

DEVELOPING VENDOR IMPROVEMENT PROGRAM IN MALAYSIA AUTOMOTIVE COMPANY

SHUKRIAH ABDULLAH^{1*}, RUSALBIAH CHE MAMAT^{1,2}, BABA MD
DEROS¹

Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, Malaysia¹

Faculty of Business & Management, Universiti Teknologi MARA, Malaysia²

*Corresponding Author: shuk.kye@gmail.com,

Abstract

Improvement Program seek to do evaluation well, request to become sufficiently versed in evaluation or to integrate on improvement perspective in all phase of performance, from needs assessment to implementation and evaluation itself. The purpose of this program in the automotive company is to assist vendor as global manufacturer in preparation towards ASEAN Free Trade Agreement (AFTA) 2015. This development vendor improvement program emphasize on the downtime reduction to below 200 minutes per month with the ultimate end of improving not only program or solutions but also the organizations and customer. A practical approach either planned or unplanned by the automotive company require policies and procedures that address the same consideration on the downtime identification. 20 top bottom rank vendor were determined based on the downtime performance, followed by classification into different group based on severity. To execute the vendor improvement program three among 20 top bottom rank vendors were selected due to willingness to participate and ease of data access in the program. Selected vendors have high ranking in terms of downtime. The case study method involved an interview and plant observation. The used of secondary data from the automotive company, and previous researcher are also utilised. This improvement program assists the automobile manufacturer to improve its supplier's performance. The vendor improvement program is implemented through a whole supplier operation assessment.

Keywords: Vendor Improvement Program (VIP), Improvement Action Plan (IAP), Selection Index Formula, Automotive, Ranking.

1. Introduction

The automotive company has created a win-win relationship with their vendor. Since the company emphasized towards quality with their tagline “Customer

First, Quality First”, they want the entire vendor to ensure that the quality of every vendor must be improved from the time to time. Four main elements that were highlighted in this program are 4 S, Quality Gate (QG), Command Centre and “My Problem”. Besides that, there are sub elements that need to be monitoring which is Customer Outflow, Yokoten Activity, and Management participation. The top management had stressed downtime (DT) as the measurement in monitoring the vendors’ performance. The term downtime is used to refer to periods when a system is unavailable [1-5]. By aligning the company goal, improving evaluation processes and communicating performance with supplier and customer, the program can greatly improve their operation efficiency. The objective is to determine the 20 top bottom rank vendors based on yearly performance, and to develop VIP and identify the focus area of improvement for non-performance vendors. Vendor compliance exists to backing the retail merchant, the perfect order model as well as the ‘right product, right quantity and right time’ concept. Improving vendor performance reduce or eliminates waste in the retail supply chain and could be reflected the lean or six sigma of the retail supply chain. Interest in close customer-supplier relationships or relational governance has increased since the late 1980s due to the professed linkage between closer relationships and improved customer performance [6-11].

2. Literature Background

Vendor development and improvement literature consist of mostly in depth case study and much of the vendor development literature focuses on the automotive industry [12]. In 2008 researcher found that the Malaysia automotive company played a significant role in developing and extending comprehensive support to its supplier mostly in the form of appointment, selection and development [13]. Later in 2010, a case study in Malaysia automotive company, show that vendor development has improved the supply chain management system especially in the area of quality and delivery service [14]. Going as far back as the 1980s, retailers have been creating ‘instruction manuals’ to assist vendors understand purchase order terms and conditions, as well as value add requirement. These instruction manual have mature over the years in a variety of shape and size. Malaysia have likely introduce Automotive Supplier Excellence Program (ASEP) in 2014, as a step to elevate the local automotive suppliers to world class levels of competitiveness and sustainability due to various study show hows important the development of the vendor improvement program. The beauty of vendor improvement program is that well-structure program can be raise and built, with each step providing a value. Literature review appeared to be in agreement on issues that concern this study for example the vendor issues involved repeated late deliveries and poor quality, while internal poor delivery to customers result from the vendor issues.

3. The Theoretical Method

3.1 Vendor Classification

First step is to Classified the vendor and followed by implementation process. For this study, Downtime (DT) is the measurement that being used to measure the

vendors' performance, since DT is close related with the cost. DT has been commonly used in the automotive company to evaluate its supplier's performance. 20 top bottom ranked vendors is identify based on the highest downtime.

