

The Development and Sustainability of the Automotive Parts Business in Thailand

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Abstract: *This qualitative study explored the development, the trends of automotive parts, the people development and the sustainability of the automotive parts business in Thailand. The participants all had experience of more than 20 years as Managing Directors, General Managers, Engineering Managers, and Human Resources Managers with companies or organizations which have been in operation for more than 20 years. It was a qualitative research design. The phenomenological research strategy was selected to conduct this study by using an in-depth interview method with 19 participants. A tape recorder was used, and the researcher transcribed and analyzed the data by applying manual coding. The major findings of the study according to four research questions about the development of the automotive parts business in Thailand were: The first discovery is the framework for the development of the automotive parts business which began from the beginning and expansion stage, later on the businesses were supported by government, customers, Thailand's infrastructure and Thailand's economy, while automotive parts operation had to develop by managed 4Ms, improved continuously, trained and developed, the study found that the networks or connection between supporter and operation made the development of the automotive parts business. The second discovery is a framework for human resources development in the automotive parts business, people began by to recruit and select the right people, train and develop people, do organization management, working in the same culture and values, do continuous improvement, finally evaluations and awards need to be provided for the motivation. The third discovery is a figure of the trends of the automotive parts business in Thailand, participants agreed that future will be EV, also raw material, automotive parts, energy, technology, environment and safety need to change to be aligned with the new EV trends. The last discovery is a figure of the sustainable development of the automotive parts business in Thailand, the things that should be done for the sustainability are for instance need to prepare human resources, policy from government, continuous improvement, evaluations and awards system and raw material etc. In conclusion, this study has contributed important new knowledge that benefits the current investments, new investors, CEOs or upper management, general managers, HR managers, engineering managers, academics and future research.*

Keywords: Qualitative, Phenomenology, Automotive parts development, Human Resource Development, automotive parts trends and sustainability of automotive parts.

Introduction

Since the 1990s, Thailand has become an attractive location for automotive investors. Thailand's automotive car export amount reached one million cars and the production rose to 2.4 million cars in 2012 (Limpapaitoon, 2013). In 2015, automobiles and automotive parts have been exported abroad as the number one Thai export product (Bank of Thailand, 2015: online). World Motor Production International Organization of Motor Vehicle Manufacturer OICA (2016) reported that in 2015 Thailand produced 1.9 million vehicles to domestic and world markets, which ranked number twelve (12) worldwide, and in ASEAN, Thailand ranked number one (1) with the highest production followed by Indonesia, Malaysia, Philippine and Vietnam. As the automotive parts business has become highly important for Thailand's economy, this research would like to see the development of the automotive parts business from the past and moving forward to see the sustainability for the future of this business in Thailand. The achievements in the past resulted from government policies, strong automotive and automotive parts manufacturers, and new technology

transferred to production (Chaithirapinyo, 2005). Furthermore, with high competition, dynamic changes and challenges of the global context in the automotive business, the future trends of automotive parts in Thailand need to be studied in order to prepare strategies for human resources for Thailand to continue growing and survive in the future. For the automotive parts business to be sustainable in Thailand, the key factor that continuously supports business growth is labor cost, at the beginning, Thailand's labor cost was less than some others countries in this region. However, some other countries in ASEAN regional have lower labor cost & had this even at the beginning so labor cost was only one factor.

Objectives of the study

There were various practices in the automotive parts business regarding its development such as government policies, specific industrial zones, local content policies, zero custom tax for machine or high technology, technical transfers, technology transfers, people development, and process development. For these reasons, the primary purpose of this study was to explore and understand the development of Thai automotive parts business from the past, what are the automotive parts future trends? and what was the human resources development? The secondary purpose was to study the possibility of changes which are occurring for the sustainability of the automotive parts business in Thailand from the viewpoint of the 19 participants who were the MD (Managing Directors) or plant managers, engineering managers, and HR managers in the Thai automotive parts organizations. In addition, one director of AHRDA (Automotive Human Resource Development Academy) was selected to present the activities of human resources development in the automotive parts business in Thailand

