



A study of factors that affect the self-practice of employees for the development of innovation capability of the Thai automotive industry



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ABSTRACT

This research aims to obtain a research model of factors that affect the self-practice of employees and to know the factors that affect the self-practice of employees for the development of innovation capability of the Thai automotive industry. The study was conducted by reviewing related literature and theories and holding a small group meeting with experts in the automotive industry to review the research model and factors obtained from this study. This research is only part of the main research that we are currently studying. The results from this research have led to the research model. According to the research results, the factors that affect the self-practice of employees can be divided into two types: 1) Intrinsic factors that consist of (1) Reward motivation, (2) Recognition, and (3) Career Path, and 2) Extrinsic factors that consist of (1) Organizational culture, (2) Transformational leadership, (3) Good workplace atmosphere, (4) Objective and key results (OKRs), and (5) Divergent thinking. The results obtained from this research will be used to additionally expand the development of a conceptual framework in order to study the population, collect data, and extend the results of the next research.

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1. Introduction

The innovation of an organization is part of the success and performance of such organization. With a rapid change in technology and innovation, if any organization is unable to develop and change themselves by developing their innovation capability continuously, it will be difficult to succeed in the long term. Driving innovation must rely on knowledge, ability, creativity, and supportive resources, both tangible and intangible, such as technology and communication. Human capital development in all dimensions will be able to help drive the organization to become an innovation-oriented organization. Such as by doing research, buying or acquiring knowledge from employees who have learnt through their work called "Best Practices".

When employees are encountering a problem, they are required to find solutions to such problem by themselves by means of trial and error in their

work until a new knowledge or better method is obtained. The importance of self-practice can help promote the pursuit of knowledge of employees who are allowed to practice solving problems on their own through repeated practices until becoming a best practice and possibly new knowledge that is difficult to replicate. In addition, it is a way to help develop the innovation capability of employees.

The Thai automotive industry plays an important role in the national economy development and is a main branch that has driven the economy of the country (OIE, 2015). The Thai automotive industry is considered one of the main industries supported by the government. In addition, the Thai automotive industry are seen as being strongest due to the highest number of business operators, or around 2,500 operators (TAI, 2017). With the current change, the organizations need to be competitive to survive. At present, the car assembly companies (OEMs) are looking to find car parts manufacturers with innovation capability in order to increase efficiency and reduce production costs. Moreover, with the trend of energy conservation, energy-saving cars and clean technologies have occurred (OIE, 2015). The car assembly companies are therefore required to change and develop vehicles together with automotive parts manufacturers and suppliers of raw materials used in car production. They are

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thus looking for automotive parts manufacturers with innovation capability and ability to respond to current uncertainties. Therefore, The Thai automotive industry are affected and required to adapt themselves to keep up with the rapidly changing technology development because most of them are small with low capital and use of technology. However, with the largest number, these companies are therefore an important part of driving the Thai automotive industry. At the same time, importing automotive industry from ASEAN countries is a problem that will affect the Thai automotive industry due to their lower costs and advantage in tax restrictions (TAI, 2017). From the importance of such problem, there is an urgent need for automotive parts manufacturers to develop the innovation capability of employees in their organization by learning from practice is a method widely used to develop the capability of employees under the concept that new knowledge in an organization will arise from taking the experience through experiments and practices. Similarly, Self-practice as a personal learning experience where learners have a goal to develop knowledge and skills in their jobs in order to improve their innovation capability through self-learning. Therefore, this research was aimed to study of factors that affect the self-practice of employees for the development of innovation capability of the Thai automotive industry.

2. Research objectives

The objectives of this research are as follows:

- To obtain a research model of factors that affect the self-practice of employees for the development of innovation capability of the Thai automotive industry.
- To know the factors that affect the self-practice of employees for the development of innovation capability of the Thai automotive industry.

3. Literature review

According to the review of theories related to this research, the relation of relevant theoretical contents can be considered in four parts:

3.1. Thai automotive industry

In this research, we aim to study Tiers 1 automotive parts manufacturers in the Thai automotive industry. The Thai automotive industry consists of two types of business operators, i.e. automotive assemblers and parts manufacturers, which includes a total of 2,635 factories (excluding other supporting industries, such as mold, die, tooling, and jig and die), 135 of which are large factories consisting of 112 automotive parts manufacturers, 16 automotive assemblers, and 7 motorcycle assemblers, while 2,500 of which are

small and medium factories (employing 50 to 200 workers) that are all parts manufacturers.