3.2 Classification Process

Data of vendor quality performance are gathered for the purpose of this study. All vendors' data from the downtime (DT), Trouble Shooting and Information Action Report (TeSIAR) and repeated TeSIAR is recorded to monitor the vendor's performance. Next, the selection index is developed using the formula in Eq.1. The ratio formula is used to standardize because DT is measured in minutes, while TeSIAR and Repeated TeSIAR is measured by the unit, Eq. (1) shows how to calculate the ratio of each vendor by using the selection index formula. D is represent the total DT of the vendor for that particular year and divided the total DT of all vendors to get the ratio. T represents the total TeSIAR number of the vendor for that year divided by the total TeSIAR of all vendors. R is the total Repeated TeSIAR of the vendor for the year divided by the total Repeated TeSIAR of all vendors. The ratio result of all vendors interpreted into the Pareto Chart to monitor the ranking of all vendors' quality performance. Based from the Pareto Chart, 20 top bottom rank vendors which contribute 65 percent into quality performance are selected for the VIP.

$$\sqrt{D^2 + T^2 + R^2} \quad (1)$$

Next, all these 20 top bottom rank vendors performance reviewed for the purpose of improvement and the area to be focus during the program. Then, these non-performing vendors will be classifying into three groups to determine the degree of attention and severity of the vendors. The groups are classified based on three elements as referred in Eq.2. By referring to the Eq. (2) Group (G) is the total of a + b + c where a is the index value which consist the ration of DT, teSIAR and Repeated teSIAR, b is based from the involvement point that the vendor received during the Quality Improvement Program, and c is the point that vendor received during the supplier evaluation. The sum of a, b, and c will further classified the vendor into several groups. Fig. 1 shows the point that given using demerit point. That's mean the higher point, the more severe the vendor performance.

$$\begin{aligned}
 G &= a + b + c \\
 \text{Case 1: } G \geq 3 &\text{ Point = G1} \\
 \text{Case 2: } G = 2 &\text{ Point = G2} \\
 \text{Case 3: } G = 1 &\text{ Point = G3}
 \end{aligned}
 \quad \begin{array}{c} \text{HIGH} \\ \uparrow \\ \text{LOW} \end{array} \quad (2)$$

a	b	c
<0.05: 0 pt	O: 0 pt	O: 1 pt
≥0.05: 1 pt	Δ: 1 pt	Δ: 1 pt

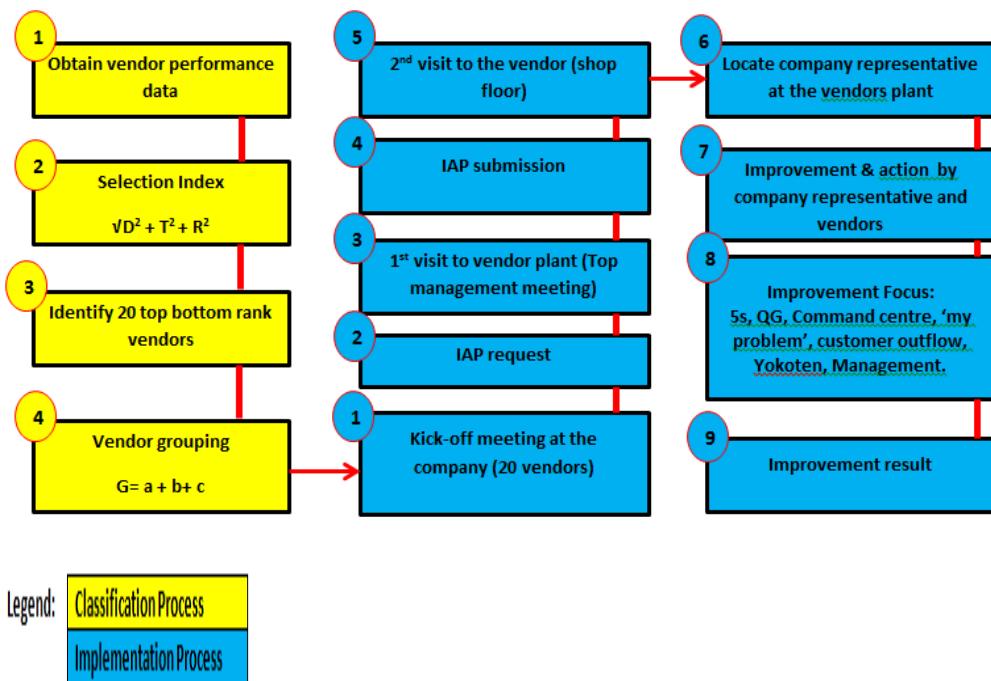
≥ 0.10 : 2 pt

X: 2 pt

X: ≥ 3 pt**Fig.1, Demerit point**

3.3 Implementation Process

The selected vendors is notified and called for a meeting. The participants are from the production and quality manager of each vendor that involve with VIP. These vendors are requested to prepare an Improvement Action Plan(IAP) together with a team members. Then, by reviewing the vendors' IAP, the company will visit the vendor plant. During the visit the company will emphasize on the following element; Quality Gate (QG), Customer Outflow, Yokoten, Management, Fundamental (5S, Command Center, My Problem). Fig.2, illustrated the completed outline of the improvement program.