Literature Review

Thailand's Economic Outlook

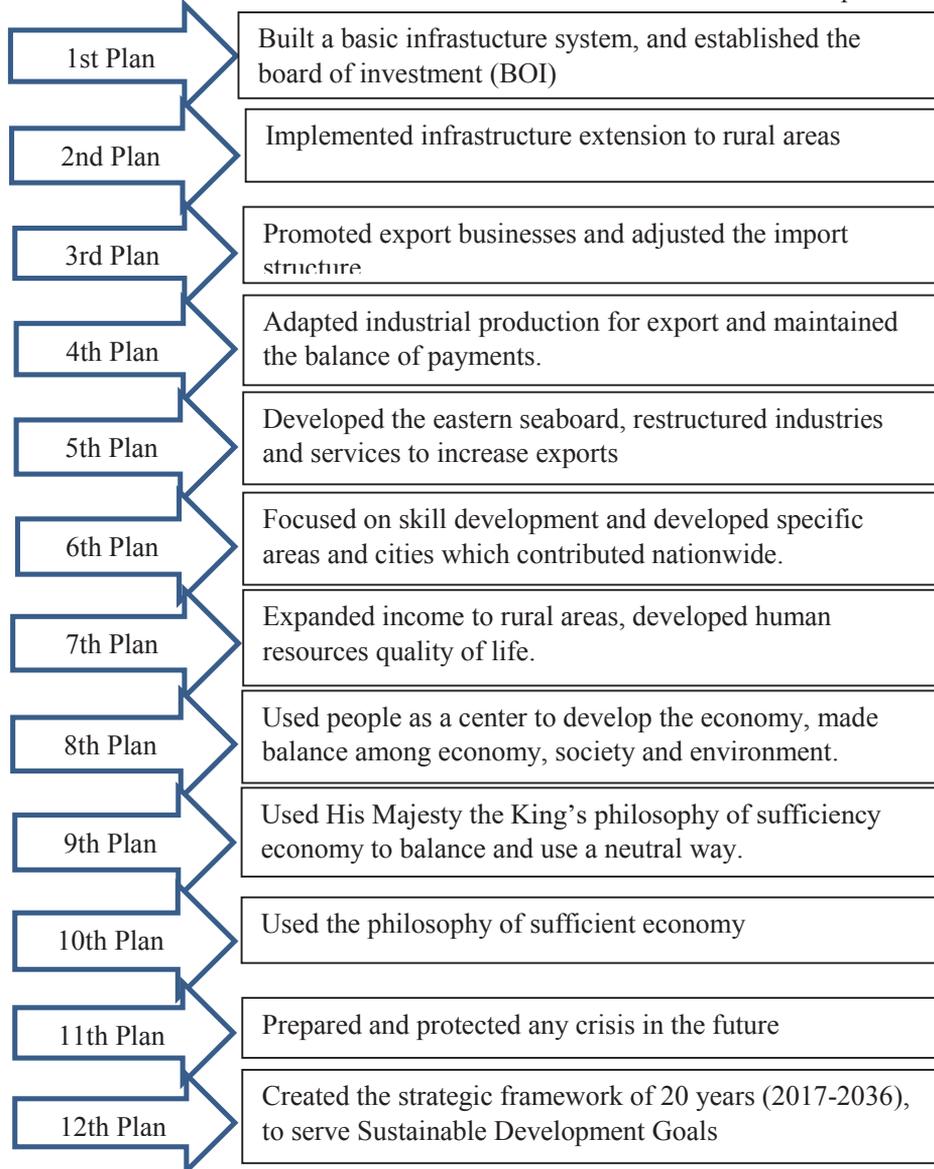
Key indicators, a press release from the Bank of Thailand 2016 has indicated that Thailand's economic growth depends on various factors such as public spending, private consumption spending and export values. For example, the data in Table 1, Export Product Value by Segment, found that the automotive was the main product in Thailand and the export product reached a ranking as the number one product to the global market.

Table 1 Export Product Value by segment from 2011 to 2015

Product type (Billions of USD)	2011	2012	2013	2014	2015
Electronic	32.7	33	32.7	33.3	32
Automotive	23.2	29.3	31.5	31.6	32.4
Agro Manu-product	27.4	28.5	27.8	27.1	25.6
Apparel & Textile	8.3	7.3	7.5	7.5	6.9
Machinery & Equipment	16.7	17.0	17.7	19.2	19.2
Electrical appliance	11.2	11.5	11.8	12.3	12.0
Metal & Steel	9.4	11.2	10.7	9.6	9.2

Source: Summarized yearly data from Bank of Thailand (2015)

National economic and social development plan (NESDB, 2017), the first plan was established in 1961, each plan mostly supported businesses in Thailand, the automotive and autopmotive parts were the key businesses that were mentioned. The implementation of each plan was related to infrastructure, transportation, industrial zones, people development and future plans. A summary of the first to twelfth plans are shown in Figure 1.

Figure 1. Summarizes the 1st to 12th Plans of National Economic and Social Development

Source: Comparing all plans of NESD by the researcher (2017)

The Automotive business in Thailand, Thailand's automotive industry began in the 1960s, when the government had a policy to build automobiles internally to replace the number of imported automotive products from abroad. The Board of Investment (BOI) has been established since 1962 under the support of the government industrial department to support and promote investors. The role of the government to promote investment, began in 1960 by the act of promote industrial investment, which created a policy of custom tax to protect the internal automotive industry and created the export automotive product policy (Jongtanasarnsombat et al., 1986). The Thailand Automotive Institute (TAI) was established in 1998 to develop automotive industries for competitiveness in the world market, the name of Detroit of Asia was set up in Thailand in the Automotive Master plan from 2002-2006 and the Eco car was created and began to invest in 2007.