Automotive parts manufacturers can be divided into two groups. First group consists of 709 Tier 1 automotive parts manufacturers that send parts directly to automotive assemblers. Second group consists of 1,100 Tiers 2 and 3 automotive parts manufacturers that provide raw materials and produce and send parts to Tier 1 automotive parts manufacturers. The overall structure of the Thai automotive parts manufacturing and assembly industry.

For 635 Tier 1 automotive parts manufacturers, 47 percent of which are mostly owned by foreigners, 30 percent are mostly owned by Thai people, while only 23 percent are totally owned by Thai people. According to the survey, most Tier 1 automotive parts manufacturers produce engine systems, brakes, wheels, and electric systems, etc. For this group, about 275,000 workers are employed. There are about 2,000 Tiers 2 and 3 automotive parts manufacturers, all of which are owned by Thai people. These manufacturers produce machinery, metals, plastics, rubbers, electronics, and glasses. They are all small and medium companies by employing approximately 250,000 workers and having approximately 700,000 people at various levels.

3.2. Self-practice

Means finding knowledge through self-practice that will create a direct experience for employees. It is a method of learning that arises from action, use, and experiment by employees practicing on their own. In addition, Brookfield (1993) agreed that the development of innovation capability of employees arises from the pursuit of knowledge in the work and the application of knowledge to create work through the process of thinking, analyzing, and experimenting repeatedly while the employees will control their learning activities and evaluate their own learning. Which is absolutely necessary for the current organizations with rapid changes in both technology and innovation (Jonassen et al., 2007). The organizations therefore need to encourage employees to continuously seek knowledge in their work by themselves and apply new knowledge, methods or creative ideas to develop their innovation capability in order to meet organizational goals (Brookfield, 1993).

The factors that affect the self-practice of employees can be divided into two types: 1) Intrinsic factors and 2) Extrinsic factors.

3.2.1. Intrinsic factors

Intrinsic factors consist of:

1. Reward motivation is that employees recognize the rewards that will be received from the organization if they can bring new knowledge to help improve the efficiency of the organization.

Employees will be encouraged to seek knowledge by themselves through practice with willingness to learn and get ready to use new knowledge to develop their work capability in order to achieve organizational goals (Ryan and Deci, 2000). Motivation can help motivate employees to try improve their performance in exchange for rewards from performing tasks that meet the goals as well as to work with full dedication and effort (Cameron et al., 2001).

One of the motivations that are often used in the organization to encourage employees to search for knowledge by themselves is reward. According to Kehr (2004), a reward is what the organization gives to the employees in return for their work while the organization expects results from the development of the work capability of employees, which may be money reward, salary adjustment, and annual bonus. This reward will have an incentive for employees to seek additional new knowledge to be used in developing their innovation capability (Cerasoli et al., 2014).

2. Recognition is that employees are dedicated to work until they can develop their capability to be accepted by their superiors, coworkers, and own or different departments resulting in self-pride and motivation making them ready to learn and search for new knowledge continuously. This recognition can make employees have self-confidence and try to seek knowledge to develop their work skills and creativity. It can sometimes be expressed in the form of praise, congratulation, encouragement or granting a certificate, which is the self-motivation of employees who are urged to seek knowledge by themselves and develop new work skills all the times resulting in the development of their innovation capability and leading to the recognition in the organization (Baron, 2008).

3. Career path is that employees recognize that the organization has set up a system to develop their career path as well as that employees clearly see and recognize the growth of their own career path from the communication of the organization. Therefore, they are encouraged to strive to seek knowledge by themselves and develop themselves at all times through trial and error and application of knowledge in the organization resulting in the development of their own innovation capability. They will thus feel that they are valuable and successful (Toffel, 2016). It can be expressed in the form that employees are given more duties or higher job position. Career path can help motivate employees to focus on working hard for the organization and seeking more knowledge to develop themselves continuously.

