

# Management Method for the Plant Manager of Automotive Parts Manufacturing Plants in Thailand and Overseas

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This study aims to identify a model for the effective and efficient management of multiple automotive parts manufacturing plants in Thailand and abroad. The study was conducted by a knowledge search with 19 experts, using the Delphi method. The target group was selected by stratified sampling from the population on LinkedIn (a professional online social group), which included 51,186 samples in total. Sampling was done until the final 121 candidates were selected. They are automotive managers with multiple plant management experience. The candidates were then contacted and 19 responded, which constitutes a group of valid size with a margin of error of 0.50. The group size must comprise of at least 10 persons until the end of the study. In the first round, information was collected by interviews, from which 227 issues were identified. The issues were then used for designing a questionnaire form, which was used to ask the same group of experts to confirm the issues twice. Finally, a set of conclusions were made for a model management system as stated in the goal. It was expected that the results of this study will be useful for the Thai automotive industry in order to expand the production base and operations.

**Key words:** *Automotive parts, automotive industry, plant manager*

## Introduction

The automotive industry is one of Thailand's pilot industries and a major economic factor. Thailand was ranked 13<sup>th</sup> among the world's largest automotive manufacturers in 2016 with an export value of over 9.2 hundred million baht or 12% of the total national exports (Kasikorn

Research Centre, 2017). Thailand's automotive production can be classified as parts manufacturing and divided in Tiers One, Two and Three. Tier One consists of manufacturers of automotive parts (both interior and exterior) such as headlights, bumpers, windshields, wheels, tires, consoles, axles, springs, electronics, radios and others, which are shipped to the assembly plants. Manufacturers in Tier Two and Tier Three send parts to Tier One. All three tiers can be collectively called the Auto-Parts group. Thailand's automobile production can fluctuate. In 2013, for example, automobile production and sales in Thailand dropped considerably from 1,331,000 units to 882,000, which could be attributed to the "First Car" policy (Yongphisarnphop, 2017). However, sales and production have improved, and it is predicted that in the future, there will be more demand for cars (The Federation of Thai Industries, 2016). The need for auto-parts, of which Thailand is a major manufacturer, should increase as well.

Increasing demand in the automobile industry is what defines the main production in each country, and it is undeniable that the automobile industry is directly affected by technological and innovative advancements. The Kasikorn Research Centre (2017) stated that the auto-parts production trend may proceed in a different direction with more emphasis on ecological friendliness and the integration of advanced technology. This is in order to maintain competitiveness in the world market, in which Germany, Japan, and the United States were the top exporters, while Thailand was ranked 13<sup>th</sup> with an export value of 360,557 million USD (The Federation of Thai Industries, 2016). Kasikorn Research Centre (2017) concluded that the future trend of Thai auto-parts manufacturing and demand might change in the following ways: 1) parts for the engines, radiators, exhaust systems, fuel supply systems, fuel tanks, combustion and gear systems will have decreased demand, 2) the use of automated control systems can extend the life of some parts, and 3) parts already in demand would remain in the demand and may even increase. Over 90% of parts manufactured in Thailand are mechanical parts such as the body, suspension, lighting and interior accessories. All of which are expected to have continued demand and be connected with the electric car production line.

Competition of Thai auto-parts manufacturers in the world market is extremely challenging due to many risks, for example trading and competition, natural disasters and government policies (Niemmanee, 2014). Trading and competition risks, in particular, lead to most Thai auto-parts manufacturers expanding their businesses to create new opportunities and reach clients. As most players have more than one company under their faction, managers must be highly capable in order to lead their organisations to success (Stephen, DeCenzo & Coulter, 2011). Due to the awareness about the importance of the automobile industry for Thailand and the current situations that are directly affecting the business sector, the researchers desire to examine this research problem with the goal to create a set of guidelines for the industry. The research problem involves questions of what an effective model management system for multiple manufacturing plants in Thailand and abroad should be, and how organisation

standards, quality management, and excellence, inform this management model. Therefore, the aim of the research is to study the model for effective and efficient management of multiple auto-parts manufacturing plants in Thailand and abroad.