The Automotive parts business in Thailand, the automotive industry was divided into an assembly plant which designed and assembled cars. The automotive parts industry was called tier 1 which supplies parts direct to the assembly plant, for example, fuel pump parts, tier 2 supply parts to tier 1 to assemble, for example, housing of fuel pumps, tier 3 and 4 supply raw material to tier 2, for example,

nuts or screws. Generally, it found that tiers 1, 2, 3 and 4 mostly supply parts to assembly plants so that in Thailand it should be divided into three groups, component part industry, supporting industry and raw material industry (Thanapatarakultorn, 2011). The components of a car can be classified into two groups, the first one is called internal elements which is comprised of the engine system, transmission system, suspension system, engine power and body electric and external components include the body tank and tires.

Global context, the automotive market size has been increasing every decade, in 2020 the market size might increase to 205 million units. The majority of the market will be Asia (65%) while the market size of passenger, commercial and two-wheeler vehicles was 102 million units in 2009 (Sehgal, 2011). ASEAN, comprised of 10 countries, became third of the investment amount from China when China invested in the big projects behind Hong Kong and Australia. China has the largest population in the world, consumption demand of energy and resources is higher continuously so that China needs to search and utilize resources from other countries. ASEAN has a population of 600 million, a lot of resources and lower labor cost than other region. ASEAN is located in Southeast Asia but the culture and behavior are totally different within each country. The automotive demand and supply of each country also varies depending on the infrastructure, economy, income and production. India reported the production of significant automotive growth behind only China, USA, Japan and Germany (International Organization of Auto Vehicle Manufacturers, 2016). In 2030, India will be a global BIG3 (Sehgal, 2011, p. 16)

Sustainability, a new high-level awareness of sustainability is a three-legged stool: (1) the environment; (2) economic development; and (3) social equity (Newport, Chesnes, & Lindner, 2003). Sustainability is now the Key Driver of Innovation (Nidumolu, Prahalad, & Rangaswami, 2009). Smart companies now treat sustainability as innovation's new frontier. Companies are becoming environment-friendly, lowering costs, and end up reducing the inputs they use.

Future trends, FIA (Fédération Internationale de l'Automobile) forecasts vehicle growth in 2020 of more than 1000 million units and will reach 2,200 million units in 2050 (Billingsley, Silverman, Adhikari, Clarke, and Cutler, 2015). Energy consumption usage of the car in the world are from many sources, the major sources were from oil and coal. Natural gas will be depleted in 20-30 years, petroleum oil will be depleted in 30-40 years, and coal will be depleted in 80-100 years (Lekpat & Theekasub, 2013). The electric vehicle (EV) is one answer as a possible alternative. The electric motor and a source of electric power will replace the internal combustion engine. The electric motor will provide power to drive the wheels, and will deliver electricity to drive the motor. EVs have zero exhaust gas emissions and require no fossil fuels. Using an EV will decrease the economics by reducing the production of oil, and could help us provide cleaner air. The sales of electric vehicles will hit 410 million by 2040, this would be almost 90 times the equivalent of 2015 (Randall, 2016, p. 3). Thailand mainly uses hybrids. It appears that the US uses a lot of EVs. The Tesla electric car runs by 100% electricity that replace the internal combustion engine which use conventional oil.

Research Methodology

This study used qualitative research with a paradigm of constructivism in order to provide the most insightful understanding of the research problem. Constructivism looks for a complexity of views rather than a narrow meaning into a few categories or ideas, also the questions are broad and general so that the participants can construct the meaning of a situation (Creswell, 2009). The research strategy employed phenomenology, in order to find the development and sustainability of the automotive parts business. Phenomenology offers the meaning, structure, and importance of the lived experience of a phenomenon for an individual or group of people (Patton, 2002). Phenomenology was used to describe, understand and interpret the experiences of people in a particular event or situation (Bloor & Wood, 2006). An in-depth interview has been employed to gather the participants' perspectives. It is a way of gaining information and understanding from an individual on a focused topic (Hesse-Biber & Leavy, 2006) and "moves beyond surface talk to a rich discussion of thought and feeling" (Maykut & Morehouse, 1994, p. 80). The data analysis coding technique was used to

reduce the data and propose key concepts or categories. This benefited more understanding of accumulating data (Maykut and Morehouse, 1994).

Findings and Discussion

In this study, the researcher conducted in-depth interviews with 19 participants who were heads of organizations, or plant managers, HR Managers, engineering managers and one director of a public department. They were selected by using criteria of more than 20 years of experience in the automotive parts field in Thailand. The details of the participants appear in Table 2.