3.2.2. Extrinsic factors

Extrinsic factors that affect the self-practice of employees consist of:

1. Organizational culture is a form of employee behavior in the organization developed by members of such organization (Schein, 1992), which is a

culture that has the same understanding within the organization. It emphasizes that employees constantly seek new knowledge. With this type of organizational culture, the organization's executives will focus on seeking knowledge by oneself and allowing employees to seek knowledge through real practice and trial and error as well as will support employees to bring new knowledge and ideas derived from self-practice to create a culture of creative thinking in the organization. Examples of successful organizational cultures that have been widely used are culture of real practice, culture of seeking new knowledge, culture of developing creativity, culture of creating new knowledge from problem solving, and culture of continuous learning.

The importance of organizational culture that affects self-practice consists of many elements: (1) Involvement means that members in the organization express themselves by participating in problem solving and collaboration enabling the organization to overcome obstacles and achieve success; (2) Adaptability means an adaptation that is suitable for changes from the external environment that affect the internal environment of the organization; (3) Consistency means that members in the organization can predict in advance about the roles, duties, and work procedures so that the coordination is as expected; and (4) Mission and vision mean the overall concept of the members that is developed to create the organizational culture in order to respond to the mission and vision based on the clear framework and direction of operations (Denison and Mishra, 1995).

As mentioned above, organizational culture therefore affects the self-practice and development of innovation capability of employees through real practice and trial and error leading to new knowledge that is beneficial to the organization. Thus, the executives should focus on creating an organizational culture that encourages employees to learn by finding knowledge on their own.

2. Transformational leadership is the process by which the leaders or superiors in the organization influence the subordinates or employees in such organization by changing the efforts of the employees to be higher than those expected and developing the employees' ability and capability to a higher level. In addition, the leaders or superiors in the organization see the importance of seeking knowledge by oneself by aiming for employees to learn from repeated work practices or trial and error. This transformational leadership can reflect the identity of the leaders in the organization that has direct influence on subordinates. It can be said that leaders who focus on reforming the organization to become an innovation organization will involve the creation and development of the employee capability to make changes in a better way by allowing employees to find and apply new knowledge in the organization (Bass and Avolio, 1994). In addition, transformational leadership will

try to make employees follow (Yukl and Lepsinger, 2005) by motivating employees to seek knowledge and developing their innovation capability by themselves through the use of communication methods for employees to realize and understand the organization's expectations and to develop themselves all the times and apply new knowledge in the organization. Moreover, transformational leadership motivates employees to develop new ideas (idealized influence), uses communication to inspire employees, encourages employees to recognize problems and find solutions (intellectual stimulation), and assigns challenging tasks to the employees (individual consideration). These methods are important to allow employees to develop their capability through a search for new knowledge by real practice.

3. Good workplace atmosphere means the organization's environment that is directly and indirectly recognized by employees in such organization and that influences the performance of employees and also affects the behavior, feeling and attitude of employees towards their organization. Which creates a motivation in acquiring knowledge by oneself and influencing work behavior of employees (Salunke, 2015). In addition, good workplace atmosphere can help push people to show their knowledge seeking behavior and creativity (Sarode and Shirsath, 2014). One important aspect of good workplace atmosphere is that it will help motivate employees to seek knowledge on their own and that it will affect the feeling of employees who want to show their knowledge and ability to other people through a continuous search and application of new knowledge in their work (Raziq and Maulabakhsh, 2015). In addition, it also creates the employee's positive perception and attitude towards the organization because the positive perception of employees will encourage them to perform tasks to achieve organizational goals and to work with higher efficiency and productivity (Sarode and Shirsath, 2014).

4. Objective and key results (OKRs) is a method for setting goals of individuals consistently throughout the entire organization with the main objectives aimed to tell the goals of the organization at various levels that need to be achieved and that are challenging. Each person will have about 3-5 objectives in each quarter and 50% of all objectives are those proposed to the executives by employees through brainstorming. These objectives must be measurable, achievable, relevant, and time-bound. In addition, they must be untouchable to avoid bias. OKRs are not always 100% achieved (Niven and Lamorte, 2016).