**Fig.2, Vendor Improvement Program Process Flow**

4. Result and Discussion

Each of the 46 vendors evaluated based on Downtime, Trouble Shooting and Information Action Report (TeSIAR), and repeated TeSIAR yearly performance shown in Fig.3, Fig.4 and Fig.5. The 20 top bottom rank vendor are identify shown in Fig.6 using selection index. Pareto chart used to estimate around 65% of vendor which contributed to the company performance. Three companies JVC, DAN and OOK are selected for case study purpose.

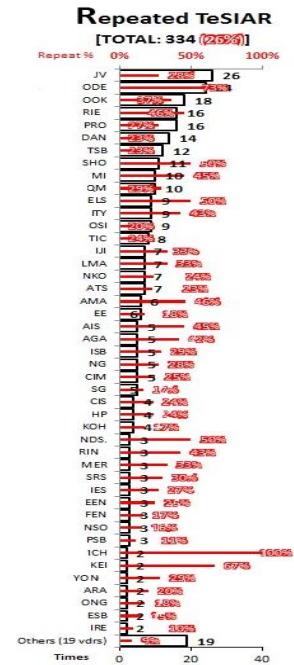
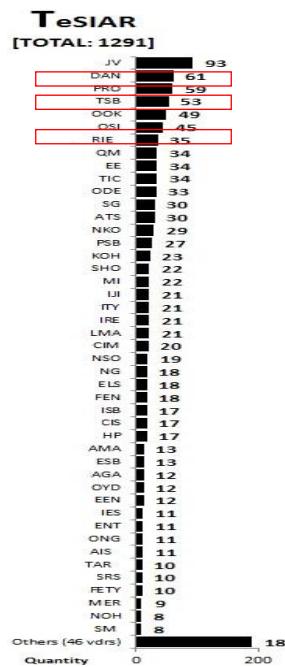
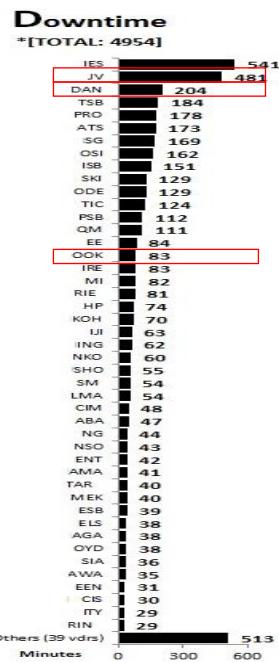
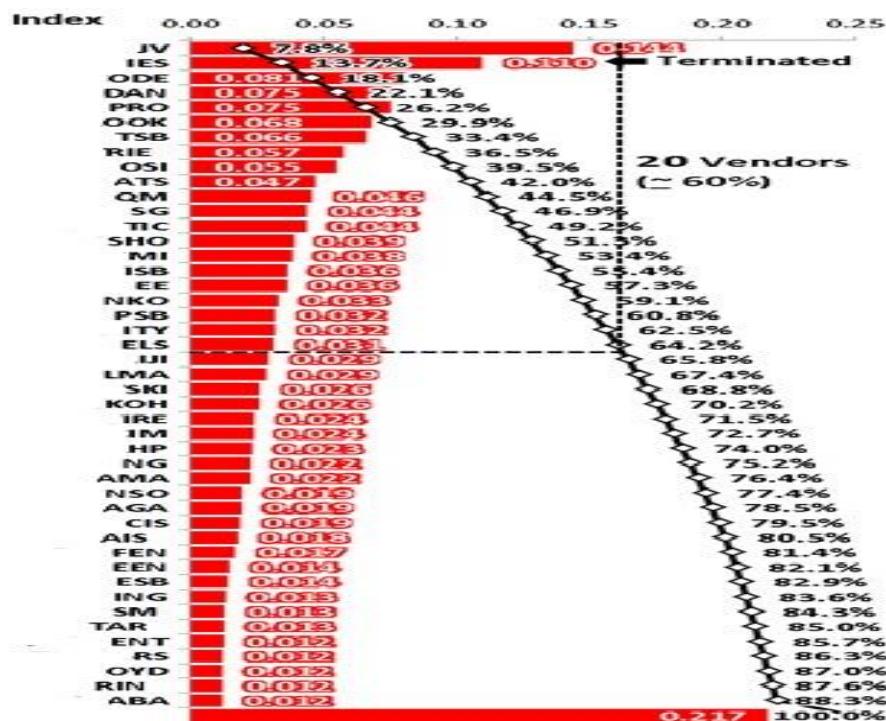