## **Theoretical Concepts**

### ***Management Concepts***

The study found that the words “management” and “administration” are often used interchangeably despite the fact that professionals in those fields are referred to differently (Manager and Administrator respectively) (Obiefuna, 2014). Nevertheless, the word “management” refers to a set of duties that provide a direction for effective and efficient use of organisational resources in the achievement of the organisational goals. “Efficient” use of resources means wise and cost-effective use, while “effective” means correct decision-making in the successful execution of the plan. Therefore, successful management needs both efficiency and effectiveness (Stephen & Mary, 2007; Lovorko, 2017).

Therefore, it can be seen that management and administration bear some similarities as both of them control the operations with a purpose to achieve organisational goals. It could be said that the “perfect” management plan does not exist and that there are only good plans to be used at the right time, so new management styles are always invented (Eckerson, 2009). The main guideline of management is the connection between the various organisational components to form a solution. Research on Z theory, management cycle, POSDCoRB or PDCA (Eckerson, 2009; Stephen, DeCenzo, & Coulter, 2011; Kuntolbut, 2013, Cullen & Parboteeah, 2008) showed that the principal management factors are: (1) Planning, (2) Organising, (3) Staffing, (4) Directing, (5) Coordinating, (6) Reporting and (7) Budgeting.

### ***Organisational Structuring Concepts***

An organisational structure is a plan that shows personnel relationships, duty allocation, responsibilities, reporting, authorisation, and relationships in the work process, as well as decision-making, communication, and the systems in the organisation that could be altered in accordance with the organisation’s strategy and goals. A good organisational structure includes improved effectiveness and efficiency, especially in cost sharing and risk distribution (OECD, 2014), or improved supply chain management and resilience against challenges arising out of global strategy implementation (Joseph, 2011). It can also increase the sense of ownership among the organisation’s members (Kocak, Carsrud, & Oflazoglu, 2016; Jernsittiparsert, Sriyakul, & Sangperm, 2019).

### ***Quality Management***

IATF16949:2016 quality management is a concept that has been enforced on the auto-parts manufacturing group by the International Automotive Task Force (IATF) since 2017 and is an improvement over the older ISO/TS16949 standard. This quality management standard covers design and development, production, installation, and services related to automobile products. It is an international standard covering operational and strategic levels with an emphasis on the role of high-level management in placing importance on internal and external organisational situations, along with specifying organisational objectives, direction, and strategies. Important issues include (1) risk management, (2) the automobile industry's connection with the clients' needs, (3) competent inspection criteria, (4) additional product safety requirements, (5) manufacturing feasibility such as management with a multidisciplinary approach and analysis for new/changed product manufacturing technology, (6) warranty management, and (7) software product development.

### ***Management for Excellence***

Hurriyet (2010) mentioned that in the current context of the hypercompetitive business environment, measures for survival in the fluctuating times of this era have severely affected organisations in the production sector, leading to its shrinking. Hoegl, Parboteeah, and Muethel (2012), and Sliwinska and Sliwinski (2017) stated that the recent epoch of the industrial economy has become a period of fluctuation and fierce competitiveness, leading to greater efforts toward excellence and a global focus. Cullen & Parboteeah (2008) mentioned such fluctuations as a factor pushing the top management to maintain the organisation's competitive edge in the industry by applying new methods, and it was found that initiatives involving quality development were applied for cost-cutting and quality improvement with high priority. The concept by Heizer and Render (2012) illuminated the management trend of increasingly emphasising a global focus. In conclusion, the management principles and theories as successively developed from the past to the present were developed from the scientific management that was based on modern human relations, situations and new viewpoints. Each method has improved the clarity and accuracy of the excellence management theory.