OKRs allow us to know what our main goals are. Because the organization has limited resources, a clear framework must be established to not lose development opportunities as well as to create clearness and transparency. These goals must be disclosed to everyone in the company to know what the company's OKRs are, where we are going, and

how progress has been made, which will help to know what each employee is doing. Everyone must be able to access this information. Some organizations may use a dashboard or online tools, such as Google doc/Sheet, for everyone to see the same image.

Therefore, OKRs will encourage employees to find knowledge by themselves and apply such knowledge in their work to achieve the established goals because they participate in setting objectives and must find a way to achieve these objectives. As a result, they are required to find new knowledge, methods or ideas to use in their organization and to achieve the goals. It also helps develop the innovation capability of employees who will perceive their own capability whether it is good or poor when compared to the previous period (Mello, 2016).

5. Divergent thinking (or lateral thinking) is a new idea based on multiple, not single, perspectives or views, imagination, intuition, earnestness, and flexibility (Torrance, 1998) or called out-of-the-box thinking. It is a freaky idea by looking at something in a strange perspective. It is based on the principle of dissatisfaction with things that are complicated or difficult. Rather, it mainly focuses on looking for easy and convenient ways and escaping from the same ways in order to obtain new and easy work guidelines and satisfactory results. According to Addis et al. (2016); divergent thinking is not a gift or talent given to a person by the heaven; rather, it is a feature that is inherent in a person that may be much or less in each individual who expresses it out at a different level. In addition, according to Torrance (1998) and Wallach and Kogan (2010), there are many factors causing a person to have divergent thinking and first of which is initiation with no fixed frame. It is involved with freedom of thinking resulting in the development of knowledge. In some cases, a divergent thinking is extended to a greater extent with no repetition that can be used to solve various problems. Similarly, Davis (2009) believes that the process of divergent thinking is a skill that can be developed and stimulates the brain to create new ideas that are simple, natural, and effective.

Knowledge from self-practice to knowledge absorption. According to the review of literature supporting the influence line from self-practice to knowledge absorption of employees, Todd and Douglas (2012) summarized that self-practice can help employees focus on finding useful, new, and various knowledge to use in their work and this knowledge will influence directly to the knowledge absorption of employees. Siriwongs (2015) found that self-practice by employees plays a critical role in the present. By searching for knowledge through the use of their own experience, the employees will obtain greater understanding and knowledge resulting in knowledge absorption. Similarly, Chen et al. (2006) found that self-practice is a skill development and can encourage learning and create new knowledge that influences knowledge

absorption. [Stefanie et al. \(2014\)](#) agreed that as employees learn and search knowledge by themselves, it can lead to their performance improvement, which directly influences knowledge absorption of employees.

3.3. Knowledge absorption

According to [Cohen and Levinthal \(1990\)](#), knowledge absorption means the employee's ability to absorb and retain knowledge through the learning process by various ways, including organizational support and self-support from various sources of knowledge in both closed and open systems. The absorbed and retained knowledge is then taken through the process of thinking, analysis, and adaptation in work in order to develop the employee's innovation capability and respond to the organization's goals. [Minbaeva et al. \(2003\)](#) said that knowledge absorption is one of the processes to retain knowledge of employees by learning from various knowledge sources and such knowledge can be self-accessed for commercial benefits and response to the goal of becoming an innovation organization. At a later time, [Lane et al. \(2006\)](#) stated that the employee's ability to absorb knowledge is different based on their previous experience, education level, and accessibility to knowledge resources. Knowledge absorption consists of two related parts: (1) Ability to understand knowledge and (2) Ability to retain knowledge, but it does not relate to the ability to apply knowledge. According to [Zahra and George \(2002\)](#), the ability to search and apply knowledge can be divided into four elements: (1) Acquisition; (2) Absorption; (3) Conversion; and (4) Utilization. If personnel or employees can complete all four elements, their innovation capability can be improved.

The importance of the employee's ability to absorb knowledge will help result in the introduction or application of new knowledge in their work based on the ability to absorb and retain knowledge of each employee. This is the result of understanding of the knowledge gained from learning by various methods. As the retained knowledge is correctly and effectively used in their own work, the employee's innovation capability can be improved and the organization's goals can be met.

