>. DOI=10.3389/fsufs.2023.1051696
9. Kobe, K. (2012). Washington, DC: Economic Consulting Services, LLC. *Small Business GDP: Update 2002–2010*.
10. Kowalik, K. D., & Klimecka-Tatar, D. (2018). The process approach to service quality management. *Production Engineering Archives*, 18 31-34.
11. Lumsden, P. (2019, April). *The Rise and Rise of Self-Service Kiosks*. Ergonomic Solution: <https://www.ergonomic.solutions/blog/2019/04/11/the-rise-and-rise-of-self-service-kiosks/>
12. Martina, K. I. (2019). Digital Transformation Playground Operationalization - How to Select Appropriate Technologies for Business Improvement Initiatives. 61-71.
13. Miski, A. (2014). *Improving Customers Service at IKEA Using Six*. International Journal of Scientific & Engineering Research, Volume 5, Issue 1, January-2014:
14. Karout, R., & Awasthi, A. (2017). Improving software quality using Six Sigma DMAIC- based approach: a case study. *Business Process Management Journal*.
15. Octabriyantiningtyas, D., Suryani, E., & Jatmiko, A. R. (2019). Modeling customer satisfaction with the service quality of E-money in increasing profit of Pt. Telekomunikasi Indonesia. *Procedia Computer Science*, 161, 943-950.
16. Mishra, R. K., & Sharma, R. K. (2014). A hybrid framework based on SIPOC and Six Sigma. *International Journal of Quality & Reliability Management*, 31(5) 522- 546.
17. Smełkowska, M., & Mrugalska, B. (2018). Using Six Sigma DMAIC to improve the quality of the production process: a case study. *Procedia-Social and Behavioral Sciences*, 238, 590-596
18. Thakore, R., Dave, R., Parsana, T., & Solanki, A. (2014). six sigma implementation practice in manufacturing industries. *Int. Journal of Engineering Research and Applications www.ijera.com ISSN, 2248-9622, Vol.4, Issue 11(Version - 4)*.
19. Tun Mohd Izlizam, Z. A. (2019). A Systematic Review of the Issues Affecting Local Government. *Journal of Advanced Research in Business*, 33-40.
20. Alajmi, S., Halin, I.A., Mustapha, F., Supeni, E.E., Ibrahim, I. (2022)
21. Simulation of Low Voltage DC-DC Booster Circuit with Improved Switch for Amplification of Biophotovoltaic Cell Output Voltage. *Journal of Advanced Research in Fluid Mechanics and Thermal Sciences* 2022, 90(2), pp. 124–134
22. Ibrahim, I., Rahmat, A.K., Halin, I.A., Ratna Masrom, N. (2020)
23. A Conceptual Framework of Halal Green Supply Chain Management (HGSCM). 2020 11th IEEE Control and System Graduate Research Colloquium, ICSGRC 2020 - Proceedings, 2020, pp. 361–365, 9232483
24. Ibrahim, I., Ismail, A.F.-M.F., Amer, A., Jani, S.H.M. (2019)
25. The effectiveness of mass marketing communication as a digital logistics tools in promoting a new online public service platform. *International Journal of Supply Chain Management*, 2019, 8(4), pp. 177–185
26. Sundram, V.P.K., Ibrahim, I., Esa, M.M., Azly, N.N.M. (2019)
27. The issues in order picking and packaging in a leading pharmaceutical company in Malaysia. *International Journal of Supply Chain Management*, 2019, 8(6), pp. 1055–1061
28. Amer, A., Md.Jani, S.H., Ibrahim, I., Aziz, N.A.A. (2019)
29. Brand preferences in Muslimah fashion industries: An insight of framework development and research implications. *Humanities and Social Sciences Reviews*, 2019, 7(1), pp. 209–214
30. Amer, A., Mat, M.K., Majid, M.A.A., Jani, S.H.M., Ibrahim, I. (2019)
31. Brand love co-creation in digitalized supply chain management: A study on framework development and research implications. *International Journal of Supply Chain Management*, 2019, 8(2), pp. 983–992
32. Johan, Z.J., Ibrahim, I., Jamil, N.A., Tarli, S.M.M., Amer, A. (2019)
33. Lean production determinant factors in Malaysia paper manufacturer industry. *International Journal of Supply Chain Management*, 2019, 8(2), pp. 977–982
34. Purnamawati, I. G. A., Oudah, A. Y., Othman, H. B., Ibrahim, I. B., Heri Iswanto, A., Komariah, A., Mustafa, Y. F. M. (2022).
35. A Comprehensive Optimization Approach Based on Cloud Computing for Logistic Sharing System Planning. *Industrial Engineering & Management Systems*. Korean Institute of Industrial Engineers. <https://doi.org/10.7232/iems.2022.21.3.468>
36. Rahmat, A. K., Ibrahim, I., S Senathirajah, A. R., & Mokthar, M. Z. (2023). The Relationship Between Green Management Commitment and Effectiveness of Occupational Safety and Health Committee. *International Journal of Professional Business Review*, 8(4), e0933. <https://doi.org/10.26668/businessreview/2023.v8i4.933>
37. Rahmat, A. K., Ibrahim, I., S Senathirajah, A. R., & Zainudin, A. D. (2023). The Determinant Factors of Green Office Layout Towards Employee Workplace Productivity. *International Journal of Professional Business Review*, 8(4), e0932. <https://doi.org/10.26668/businessreview/2023.v8i4.932>
38. Zailani, Q. N. N., Sundram, V. P. K., Ibrahim, I., & Senathirajah, A. R. S. (2023). Plan- do-Check-Act Cycle: a Method to Improve Customer Satisfaction at a Municipal Council in Malaysia. *International Journal of Professional Business Review*, 8(4), e0931. <https://doi.org/10.26668/businessreview/2023.v8i4.931>