Table 2 Overview of demographic characteristics of the participant

No	Age	Education	Last/current Position	Type of Business	No. of Employees	Automotive Experience (Years)
P1	54	Bachelor	HR Manger	Thai Company	750	30
P2	50	Master	HR Manager	Multi-National	1500	27
P3	50	Master	Senior HR Manager	Multi-National	2500	30
P4	49	Master	General Manager	Multi-National	3000	25
P5	55	Master	General Manager	Multi-National	2500	20
P6	56	Master	Assistant VP	Multi-National	800	30
P7	54	Master	Senior GM	Multi-National	650	20
P8	37	Bachelor	Engineer Manager	Multi-National	450	12
P9	52	Bachelor	Engineer Manager	Multi-National	450	20
P10	50	Master	General Manager	Multi-National	270	25
P11	52	Master	General Manager	Multi-National	650	30
P12	44	Bachelor	Senior Manager	Multi-National	550	23
P13	51	Master	Director	Multi-National	Na	20
P14	48	Master	Executive Director	Thai Company	Na	20
P15	56	Doctoral	Vice President	Thai Company	1800	18
P16	50	Bachelor	General Manager	Thai Company	NA	28
P17	60	Master	Managing Director	Thai Company	300	30
P18	56	Master	Director	Public organization	NA	NA
P19	48	Master	Deputy MD	Thai Company	320	20

The researcher concluded the categories as below.

(1) The development of the automotive parts business

There were 23 categories of development from a total of 308 initial codes. The details of each category and samples of quotation perceived by participants as follows.

1 Beginning of the automotive parts business.

".....at the first stage we studied the drawings which were offered by customers and began business from motorcycles." [P2]//, "The owners began the auto parts business from small shops or row houses." [P1]//

2 Expansion of the automotive parts business.

"After orders increased the company expanded to Bangna district, Samutprakarn Province, later on expanded to Leamchabang and now expanding to abroad." [P1]//"

3 Government support to automotive parts.

"Local content limited policy made car makers ask suppliers in Japan to invest more in Thailand." [P10]//

4 Thailand's economic drive of automotive parts.

"Consumption was increased continuously." [P3]// "Low cost countries attracted automotive companies to move in." [P4]//

5 Customer support and demand in automotive parts.

"Customers ordered to control defects less than 1 ppm." [P19]// "customers requested cost down every year by 5% during the car period 7-12 years contracted." [P19]//, "Production and productivity are accepted as required from customers." [P4]//."

6 Thailand's automotive parts supply chain.

"...Partners abroad moved in to support the assembly plant in Thailand." [P8]//

7 Thailand's infrastructure.

"....infrastructure in the industrial estate has been prepared." [P4]// "The environment in Thailand was ready for investors to invest for financial, safety, security, communication, travelling and laws did not discourage." [P7]//

8 Operation development in manufacturing.

"We need to develop QCD every year to reduce the cost." [P19]//, "...Initiative to use robots to replace manpower due to the manpower shortage." [P5]//

9 Continuous improvement of activities.

"We use many tools to manage the plants such as LEAN to have zero defects and low cost." [P10]//, "Japanese always use 5S and Kaizen to make Thais follow and develop." [P12]

10 Manage 4 M's (man, method, material, machine)

"..... manage 4M. "QCD and 4 M if we can maintain quality, customers will trust and will not be lost." [P17]//

11 Management strategy.

"Manage cost to be lower, increase efficiency." [P10]// "Strategic planning has been done every year." [P15]//

12 Evaluations and incentives system.

"...Evaluation of employees and supervisors are a must measurable method to measure people after working every 6 months or one year before considering to pay bonuses and salary adjustments." [P1]//

13 International standards.

"It is a must to have TS 16949 or QS 9000 in the company which supply parts to OEM before accepted for production." [P3]//

14 Ability of people in the automotive parts business.

"Thais learn fast, can speak Japanese, after getting trained are capable to handle product instead of them." [P17]//

15 Training and development.

"Human Resources development continuously is one key factor that has built automotive parts development." [P4]//, "Toyota sent retired people to teach TPS (Toyota Production System)." [P11]//

16 Research and development.

"...Work together with the car maker to do R&D to develop product." [P14]//."

17 Thai culture support of the automotive parts

"Thai culture smile, easy, friendly both formal and informal, good relationships and understand each other." [P17]

18 Competition in automotive parts

"Competitors are increased in the Thai market." [P3]// "Competition makes the company develop to survive." [P6]//

19 Sales and Marketing activities.

"Dealer is one chain that makes auto parts grow." [P19]//

20 Demand from end users

"Car maker of auto parts need to develop and create new innovative parts to answer the demand of humans." [P6]//

21 Relationships

"Good relationships with customers make satisfaction scores higher." [P8]//

22 Third party Advice.

"During TA agreements we get knowledge, can operate, capable to control production, can do jigs and tools." [P5]