Fig.3, Downtime result

Fig.4, Total TeSIAR case

Fig.5, Repeated TeSIAR

**Fig.6, Selection Index result**

Base on the observation, the three non-performing vendors (OOK,DAN and JV) majority depend on the company initiative to mobilize the improvement program.OOK established in 2003, manufacture an abs and fibre glass bodykit, their manufacturing process uses vacuum forming, lamination and blow molding. DAN manufacture specializes in solid and spong rubber profile, shapped hose and mold product, this company is the pioneer automotive rubber product produce in Malaysia. JV is one of the main supplier; product comprise modular assemblies, suspension parts, body and engine as well as plastic part and lamp assemblies. The following activities shown in Fig. 7 is an improvement program at the vendors plant. Quality gate are conducted to analyze the quality of their products and to take actions in time. Quality gate become a milestones and decision point within a project and are evaluated against predefined and quality focused criteria. Zero defect program closed refers to designing defects out of the process or product, so that theoretically at least a company can consistently manufacture a defect free product. It is the best approach in a six sigma environment of continuos improvement. The 5S initiative fall broadly into categories where department specific wherein each department manage the 5S initiatives specific to the department most likely to lead the best result if follows the integrated with the process model of implementation. When an organization intention to improve its vendor management efforts, it help to implement changes in the sequencial stage they occur; strategic fit, selection and contract, execution, then review. The program should build a useful, multidiscipline, multilayered approach to ensure vendors achieved the maximum value for business.

**Fig. 7 Improvement activities**

5. Conclusion

Vendor development is one of the current techniques of strategic sourcing, where it improves the value received from suppliers. This paper conclude the objective to determine the 20 top bottom rank vendors based on yearly performance, and to develop VIP and identify the focus area of improvement for non-performance vendors. Vendor development strategies can result in significant improvement in supplier performance including reduction product defetc, improving on time delivery and improving product performance. Not all vendor development initiatives are successful, in fact many are not due to poor implement and follow-up.

References

1. Al-Chalabi, H. S., Lundberg, J., Wijaya, A., & Ghodrati, B. (2014). Downtime analysis of drilling machines and suggestions for improvement. *Journal of Quality in Maintenance Engineering*, 20(4), 306-332.
2. Singh, A., Adachi, S., & Inouye, M. (2011). Quality control analysis of downtime and time to prepair for water supply pipes. *Built Environment Project and Asset Management*, 1 (1), 75-90.
3. Limited, E. G. (2009). Intelligent light curtain saves downtime costs to meet latest safety requirements. *Industrial Robot An International Journal*, 36 (4).
4. Nepal, M. P., & Park, M. (2004). Downtime model development for construction equipment management. *Engineering, Construction and Architectural Management*, 11 (3), 199-210.
5. Somers, T. M., & Gupta, Y. P. (1991). An Examination of an Engine Manufacturing Plant's Downtime and Production Standards. *International Journal of Operation & Production Management*, 11(5), 22-38.
6. Battor, M., & Battour, M. (2013). Can organizational learning foster customer relationships? Implications for performance. *The Learning Organization*, 20 (4/5), 279 - 290.
7. Mitreaga, M. (2012). Network partner knowledge and internal relationships influencing customer relationship quality and company performance. *Journal of Business & Industrial Marketing*, 27(6), 486 - 496.
8. Toor, T. P. (2009). Creating competitive edge through improved customer relationship management. *Business Strategy Series*, 10 (1), 55 - 60.
9. Fink, R. C., Edelman, L. F., & Hatten, K. J. (2007). Supplier performance improvements in relational exchanges. *Journal of Business & Industrial Marketing* , 22 (1), 29-40.
10. Liljander, V., & Roos, I. (2002). Customer-relationship levels – from spurious to true relationships. *Journal of Services Marketing*, 16 (7), 593 - 614.
11. Nielson, C. C. (1998). An empirical examination of the role of “closeness” in industrial buyer-seller relationships. *European Journal of Marketing*, 32 (5/6), 441 – 463.
12. E, P., & Roodhooft, F. (2008). Management Control of supplier relationship in manufacturing: A case study in the automotive industry. *Leuven Gent Management School Working Paper*, Series 23.
13. Abdullah, R., Lall, M. K., & Tatsuo, K. (2008). Supplier Development Framework in the Malaysian Automotive Industry: Proton's experience. *Int. Journal of Economics and Management*, 29-58.
14. Mahmood, W. H., Rahman, M. N., Baba, M. D., & Ismail, A. R. (2010). Product and Vendor Development Program in encouraging supply chain management: A case study. *Applied Mechanics and Materials*, 4141-4145.