Knowledge absorption to innovation capability of employees. According to the review of literature supporting the influence line from knowledge absorption to innovation capability of employees, [Massa and Testa \(2004\)](#) concluded that the ability to absorb knowledge can affect the innovation capability of employees and lead to the application of knowledge to create innovation for commercial purposes of the organization. [Tsai and Tsai \(2010\)](#) reported that knowledge absorption is essential to the development of employee's innovation capability resulting in the ability to invent innovation within the organization. Similarly, [Alegre and Chiva \(2013\)](#) suggested that the ability to absorb knowledge influences the innovation capability of employees,

creates new ideas for innovation within the organization, and leads to competitive advantages. In addition, the ability to absorb knowledge can also positively influence the employee's innovation capability and also enhance the innovation capability of the organization.

3.4. Innovation capability

Innovation capability is the employee's ability to learn and absorb the knowledge. The retained knowledge can be applied to create innovation within the organization in the forms of product innovation, process innovation, service innovation, and management innovation leading to the development of the employee's innovation capability and the achievement of the organization's goals. According to [Goldsmith and Foxall \(2003\)](#); innovation capability is both attitude and behavior of employees in learning and absorbing knowledge for use in innovation. [Avlonitis et al. \(1994\)](#) said that innovation capability is both ability to learn technology and intention, which can affect the ability to absorb knowledge and strive to change knowledge into the development of innovation in the organization. Later, according to [Hurley et al. \(2005\)](#); innovation capability is the employee's ability to learn and retain knowledge that can be commercially utilized. [Nybak et al. \(2009\)](#) defined innovation capability as a creation or development of a new product, process, idea or method to do things based on creativity. [Wutthirong \(2015\)](#) stated that innovation capability is the ability to change the management system throughout an organization to develop new things in terms of new products, services, work processes, and business models.

The importance of innovation capability is involved with knowledge absorption and retention of employees. As an organization encourages employees to use their retained knowledge in inventing or creating innovation continuously, there will be new knowledge that helps create innovation within the organization. In addition, when employees are motivated by their organization by giving various rewards, they will be more encouraged to apply their retained knowledge to create more innovation in the organization. As the organization has its own innovation, it will have greater innovation capability as a result of the employee's innovation capability.

4. Research methodology

This research began with the literature review from relevant databases together with in-depth interviews with those involved in research and development in ten automotive manufacturing companies in Thailand. We developed an interview form which consists of topics and open-ended questions used in the interviews. In addition, there was a small-group meeting with experts in the Thai automotive industry to examine, test, improve or revise the interview form for effective use selected

automotive parts manufacturing companies in order to know what factors that affect the self-practice of employees that those companies used from.

4.1. Data collection

The researchers conducted in-depth interviews with senior executives who are involved in research and development in ten companies selected from the 2017 automotive industry record. These companies manufacture and provide automotive parts to original equipment manufacturers (OEMs) directly and were selected to represent the Thai automotive industry in order to know the factors that affect the self-practice of employees. They represented the manufacturers of different automotive parts: (1)

exterior and body parts, (2) interior parts, (3) engine parts, (4) drive and transmission parts, and (5) suspension and brake parts, in order to know the factors that affect the self-practice of employees that are diverse and cover all product segments of automotive parts.

4.2. Data analysis

After gathering data from in-depth interviews, we analyzed the data by taking into factors that affect the self-practice of employees. The factors that affect the self-practice of employees were then classified as intrinsic factors and extrinsic factors and can be summarized in the [Table 1](#).

Table 1: Factors that affect the self-practice of employees

Factor	Method	Source
1. Reward motivation	- Money reward - Giving of things - Salary adjustment - Annual bonus	Ryan and Deci (2000) Cameron et al. (2001)
2. Recognition	- Praise - Congratulation - Giving of certificate	Kehr (2004)
3. Career path	- Higher position - Challenging duties	Michaels et al. (2001)
4. Organizational culture	- Seeking of knowledge by oneself	Denison and Mishra (1995) Schein (1992)
5. Transformational leadership	- Focus on seeking knowledge by oneself - Focus on creating creative ideas - Focus on real practice and problem solving by oneself	Bass and Avolio (1994) Yukl and Lepsinger (2005)
6. Good workplace atmosphere	- Focus on creating workplace atmosphere that is conducive in seeking knowledge by oneself - Focus on creating workplace	Sarode and Shirsath (2014) Raziq and Maulabakhsh (2015) Salunke (2015)
7. Objective and key results (OKRs)	- Setting of consistent goals of individuals throughout the entire organization - Setting of methods to achieve the goals	Niven and Lamorte (2016) Mello (2016)
8. Divergent thinking or lateral thinking	- Imagination - Earnestness - Flexibility	Torrance (1998) Davis (2009) Wallach and Kogan (2010) Addis et al. (2016)