23 Support by associations and institutes.

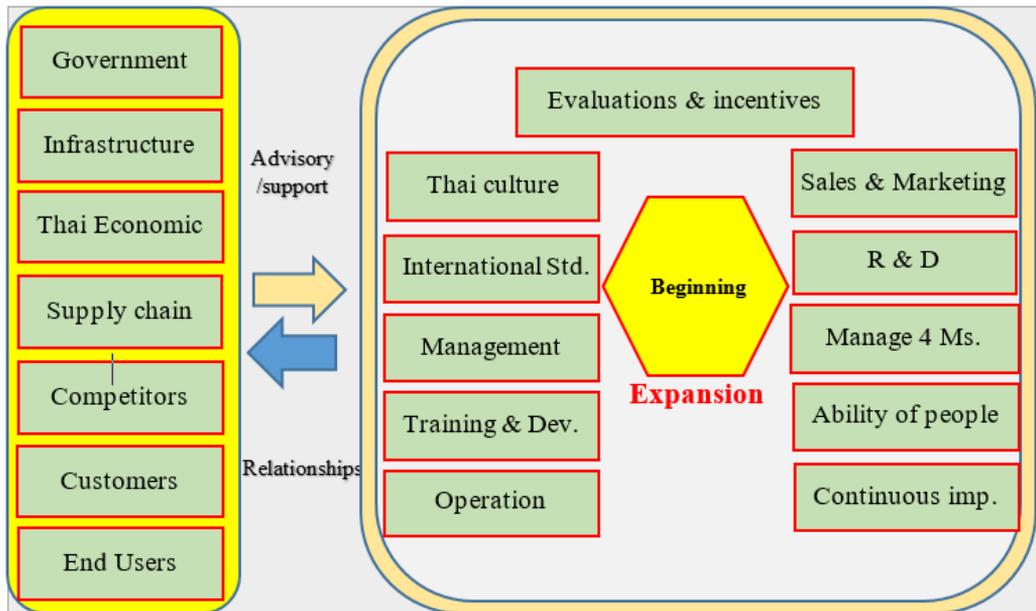
"National Productivity Institute supports to train people and the Thai Japan Association provided scholars to Japan under the AOTS program." [P10]//"

According to the 23 categories, the study found that the development of the auto parts business began from the start of the business and later the demand was growing, then the business needed to expand. So, the first group which was discussed relating to the beginning of the automotive parts business expanded after that. The second group in the study was a group of supporters composed of 7 categories, which were (1) government support to automotive parts, (2) Thailand's infrastructure, (3) Thailand's economy drive of the automotive parts, (4) Thailand automotive supply chain, (5) customer support and demand in automotive parts, (6) demand from end users and (7) competitors. The third group was comprised of 11 categories that related directly to operations. It is the operational side, there were (1) Sales and marketing activities, (2) Research and development, (3) Training and development, (4) ability of people in automotive parts business, (5) International standards, (6) Operational development in manufacturing, (7) CI (continuous improvement) activities, (8) Manage 4 M's management strategy, (9) Evaluations and Incentives system, (10) Management and (11) Thai culture support of the automotive parts. The last group which was discussed related to the connections, which were composed of 3 categories (1) Relationships, (2) Third party advice and (3) support by associations and institutes. The researcher divided the findings in this section into 4 parts:

- 1) Beginning and expansion of the automotive parts business in Thailand
- 2) Supporters to the automotive parts business in Thailand
- 3) Operations of the automotive parts business in Thailand
- 4) Connections to the automotive parts business in Thailand

The researcher concluded the automotive parts development, then formed a framework that emerged from the study, as illustrated in Figure 2.

Figure 2 the discovery framework of the development of automotive parts business in Thailand, generated by the researcher



(2) The trends of automotive parts business in Thailand

There were 13 categories of automotive parts trends from a total of 234 initial codes. The details of each category and samples of quotations perceived by participants are below.

1 Automotive Trends.

"In 10 year will use EV, EV from Solar will be same as a moving laptop" [P3]// "future will be small electric vehicle cars." [P4]//

2 Raw Material Trends.

"Plastics and Fiber will replace steel, polymer will replace steel, currently new luxury car bodies are made from fiber glass." [P1]//

3 Energy Trends.

"Energy may be solar cell or hydrogen still not clear." [P8]// "Energy will be from Solar cell, Tesla EV launched Power wall, it seems like power bank, where use solar cell from the roof and storage power at the wall, every day customer can charge electric at home." [P10]//

4 Automotive parts Trends

"EV use at least 10 modules, no engine parts, no pistons, no central shaft, no rear axle, use motor." [P10]//

5. Strategy Trends.

"Join government programs by invested solar cell" [P1]//, "Invest in a Low cost country." [P2]//

6. Technology Trends.

"Future from manual to controllable car included IT." [P11]//

7 Environment Trends

"Environmentally friendly cars, polluting cars will be abolished." [P8]//."