### ***Research Method***

This study initiates its examination through two steps. The first step was a study for the model development, in which the electronic Delphi technique was used. In-depth interviews were conducted over the phone and by video call, and a Delphi electronic questionnaire was completed over the Internet and by e-mail in order to identify a management model in accordance with the research objective. In addition, the draft version of the manual was done in the first step. The second step involved reaching a consensus, in which the researchers used

a focus group technique with a group of experts to reach a consensus on the draft manual and the model. The final, complete model and manual was then created.

The population and sample group for this study included 19 experts as the target group for the Delphi process. They were selected by the Knowledge Resource Nomination Worksheet (Oki & Pawlowski, 2004), which consists of five steps. In the first step, the relevant disciplines and organisations were checked. 51,186 plant managers worldwide were found. The second step was conducted to identify the individuals in the automobile industry. 8,765, people were found. 7,137 were abroad, while 1,598 were in Thailand. The third step involved the selection and contacting of experts. Out of the 1,598 managers in Thailand, 121 were Thai (7.57%), while the others were foreigners. Following this, invitations were sent to the 121 Thai managers to participate in the study. 19 replied, which was an acceptable number according to Macmillan (1971), who stated that at least 17 participants must join the survey in order to reduce the margin of error to 0.50, and at least 10 of them must stay until the end of the study (Lim & Sambrook, 2010). In step four, the 19 experts were ranked and invited to participate in the research. The details of the participating experts are listed in Table 1.

**Table 1:** Expert research participants

No.	Job Title	Duties and Responsibilities
1	Plant Manager	<b>Products:</b> Electronic products and parts, air compressors, CNG/NGV cylinders <b>Experience:</b> 2 plants in Thailand, 1 in Laos
2	Asia Pacific Manufacturing Manager	<b>Products:</b> Car seats, engineering function <b>Experience:</b> APAC plants: 1 in Thailand, 1 in Indonesia, 2 in Malaysia. Engineering & MNT Chairman in 10 Thai, 5 Japanese, 2 Korean plants and 1 Indian.
3	Production Director	<b>Products:</b> Plastics, Premium Airbags/Container liners <b>Experience:</b> 3 Thai plants, 1 Indian and 1 Turkish
4	Asia Pacific Production Technology Manager	<b>Products:</b> Tires, brakes, shock absorbers <b>Experience:</b> Production management: 3 plants in Thailand and engineering support in 9 plants (3 in Thailand, 1 in Vietnam, 3 in Indonesia, 1 in India, and 1 in Japan).
5	Operations Director	<b>Products:</b> Electronics parts for cars <b>Experience:</b> 2 plants in Thailand
6	Operations Manager	<b>Products:</b> Tires, bearings, metal parts, suspensions <b>Experience:</b> Currently supervising 3 plants in Thailand with experience in both Thailand and Indonesia.
7	Deputy Regional	<b>Products:</b> Bush bearings tape

	Manager, SEA	<b>Experience:</b> 2 Thai and Indonesian plants
8	Senior Executive Manager for Operations	<b>Products:</b> Raw glass, minerals <b>Experience:</b> 4 Thai plants and 1 Vietnamese
9	Plant Manager, Regional CI Manager	<b>Products:</b> Timing Belts, Hosts <b>Experience:</b> Currently is a plant manager of a single factory (5 years). CI GPS management in Thailand, Japan, Korea, India and China for 8 years.
10	Managing Director/Plant Manager	<b>Products:</b> Airbags, Cool Inflator <b>Experience:</b> Plants in Thailand and Mexico.
11	Plant Manager	<b>Products:</b> Air conditioners, front consoles, condensers and evaporators <b>Experience:</b> 4 Thai plants
12	Operations Director	<b>Products:</b> Moulding & Injection Support of Automotive components <b>Experience:</b> Currently is an operations director with experience in 2 Thai plants and 1 American.
13	Factory Manager	<b>Products:</b> Industrial plastic packaging <b>Experience:</b> 2 Thai plants
14	Head of Operations Thailand, Plant Manager	<b>Products:</b> Break & Coolants, Pigments for Coating, PVC & Wax additives <b>Experience:</b> 13 years in the main plant including new expansion.
15	Plant Manager	<b>Products:</b> Leather, belts, coils <b>Experience:</b> 7 years in the main plant with 3 plants in Thailand.
16	Regional Operations Manager, Factory Manager	<b>Products:</b> Paint and pigments <b>Experience:</b> 3 plants (Thailand, Vietnam and the Philippines).
17	Plant Manager	<b>Products:</b> Chassis and suspensions <b>Experience:</b> 2 plants in Thailand and India
18	Plant General Manager	<b>Products:</b> Power Modules, Electric Vehicles, Hybrid Vehicles, Tools and Air systems for industry <b>Experience:</b> 3 Thai factories (CI manufacturing).
19	Plant Operations Manager	<b>Products:</b> Suspensions and exhaust systems <b>Experience:</b> 2 plants in Thailand and is going to assume management of the third in Thailand.