5. Results

The results of the study and the literature review mentioned above can be synthesized as research model of this research and can reveal the factors that affect the self-practice of employees for the development of innovation capability of the Thai automotive industry as shown in [Fig. 1](#). From the results of the study and the literature review mentioned above, the factors that affect the self-practice of employees can be divided into two types: 1) Intrinsic factors that consist of (1) Reward motivation, (2) Recognition, and (3) Career Path, and 2) Extrinsic factors that consist of (1) Organizational culture, (2) Transformational leadership, (3) Good

workplace atmosphere, (4) Objective and key results (OKRs), and (5) Divergent thinking.

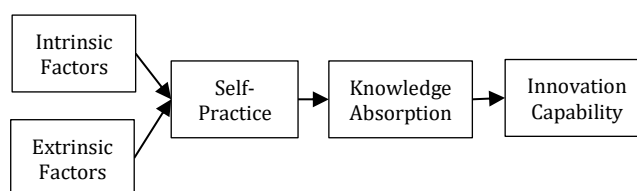


Fig. 1: Research model

These factors can also affect the knowledge absorption of employees in the automotive industry. The results of the study from the literature review and data from in-depth interviews about self-practice can be summarized in the [Table 1](#).

6. Discussion

Research results obtained in the fifth topic are consistent with objective item 1 of this research. Therefore, we can specify as a research model (Fig. 1) that the factors affecting self-practice of employees in the organization consist of intrinsic and extrinsic factors. It is consistent with the results obtained from in-depth interviews with employees in the Thai automotive industry. They agree that reward motivation, recognition, career path, organizational culture, transformational leadership, good workplace atmosphere, objective and key results (OKRs), and divergent thinking affect both intrinsic and extrinsic motivations of employees within organizations in the Thai automotive industry. Moreover, after these employees have learned through self-practice, they have also absorbed knowledge gained from such practice as well as transferred knowledge to their coworkers, which is useful and helps develop their innovation capability directly.

In addition, the research results are also consistent with objective item 2 of this research. It is thus possible to summarize the factors and methods for encouraging self-practice of the employees within organizations in the Thai automotive industry as mentioned in the fifth topic. These factors are summarized and shown in Table 1. According to the results from in-depth interviews with employees in the Thai automotive industry together with the literature review, which are consistent, we have discovered the factors that affect employees' self-practice.

According to the organizations where we collected data, they provided consistent information that the motivations by rewarding, giving money or things, increasing salary or giving annual bonus (Table 1) can directly affect the employees' self-practice.

Moreover, the results of the interviews also indicate that these motivations can develop innovations in the production processes within the organization. It can be seen from the information that the organizations have developed the automatic parts conveying equipment operated by an automatic system that can help reduce the time of transferring parts during the production processes. In addition, the innovation of mechanical arms for production has been developed to increase production efficiency resulting in the production of automotive parts with more precision as well as saving the organizations' cost of automotive parts production.

7. Suggestions

However, the companies chosen by us for interviews in this study were tier-1 suppliers that deliver parts to the car assembly companies directly and most of which are large companies. We did not select tier-2 and tier-3 suppliers and most of which are medium and small companies; therefore, this

study did not cover the entire supply chain of the automotive industry. According to the consideration, it was found that the different orders of delivery of automotive parts might result in the different abilities of organization innovation. As a result, We suggests that the next study should focus on small- and medium-sized automotive parts manufacturing companies because there are approximately 2,500 companies in Thai automotive industry in order to know the problems and solutions to develop the entire Thai automotive industry.

Compliance with ethical standards

Conflict of interest

The authors declare that they have no conflict of interest.

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