8 Safety Trends

"Future cars will be driven with fun, extremely safe, energy saving, answer lifestyle and friendly with the environment." [P19]

9. Improvement Trends.

"Develop R&D, follow the trend of technology, prepare yourselves and ready to compete in ASEAN." [P4]//, "Clear government policy, human resources have to prepare for future change, enforce to transfer technology of design for automotive or parts." [P10]//

10 Eco Car trend

"Big size will be changed to small size, lower CC and use in the city same as Japan." [P11]//

11 ASEAN Trend

“Investor may expand to invest in ASEAN to reduce the risks.” [P5]// “Duty tax is zero, if automotive parts companies maintain good quality, it will be a chance to expand to ASEAN country.” [P6]

12. China Trend.

“China has the potential to produce batteries to use in cars, I though China is a threaten to Thailand, development very fast.” [P6]// “Chinese cars and automotive parts will increase; many Chinese investors will do joint venture in Thailand.” [P7]//

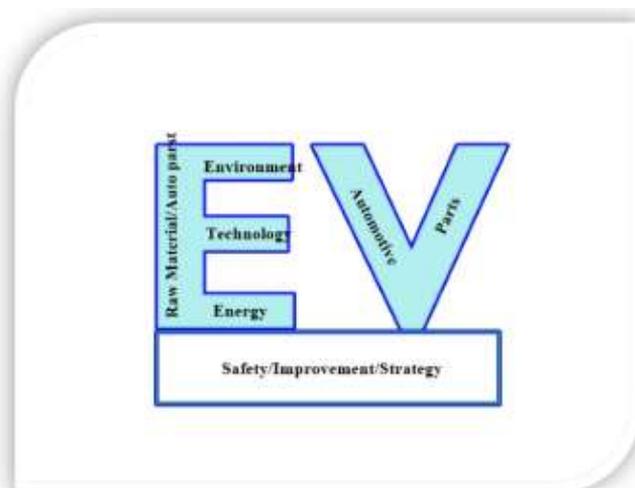
13. India Trend.

“India’s and China’s quality are not bad, but our price is higher than India’s and China’s, we always say that our quality is equivalent to Japan.” [P8]//

The studied found 9 categories related to the trends of automotive parts in Thailand, they are (1) automotive trends “90% of the participants agreed that the future will be EV in Thailand only the time table is different.”, (2) raw material trends “Previously the main material to produce the cars or materials for spare parts was from steel, but the economy and requirements by customer have changed, it needs to be a stronger, lighter car, the material has been changed from steel to plastic, fiber, polymer, aluminum alloy, glass utilization, or carbon Nano fiber glass, and the windshield is as strong as steel but lighter than steel.”, (3) energy trends “Energy is developing to reduce Fossil fuel. It can be fuel cells, H2, Electric or plug-in hybrids.”, (4) automotive parts trends “The automotive parts in Thailand have to be adapted to produce part high technology, new innovations, to be in line with the new car trend of EV or small car, engine parts will be reduced, overall total parts will be reduced significantly.”, (5) strategy trends “Organization is needed to do strategic planning, plan strategy year by year, and a 5 year plan to make sure they are in trend.”, (6) technology trends “High technology is not only equipment but machines will be modified to be autonomous, robots will replace manual machines, and replace people that do not have consistent quality.”, (7) environment trends “people understand and are willing to change and protect the environment to save the earth.”, (8) safety trends “New car vehicles ordered to install equipment or meet at least minimum international standards to protect people and decrease the number of deaths.” and (9) improvement trends “Improvement is a must to be prepared for Thailand auto parts to be ready for big changes in the near future, continuous improvement, innovative new products, and new technology are required to be studied.” The other 4 categories were a general information trend that asked from the researcher, there were the Eco car trend, ASEAN trend, China trend, and India trend.

The researcher concluded the finding of the automotive parts business trends, then formed a figure that emerged from the study, as illustrated in Figure 3.

Figure 3 the discovery figure of the automotive parts business trends in Thailand, generated by the researcher.



(3) The human resources development in automotive parts business

There were 7 categories of human resources development in automotive parts from a total of 120 initial codes. The details of each category and samples of quotations perceived by participants are below.

1. Training and development.

“Send Thais to train abroad, training in class.” [P5]// , “Thai labor has developed skills, engineering field, management skills, finally reach to top management which authorizes decisions.” [P5]//

2 Recruitment and selection.

“We recruit engineers and electronic engineers, I want students who think out of the box, the country will grow with innovation.” [P14]//

3 Organization management.

“Management needs to do continuous improvement or do strategic planning.” [P15]// , “Production effectiveness per head per unit must be higher than nowadays, and organize to develop people better, it can continue.” [P4]//

4 Continuous improvement.

“Continuous improvement by using CI, QCC, 5S, Engineering day, etc.” [P1]// “Need to use Lean, 6 Sigma to improve operations.” [P4].”