Regarding the tools used for the Delphi technique, there were three rounds of data collection: round 1 involved unstructured interviews that allowed the experts to identify the key issues and the scope, while rounds 2 and 3 were structured Likert scale questionnaire-based surveys. All tools were designed and verified for IOC and certified by the ethics committee before being applied. Data analysis was conducted based on these tools. Content analysis was conducted for the unstructured interviews by the researchers and two experts in order to determine the mean. The Likert scale questionnaires for rounds 2 and 3 were then used for the median and inter-quartile range to clarify the findings.

### ***Results***

The study of the model for effective and efficient management of multiple auto-parts manufacturing plants in Thailand and abroad found that:

Out of the 19 experts used in this study, eight had work experience between 20 - 24 years (44.4%), seven between 15 - 19 years (38.8%), two over 25 years (11.1%), and one between 10 - 14 years (5.5%). A total of 13 of the experts had master's degrees (66.6%), three had bachelor's degrees and three had doctoral degrees (16.7%). Eleven worked in the Tier I auto-parts industry (61.1%), four worked in Tier II (22.2%), one worked in Tier III (5.5%) and two worked in the automobile support industry (11.1%). Each manager supervised between 2 and 20 factories, for a total of 79 factories in 12 countries: Thailand, Indonesia, Japan, India, Vietnam, Malaysia, South Korea, Turkey, the Philippines, Laos, Mainland China and Mexico.

The results from the interviews revealed 227 issues that could be expanded to build a management model and were divided into the following groups: 1) 44 issues for management, 2) 64 for administration results and organisational structure, 3) 5 for good governance, 4) 26 for quality management, 5) 53 for excellence, and 6) 35 for cross-cultural management. All of these issues were built into the questionnaire and sent to the target group to be confirmed twice before the conclusion. Results as presented below show only the issues that were 100% confirmed by the third stage.

#### **1) Management**

From the study on management, it could be concluded that effective management of more than two auto-parts plants requires skills such as (1) work planning and assignment, (2) follow-up, (3) facilitation or support of productivity, quality, punctuality and cost, (4) effective intra-organisational coordination, (5) human resources management, (6) performance reporting and (7) budget management. Nevertheless, the results of the study could be summarised based on the 100% confirmed issues as follows:

**Table 2:** Management data confirmation

Management Issues	Use in draft (N=19)		Application (N=19)				Confirmed? (N=19)	
	Freq.	%	Mdn.	Level of use in Org.	I.R.	Consistency	%	Result
Top-down KPI and comparison	19	100	5.00	Highest	1.00	Highest	100.0	Confirmed*
Planning for KPI fulfillment	12	63.1	5.00	Highest	1.00	Highest	100.0	Confirmed
One-, three- and five-year planning	3	15.7	5.00	Highest	1.00	Highest	100.0	Confirmed
Use of monthly meetings for work section KPI summary	18	94.7	5.00	Highest	0.0	Highest	100.0	Confirmed*
Mindfulness, follow-up, consulting and continuous troubleshooting support	17	89.4	5.00	Highest	1.00	Highest	100.0	Confirmed*
Critical support of operations and budget planning	17	89.4	5.00	Highest	1.00	Highest	100.0	Confirmed*
Knowledge/proficiency support or project/team-based work	13	68.4	4.00	High	1.00	Highest	100.0	Confirmed
Creation of a joint guideline for work, problem solving and success building	13	68.4	4.00	High	1.00	Highest	100.0	Confirmed
Communication of the overall company image, goals, and strategies, along with collective goals and KPI.	9	47.3	5.00	Highest	1.00	Highest	100.0	Confirmed
Focus on learning-by-doing, such as activities, on-the-job training and mentoring	14	73.6	5.00	Highest	1.00	Highest	100.0	Confirmed

