A STRUCTURAL EQUATION MODEL OF COLLABORATION AND INNOVATION AFFECTING ORGANIZATION PERFORMANCE IN THAILAND's AUTOMOTIVE PARTS INDUCTRY : A CONCEPTUAL PERSPECTIVE

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Abstract - This study aimed to expand understanding of the collaboration and innovation affecting organizational performance in the automotive parts industry in Thailand. The automotive industry in Thailand is growing steadily due to vehicle manufacturing for export, making the Kingdom a major production base for automotive parts. The launch of the ASEAN Economic Community (AEC) with joint market and production base has contributed to increased competition in the region. In Thailand's automotive parts manufacturing industry, organizations that focus on collaboration and innovation have been found to exhibit better performance.

Keywords - Collaboration, Innovation, Organization Performance, Thailand Automotive Parts

I. INTRODUCTION

The trend in the global automobile industry is continuing to grow and expand (see Fig.1.). It is expected that the Compound Annual Growth Rate (CAGR) for worldwide automobile assembly of global light vehicles will have an average growth rate of 5.02% per annum (rising to more than 106 million vehicles in the year 2019 [1]. The main contributing factors are strong demand and the expansion of emerging markets in the Asia-Pacific region, led by China, India and several ASEAN countries. Another factor is the cumulative demand of consumers in the United States, which is rising after coping with an economic turndown in the past [2].

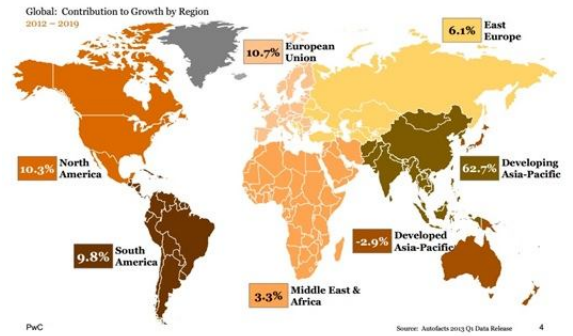

Fig.1. Global contribution to growth from 2012 – 2019 [1]

The automotive industry in Thailand is a leader in the ASEAN region and the world, with the top-ranked production volume in ASEAN and also 12th rank among car manufacturers of the world [3]. The automotive and automotive parts industries can be developed continuously. Under partnerships between the public and private sectors in areas such as labor skills certification, innovations arise from cooperation between diverse partners including customers, suppliers, contributors and competitors. However, the emergence of innovation depends on the differences between partners [4], partnerships with external agencies for improvement in operational results, and the creation of relationships, as well as the exchange of information and operation methodologies, complementing, and the sharing of resources [6], sharing of a common goal, or with mutual agreement [7]. Therefore, organizational collaboration, both internally and externally, can affect innovation creation, production processes, products, services and organizations, leading to good performance of the organization.

Objectives of the study

1. To investigate the direct influences, indirect influences and overall influences of factors affecting organisation operation in Thailand's automotive parts industry
2. To develop an equation model for collaboration structures that affect organisational performance in Thailand's automotive parts industry

II. LITERATURE REVIEW

2.1. Collaboration

Collaboration means that at least two organizations are cooperating in operation, building up a relationship, exchanging information, learning from one another, sharing a common goal and joint benefits and finding out about how to improve their operations together. It also involves solving operational problems together [5, 6, 8]. While the organizations focus on activities of significant importance in creating greater value, they should not neglect the importance of the results on operation performance, the delivery of their primary products to create customer satisfaction [9], the efforts of the organizations to earn benefits, and exploring detailed learning, both internally and externally [10].

Therefore, it is possible that organizations can benefit from collaboration with product manufacturers as well as from external knowledge to improve work performance [11]. In identifying the preconditions for collaboration [12], the difference in collaboration between different trade partners bring about product innovation and the innovation process [13]. A study on collaboration arrangement can encourage innovation that increases the novelty of products to the market for suppliers, customers, competitors, universities, consultants, private sector research institutes, public education institutions, research associations, and technology research organizations [14]. Three observable variables of collaboration consist of Supplier Collaboration, Internal Collaboration and Customer Collaboration, as shown in Table 1.

Author	Supplier	Internal	Customer
K. Grekova et al. [15]	✓		✓
Thomas Schøtt et. al. [16]	✓	✓	
Kuen-Hung Tsai et. al. [8]		✓	
Un, C.A., & Asakawa, K. [17]	✓	✓	✓
Rune Dahl Fitjar et. al. [18]	✓	✓	✓
Vito Albino et. al. [19]	✓		✓
Kuen-Hung Tsai et. al.[20]	✓		✓

Table 1: Overview of findings from literature review on Observable Variables

2.2. Innovation

Innovation is necessary to maintain profitability and a competitive advantage, especially in the context of movable resource utilization. Innovation is one of the major factors that increase competitive advantage in an organization and in an environment that is changing rapidly [21].