5 Culture and Values.

“Create employees to act as business partners.” [P6]// , “Make them be proud, love and loyal to the organization, build a good environment that makes them want to stay and work until retirement, make them feel a part of the organization, people in the organization are brothers, do as duty but treat as family.” [P11]//

6 Network sharing.

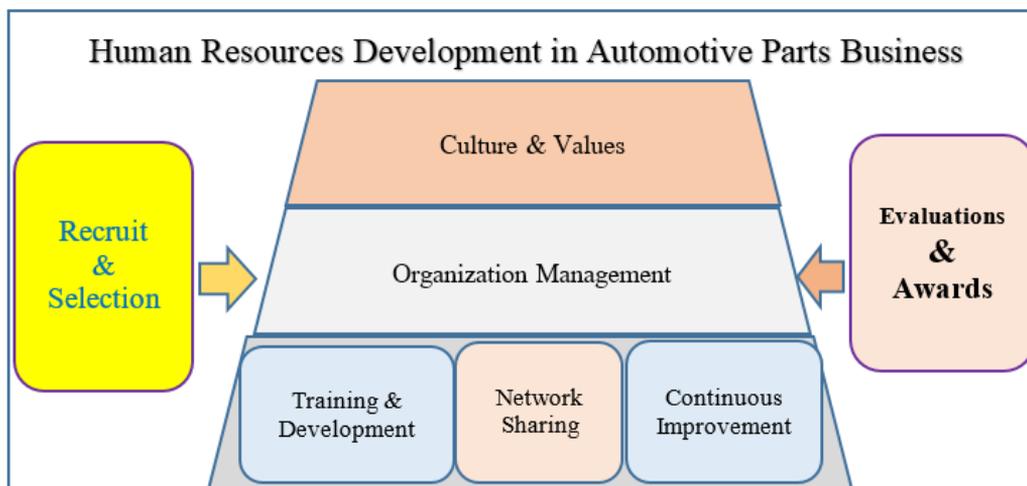
“Partners between private and public is the right way.” [P19]//, “I suggest to establish a council which is comprised of private and public organizations to create curriculum in the education department.” [P19]

7 Evaluations and Awards.

“KPI needs to be used in the organization to be competitive in the market.” [P4]// , “Evaluation system is one key of success.” [P17]//

The researcher concluded the discussion of human resources development in the automotive parts business, then formed a framework that emerged from the study, as illustrated in Figure 4.

Figure 4 the discovery framework of the human resources development in the automotive parts business in Thailand, generated by the researcher



(4) The sustainable development of the automotive parts business in Thailand.

There were 10 categories of the sustainable development of the automotive parts business in Thailand from a total of 148 initial codes. The details of each category and samples of quotations as perceived by participants are below.

1 Human Resources.

“Employees need to have competence in their job or in their function.” [P1]//, “Manpower is a key of sustainability, we need to consider elderly people, new born is less, Thai workers also are less, labor cost should not be changed frequently.” [P5]//, “Thais have to adapt and study how to develop products to be in line with the changes, retain and develop excellence, and good employees also create ethical, potential of production owners, qualified employees.” [P6]//

2 Continuous development.

“Increase productivity to cover wage increases, “[P10]//, “Study the trend, change, adapt and develop to catch up with the changes, develop technology, and create innovative products.” [P6]//

3 Raw Materials

“Raw materials are exported from abroad, before we start the production, the raw materials must be accepted from customers.” [P17]//, “Direct cost, raw materials need to be competitive due to being imported from abroad.” [P11]//

4 Evaluations and awards.

“KPI needs to be set up for everyone.” [P1]//, “Pay by performance, pay technical higher, and incentive benefits should be provided to qualified workers.” [P3]//

5 Sales and Marketing.

“Customers trust in quality, analyze customers need since assembly plant to end users, maintain quality standards as required by consumers, develop parts response to market request.” [P6]//, “Costs must be competitive.” [P7]//

6 Management.

“Do road maps to analyze risk factors, study the automobiles and automotive parts in-depth, what are the risks? What technology should be done for the future?” [P4]//, “Analyze themselves to make sure we are in the new trends.” [P5]//, “Should have short term and long term plans.” [P13]//, “Strategic planning or strategy for all concerned human, networks, and technical.” [P15]

7 Government.

“Government policies are very important, must be protected and give benefits to Thai SMEs, rules and regulations need to support Thai SMEs, give them a chance.” [P16]//, “The government makes it convenient to investors and organizations.” [P12]//

8 Culture.

“Thai habits are good.” [P5]//, “Adapt to fit with the changes.” [P9]//

9 Environment.

“Safe for investment and security.” [P5]//, “Need a secure political system.” [P9]//

*10 Networks.
“join networks both private and public organizations.” [P15]//, “join society and respond to social needs.” [P6]*

The researcher concluded the discussion of the sustainability of the automotive parts business, people should be in the plane that is ready to take off, management acts as the captain who leads the organization and stays on top. The sales and marketing team are always in the first row and lead the organization to make good relationships with customers, raw materials, culture, environment and networks acting as the supporter and backup team, government are supporters and stay at the helm to guide this plane, CI is the propeller that always rotates and makes the plane move forward, and evaluations and awards must be done by the crew and flight attendants whose duty is service per standard.