Building of relationships and teamwork	3	15.7	4.00	High	0.75	Highest	100.0	Confirmed
Use of the meetings to review monthly performance of both domestic and international plants	19	100	5.00	Highest	1.00	Highest	100.0	Confirmed*

In Table 2, it can be seen that the “*Top down*” approach based on KPI, annual continuity checks and monthly performance reviews of both domestic and international plants has the highest confirmation in all three parts: 100% in the first, most used in the second, and 100% in the third. This is followed by *Use of monthly meetings for KPI summary in each work section* at 94.7% in the first part, most used in the second, and 100% in the third.

## 2) Administration

To be effective at managing more than two plants in Thailand and abroad at the same time, good administration attends the following issues:

**Table 3:** Administration data confirmation

Planning for production effectiveness	Use in draft (N=19)		Application (N=19)				Confirm? (N=19)	
	Freq.	%	Mdn.	Level of use in Org.	I.R.	Consistency	%	Result
Measurement by production cost and the productivity measurements of DM, DL and FOH	15	78.9	5.00	Highest	1.00	Highest	100.0	Confirmed*
Capacity and utilisation administration	6	31.5	4.00	High	1.00	Highest	100.0	Confirmed
Having vision, clarity, success strategy, and production efficiency direction	16	84.2	4.00	High	0.50	Highest	100.0	Confirmed
Development of sense of belonging, participation, teamwork, resource limitation and impact on the business	11	57	4.00	High	1.00	Highest	100.0	Confirmed

Building effective communications and more time for production	9	47.3	4.00	High	1.00	Highest	100.0	Confirmed
Determination, responsibility and continuous follow-up	7	36.8	4.00	High	1.00	Highest	100.0	Confirmed
Creating change and presenting new things for the future	7	36.8	4.00	High	1.00	Highest	100.0	Confirmed
Being a good model, transparent and reliable	4	21	5.00	Highest	1.00	Highest	100.0	Confirmed *
Constant self-improvement	3	15.7	4.00	High	1.00	Highest	100.0	Confirmed
Quick access, response and support against the problem	10	52.6	4.00	High	1.00	Highest	100.0	Confirmed
Display of results in terms of Control/KPI/Dashboard and constant follow-up	8	42.1	5.00	Highest	1.00	Highest	100.0	Confirmed *
Learning with the team or other plants	2	10.5	4.00	High	1.00	Highest	100.0	Confirmed
Focus on production speed and response to the clients	2	10.5	4.00	High	1.00	Highest	100.0	Confirmed

In Table 3, the researchers present the issues with 100% confirmation, which shows that good administration consists of *Measurement by production cost and productivity measurement of DM, DL and FOH*, which has 78.1% confirmation in the first part, most used in the second part, and 100% confirmation in the third part. This is followed by *Display of results in terms of Control/KPI/Dashboard and constant follow-up*, which has 42.1% confirmation in the first part, most used in the second part and 100% confirmation in the third part. The third rank belongs to *Having vision, clarity, success strategy, and production efficiency direction*, which has 84.2% confirmation in the first part, highly used in the second part, and 100% confirmation in the third part.