Author	Product	Process	Service	Organization
Wawmayura et. al. [28]	✓	✓	✓	
C. Annique Un et. al.[29]	✓	✓		
Foret, Jerad A. et. al.[30]	✓	✓	✓	
Víctor Jesús García-Morales et al. [31]				✓
Alexandra Simon et. al. [32]		✓		✓
Alain Y.L. Chong et al. [33]	✓	✓	✓	
C. Brooke Dobni [34]	✓	✓	✓	
Philipp Koellinger [35]	✓	✓	✓	

Table 2: Overview of observable variables on innovation from literature review

Innovation is important to achieving operational efficiency, as well as increasing quality of service [22]. Rogers [23] stated that the acceptance or implementation of new innovative ideas in organization and the emergence of innovations can benefit from collaboration between various kinds of partners such as customers, suppliers, distributors, and even competitors. However, the emergence of innovation depends on the variability of the collaboration between different partners [4, 24]. As such, collaboration in innovation may not be the same [25, 26]. Using external sources can also help to increase the potential and resulting products that match customer needs [27]. From Table 2, the literature review shows that innovation consists of measurement in the following dimensions: Product Innovation, Process Innovation, Service Innovation and Organization Innovation.

2.3. Organizational Performance

Financial Performance indicators are key indicators of the performance of an organization. Due to a number of limitations for financial performance indicators, non-financial indicators consist of knowledge, reputation and brand image. Satisfaction is also commonly used [36]. By using measurement or assessment of key indicators to let the organization learn about achievements with regard to financial operations, customers, internal processes, learning and development [37] and to support decision-making at both the strategic and operational levels [38]. The four dimensions of measurement consist of: Financial Perspective, Internal-Business-Process Perspective, and Learning and Growth Perspective. Working together with suppliers, buyer companies will develop the knowledge and skills that will help improve their performance [39].Maintaining the sustainability of their relationships with suppliers in the supply chain allow companies to cope with the external pressures that affect operations, including sustainable streamlining, cost savings and increased profits from sales [40]. Our literature review revealed four observable factors, consisting of Customer Retention, Employee Satisfaction, Cost Savings and growth (Growth), as detailed in Table 3.

After reviewing the relevant literature to develop the research model in Fig.2., assumptions can be shown as follows:

1. Assumption 1: Collaboration has a direct positive influence on the operation of an organisation
2. Assumption 2: Collaboration has a direct positive influence on collaboration
3. Assumption 3: Innovation has a direct positive influence on organisational performance

Author	Customer Retention	Employee Satisfactio	Cost Saving	Growth
K. Grekova et al. [15]			✓	
Fang-Yi Lo et al. [41]				✓
Robyn King et al. [42]	✓			✓
Revti Ramanet al. [37]	✓			✓
T. Ramayah et al. [43]	✓	✓		
Aron O'Cass et al. [9]	✓			
Zakuan et al. [44]	✓	✓	✓	✓
Cheng-Feng Cheng et al. [45]			✓	
Chinho Lin et al. [46]	✓	✓	✓	✓

Table 3: Overview of findings on observable variables for organizational performance

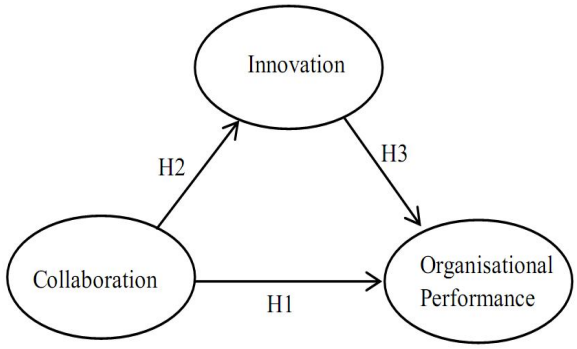

Fig.2. Conceptual framework

III. METHODOLOGY

3.1. Questionnaire Design

A questionnaire was created as a tool for measurement based on the conceptual framework and operational definition. A 7-Point Likert Scale was adjusted and tested using a sample of 30 for Cronbach's internal alpha coefficient (α-coefficient) for the mean values of the correlation coefficient. Only questions with empirically high confidence values greater than 0.70 or more were used.

3.2. Data Collection

The size of the sample or population used in this research study is considered in the ratio of 20 samples per 1 variable. Schumacker & Lomax [48] offered that a larger sample size than the size used in other methodologies is required under the Structural Equation Model (SEM) to ensure that the estimation is correct and can be representative of the population. Therefore, data for the current study was collected from a requisite number of managers (220) in Tier 1 factories of the automotive parts manufacturing industry in Thailand [49] using simple random sampling.

RESULT AND DISCUSSION

An organization can create exclusive collaboration to develop elements for innovation to achieve financial and marketing results that are superior to competitors and build up customer satisfaction. Organization can grow continuously [50, 51], whether in sales, profitability and return on investment (ROI) compared to competitors in the same industry. Organizations with effective collaboration can create networks, create relationships in the network that are good for financial performance, markets and finance in many aspects, including laying the foundation for collaboration between customers and trade partners. These factors can lead to operation driven by innovation enhanced by technology strengths, knowledge and modernization [28]. Marketing has relationships with innovative services and distribution, which can lead to the company's strategic planning and resource allocation for sustainable growth [52]. Thus, a company that has focused on improving collaboration and development will gain the organizational ability to create process innovation, product innovation, and service innovation. Further, organizational innovation leads to changes in the organization for creating sustainably comparative advantage.

CONCLUSIONS

It is essential for the automotive industry in Thailand to promote and build collaboration, including collaboration with external organizations such as universities, private business entities, research organizations, and supporting agencies in the government in order to create tangible innovation in the automotive parts industry. It is essential to develop and focus on collaboration, networking and cluster building in the auto parts industry in Thailand, including upgrading the capacity of the supportive industry in the production of quality parts, reducing costs, and retaining customers. Satisfying company employees is also of significance. The government must put more effort into coordination of increased collaboration in the automotive industry, domestically and abroad.

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