The researcher, then formed a figure that emerged from the study, as illustrated in Figure 5. Figure 5, the discovery figure of the sustainable development in the automotive parts business in Thailand, generated by the researcher.



Implications

For leaders, entrepreneurs and policy makers

This research study may help guide the leaders, entrepreneurs and those who make policies about projecting the automotive parts development, human resources development, the trends and the sustainability of the automotive parts business in Thailand. These were from the proposed framework of the automotive parts development concept and the human resources development framework as illustrated by the general information of evolution from the beginning of the automotive parts business to the expansion and growing process. On the other hand, the automotive parts future trend figure and the sustainable development figure are the process figures of bridging the business strategies into practice.

For HR professionals, OD professionals, and people who are in positions of strategic HRM, strategic HRD, and OD

The second practical implication is for HR professionals and OD professionals involved in planning and designing the organization and people aligned to the business direction and strategy. The discovery framework of human resources development of the automotive parts business in Thailand, the proposed framework demonstrates the flow from selection followed by organization management, develop people with the CI, the networks, the training and build the same culture and values and ending by the evaluations, awards or incentives to motivate people. It can help the HR profession to understand the gap between what an organization projects for the future development versus what the organization has on hand.

For individuals

The results of the studied can open up the view of the individual who works in any organization that can use this framework or figure to develop their own business or apply for their own interest. Additionally, they are aware and understand the rationale behind what the development of automotive parts business is, what the trend is, how automotive parts develop people, and what should be done to be sustainable.

Limitations of this study

This study employed a qualitative design, so that the findings may not be generalized to the whole population of the automotive parts business in Thailand as the selective sampling may not be representative of all participants. However, the value of qualitative research lies in the particular

description and themes developed in the context of a specific site (Creswell, 2009). The researcher hopes that these results may be used as a basis for the future study of development, the future trends of the automotive parts, Human Resources development and sustainability of the automotive parts business in Thailand and other countries.

Recommendations for future research

The researcher proposed four major recommendations for future research, **First**, in order to generalize the concept of the automotive parts development that emerged from the in-depth interviews with the 19 participants of the automotive parts business in Thailand, the researcher recommends that further quantitative research should be conducted with focus on the CEO or owner who is number one in the organization in order to confirm the framework conceptualization that was found. The study may be designed to survey the CEOs of the automotive parts companies, the perceptions of the proposed figure of future trends of the automotive parts business to confirm the figure that was found. It should statistically test each description of future trends of the automotive parts in a quantitative research design. **Second**, in general, the future trends consists of energy, environment, technology, raw materials, safety, improvement, strategy and the automotive parts, thereby it creates a general concept of future trends. However, Raymond (2003) argued that the future world is about profiting from knowledge and the power of interconnectivity— where enabling and personal empowerment is a key to all business-to-customer transactions. Additionally, in this study it was found that the new trends of energy was not clear whether to be fuel cell, battery, water or others which might be used in EVs (electric vehicles) or the internal combustion engine car. Therefore, the researcher recommends a qualitative methods research study of the future trend for energy of automobiles in automotive assembly plants. The participants should be leaders of product design who are responsible for designing and proposing the new energy to support a new challenging trend. The results of this study may benefit the automotive parts business to understand the new trends or new innovation implications for their business, whereby it also creates a competitive advantage. **Third**, this study found that the people development concept was how to develop people but the major one should be focus and study, it is how to develop the designer or to develop R&D for new products for the automotive parts business. It found that local and international companies in Thailand lacked of designer and knowledge of R&D to develop products. It affected the sustainability of the automotive parts in the long term because Thais do not have the knowledge, skill in design and R & D for the new automotive parts, it was common to make a product that received the drawing from the assembly plant. the researcher recommends conducting qualitative research to create a model to develop the designer and R&D in the automotive parts business by inviting companies which have their own design to explore the development of designer and R&D in the organization. This research will help HR or OD professionals to understand and build the development of the people in the organization to be competent in design and R&D. **Finally**, the sustainability of the automotive parts business consists of management, human resources or people, sales and marketing, raw materials, culture, environment, network, continuous improvement, government, and an evaluation and award system, thereby creating a general concept of sustainability of automotive parts business. Therefore, the researcher recommends a mixed methods research study of the sustainability of automobiles in diverse automotive parts organizations. The research may investigate the factors that influence the sustainability from the sampling. Then, qualitative research is employed to explore the details of each factor, which will supplement the quantitative research. The results of this study may benefit the organization with practical implications for their business, whereby it also creates a competitive advantage.

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