### 3) Good governance

**Table 4:** Good governance data confirmation

Creation of good governance for both domestic and foreign parts of the organisation	Use in draft (N=19)		Application (N=19)				Confirm? (N=19)	
	Freq.	%	Mdn.	Level of use in Org.	I.R.	Consistency	%	Result
Being a model of transparency, honesty, good behaviour, law conformity, responsibility and accountability	18	94.7	5.00	Highest	0.00	Highest	100.0	Confirmed
Creation of norms, practical guidelines, organisational policies and CSR	11	57.8	4.00	High	1.50	Highest	100.0	Confirmed
Having review and self-expression related with transparency and rightfulness	9	47.3	5.00	Highest	1.00	Highest	100.0	Confirmed

Regarding good governance, it was found that *Being a good model of transparency, honesty, good behaviour, law conformity, responsibility and accountability* ranks the first with 94.7% confirmation in the first part, most used in the second part, and 100% confirmation in the third part. This is followed by *Having review and self-expression related with transparency and rightfulness*, which has 47.3% confirmation in the first part, most used in the second part and 100% confirmation in the third part. The third ranked is *Creation of norms, practical guidelines, organisational policies and CSR*, which has 57.8% confirmation in the first part, highly used in the second part, and 100% confirmation in the third part.

4) Quality management

**Table 5:** Quality management data confirmation

Understanding of organisational context for quality management	Use in draft (N=19)		Application (N=19)				Confirm? (N=19)	
	Fre q.	%	Mdn.	Level of use in Org.	I.R.	Consistency	%	Result
Management direction focusing on lowering costs	13	68.4	4.00	High	0.00	Highest	100.0	Confirmed
Quality system as image of industrial standards	10	52.6	5.00	Highest	1.00	Highest	100.0	Confirmed *
More “Businessisation” of quality standards and directions	3	15.7	5.00	Highest	1.00	Highest	100.0	Confirmed *
Participation in review, follow-up and control to ensure standard compliance	16	84.2	4.00	High	1.00	Highest	100.0	Confirmed
Promotion of participation in system management and standards development	15	78.9	4.00	High	1.00	Highest	100.0	Confirmed
Low quality cost and compliance with client’s needs	9	47.3	4.00	High	1.00	Highest	100.0	Confirmed
Building understanding of quality management in the manager	8	42.1	4.00	High	1.00	Highest	100.0	Confirmed
Creation of practical standards with constant improvement	15	78.9	4.00	High	1.50	Highest	100.0	Confirmed
Development of understanding about the system, human skills and system management	12	63.1	4.00	High	1.00	Highest	100.0	Confirmed

Building a constant, organisation-wide follow-up system	15	78.9	4.00	High	1.00	Highest	100.0	Confirmed
Development based on assessment, loss control and constant accommodation of the changing business environment	12	63.1	4.00	High	0.75	Highest	100.0	Confirmed

According to Table 5, issues that are confirmed in all three test parts include *Quality system as image of industrial standards* (52.6% in the first part, most used in the second, and 100% in the third), *Participation in review, follow-up and control to ensure standard compliance* (84.2% in the first part, highly used in the second, and 100% in the third), and *Promotion of participation in system management and standards development and Creation of practical standards with constant improvement* (78.9% in the first part, highly used in the second, and 100% in the third).

#### 5) Excellence management

**Table 6:** Excellence management data confirmation

Specification of vision and excellence	Use in draft (N=19)		Application (N=19)				Confirm? (N=19)	
	Freq.	%	Mdn.	Level of use in Org.	I.R.	Consistency	%	Result
Awareness of the drive to excellence such as business excellence, organisational adaptation and cost-savings	12	63.1	4.00	High	1.00	Highest	100.0	Confirmed
Basic development activities such as 5S, VM, VSM, Kaizen, QCC, A3, Tagging, 8D, etc.	12	63.1	4.00	High	1.00	Highest	100.0	Confirmed
Building cooperation in activities and discipline, along with sense of importance	13	68.4	4.00	High	1.00	Highest	100.0	Confirmed
Development of knowledge and understanding about excellence	12	63.1	4.00	High	1.00	Highest	100.0	Confirmed

Hosting off-work activities to build relationship and understanding among employees	5	26.3	4.00	High	1.00	Highest	100.0	Confirmed
Building continuity of the 5S activities	19	100	4.00	High	1.00	Highest	100.0	Confirmed
Development activities such as Kaizen, Suggestion System, Lost reduction, QCC, Lean, Six Sigma, and Product Difference	15	78.9	4.00	High	1.5	Highest	100.0	Confirmed
Intraorganisational activity assessments with a prize/commendation system	7	36.8	4.00	High	1.00	Highest	100.0	Confirmed
Creation and use of tools as the basis for continuous development, such as 5S, PDCA, QCC, Kaizen, etc.	19	100	4.00	High	0.5	Highest	100.0	Confirmed
Wages, building of efficiency/DL labour productivity/Productivity	9	47.3	4.00	High	1.00	Highest	100.0	Confirmed
Leaning and lead time reduction	4	21.0	4.00	High	1.50	Highest	100.0	Confirmed
Warehousing and lead time management	16	84.2	4.00	High	1.00	Highest	100.0	Confirmed

With regard to excellence management, it was found that *Building continuity of the 5S activities* and *Creation and use of tools as basis for continuous development, such as 5S, PDCA, QCC, Kaizen, etc.* has 100% confirmation in the first part, high use in the second part, and 100% confirmation in the third part. They are followed by *Warehousing and lead time management*, which has 84.2% confirmation in the first part, high use level in the second part, and 100% confirmation in the third part.

The consensus of the group agrees with the results and includes some additional suggestions for improvement, for example the inclusion of the PDCA process for joint analysis with the management process in model development, the inclusion of more strategies to promote continuous operational processes, and less emphasis on production details. This is because the study is done at the planning level, so emphasis should be shifted to management to increase efficiency and performance.

## Discussion and Suggestions

According to the study, there are many theories and concepts about management and many communities are more or less familiar with management. Lovorko (2017) summarised that management is a set of duties that establish a direction for the effective and efficient use of organisational resources to achieve the determined goals. Thus, management is certainly a natural part of any organisation. Nevertheless, each type of business has its own unique style of management. For example, the automobile and auto-parts industries, which see high growth rates, might view effective and efficient management as a major factor to be successful. The results of this study show that a successful management model for multi-site factory management requires the following operational styles:

**Figure 1.** Important issues related with multi-site auto parts factory management



Regarding the ways in which command and control can be made effective, this study found that the top-down command structure, which uses KPI to compare performances between the years along with the use of monthly meetings to summarise the KPI indicators for each section works well. This finding agrees with the concepts introduced by Stephen and Mary (2007) and Lovorko (2017), who stated that high-level effectiveness requires strong emphasis on goal achievement, so that the top-down command structure can drive units to work towards the organisation's goals. The manager that has more than two organisations under their responsibility will greatly need top-down command style and KPI-based assessment (Eckerson, 2009).

After the command and indicator-based assessment, it was found that most managers are mindful about “follow-up, consulting and problem solving”, “providing critical support for operations and budget planning” and “using the monthly meeting for monthly performance



review in both domestic and foreign plants.” This concurs with Qianqian (2016), who also found that the characteristics and goals of a manager are related to the investment and management process, which are then reflected through KPI, effectively being a top-down approach.

With regard to management, it was found that “having vision, clarity, success strategy, and production efficiency direction”, “measurement by production cost and the productivity measurements of DM, DL and FOH” and “display of results in terms of Control/KPI/Dashboard and constant follow-up” are highly important skills. Watts and McNair-Connolly (2012) confirmed that performance measurements must be modified and adopted according to organisational and situational factors. For example, measurement by production cost is widely used. Also, most agreed that mindfulness of the quality system improves organisational image, and that the use of 5S, PDCA, QCC or Kaizen are good tools for improving performance.

In terms of cross-cultural management in the case of foreign-based plants, it was found that there should be motivation to work, trust, and the share goals with each other. Adaptation, attitude, understanding, dedication, and resolve in cross-cultural management should also be encouraged.



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