



# Self- efficacy as moderator for absorptive capacity and knowledge acquisition

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## ARTICLE INFO

### Article history:

Received: 30 January 2014;

Received in revised form:

22 February 2014;

Accepted: 4 March 2014;

### Keywords

Self-efficacy,  
Absorptive capacity,  
Knowledge acquisition.

## ABSTRACT

The objective of this paper is to investigate the role of self-efficacy as a moderator between individual's absorptive capacity and knowledge acquisition behaviour among engineers in the electrical and electronic (E&E) sector in Malaysia. The study utilized survey method to collect the data. There were 305 responses for the survey. Partial least square (PLS) properties of structural equation modelling (SEM) were used to measure the interaction between absorptive capacity and self-efficacy and its effect knowledge acquisition. The study found no support for self-efficacy as a moderator between the two variables.

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## Introduction

Self-efficacy is originally rooted in the domain of psychology but is has been applied into many research areas, including motivational and behavioural studies. Self-efficacy as a variable has been well established to complement the social cognitive theory, where, it is defined as one's belief of his or her capability to attain goal, complete the task, and deal with obstacles. Through self-efficacy, an individual is expected to have better learning capabilities and positive behaviour towards attaining any goals (Bandura, 1986). Furthermore, self-efficacy is also viewed to have influence on one's ability and overall motivation of individuals to perform a specific behaviour in any organizational or non-organizational setting (Bandura, 1977). In other words, the concept of self-efficacy is applied to understand individual creative action in organization (Bandura, 1986).

Many studies present a positive relationship between self-efficacy and task performance, as mentioned in Stajkovic and Luthans (1998). However, several studies also found that the influence of self-efficacy on performance is subject to individual differences on cognitive capabilities, interests, and other traits (for e.g.; Bandura & Wood, 1989; Mathieu, Martineau, & Tannenbaum, 1993). Self-efficacy has also been found to have no significant influence on knowledge or skill acquisition of a person (Mitchell, Hopper, Daniels, George-Falvy, & James, 1994). In a highly complicated task, self-efficacy has been validated that it can predict future action and attitude of a person in various contexts and sample types (e.g. Bandura & Wood, 1989). Additionally, self-efficacy can be utilised to predict the reason why people behave in a certain way. Obviously, this construct is suitable to be tested as a moderator in the relationship between absorptive capacities of an individual towards knowledge acquisition behaviour.

In MNCs, acquiring newly transferred knowledge either technical or non-technical knowledge is not an easy task. It requires a complete package of internal and external capability and motivational aspects before a transferred knowledge can be acquired by workers. In this context, the model of individual absorptive capacity is insufficient to explain knowledge acquisition and innovative behaviour of a person. It requires a

motivational dimension such as self-efficacy to moderate the relationship between them.

The presence of self-efficacy plays an important role in motivational aspects by being involved in every single task given, as individuals will analyse the task characteristics, personal experience, personal resources, and constraint involves in any task or action to be undertaken (Endres et al., 2007). Once the estimation for a task is done, personal goals are set before the individual embark on the related task. During the process, self-efficacy appears to be a core motivational element that leads to better achievement of a task. As it plays an important role in personal motivation, well-being, and accomplishment, self-efficacy can act as an inducement for individual to take action or persist when facing difficulties; if they believe that their action will result in the desired outcomes (Pajeras, 2002). In social cognitive theory, self-efficacy varies in three different dimensions including the level of magnitude, strength, and generality. Level of magnitude refers to the difficulty level of a task that oneself can take, while "strength" portrays the meaning of how certain of oneself to successfully performing a particular level of task difficulty, and finally "generality" means the level to which magnitude and strength beliefs generalize across tasks and situations that oneself has face (Bandura, 1986).

The concept of self-efficacy is well explained in a situation when an individual's behaviour is mismatched with their actual capabilities, where one's behaviour is often better predicted than their actual achievement (Pajeras, 2002). It also conveys that, the stronger the perceived self-efficacy of an individual the higher effort to be committed to an activity will be (Bandura, 1977). Bandura (1986) also added that self-efficacy will determine the depth of the effort of an individual that they can perform, in addition to the length of the time that they can persevere to face obstacles. Furthermore, self-efficacy also determines the extent of effort and perseverance that individuals can take to overcome any obstacles and difficulties that they face. This statement is clearly supported in Bandura (1986) as he mentioned "what people think, believe, and feel affects how they behave" (p. 25). In many circumstances, self-efficacy can moderate the relationship between personal and behaviour, where, in this context self-efficacy is projected to moderate the

relationship between absorptive capacity (personal), and knowledge acquisition (behaviour).

### **Absorptive Capacity**

Since it was introduced by Cohen and Levinthal (1989; 1990), the definition of the construct has evolved according to different context and scope of studies. Cohen and Levinthal (1990) define absorptive capacity as the capability to value, assimilate, and apply the knowledge from external sources. However, during the process of developing the absorptive capacity construct, the individual cognitive structures and knowledge acquisition capabilities are applied, mainly referring to a part of the organizational learning process in an organization. Cohen and Levinthal (1990) have also claimed that absorptive capacity of a firm is basically derived from individual absorptive capacity because organization will never learn but individual will. Even though organizational absorptive capacity is a not a cumulative of individual absorptive capacity in a firm, but individual absorptive capacity still plays a dominant role in overall firm's absorptive capacity.

Zahra and George (2002) had re-conceptualized the definition of the construct into a new dimension of absorptive capacity, stating that absorptive capacity is a set of capabilities to acquire, assimilate, transform, and exploit knowledge. Tu et al., (2006) relate the refinement of absorptive capacity by Zahra and George (2002) as the organizational mechanism that facilitates the process to identify, communicate, and assimilate the relevant external and internal knowledge.

Absorptive capacity is unique as it is applicable in multiple-level construct, either at individual, organization, or intra-firm level. However, initially, absorptive capacity started at the individual level that emerged with the prior related knowledge of individuals and the diversity of their background (Cohen and Levinthal, 1990). It was argued that the firm's ability to absorb knowledge will strongly depend on the ability of the individuals in organization to absorb knowledge, in addition to the characteristics of individual members in that organization.

Cohen and Levinthal (1990) clearly stressed that the organization's absorptive capacity always rely on the individual absorptive capacity of their employees. In brief, the individual absorptive capacity can provide significant impact to the firm's learning process especially when that particular firm is involved in knowledge transfer activities (Tang, Mu, & MacLachlan, 2010). So, it is important to extend the concept of absorptive capacity to the individual level especially in cognitive domain because it can reflect the organizational competitive advantage and performance. Due to the importance of individual absorptive capacity to the organization, prior investment to develop the individual absorptive capacity is necessary in order to improve the firm's performance and competitive advantage.

With regard to the concept of individual absorptive capacity, Hamel (1991) argues that in an organization, the individual capacity to absorb knowledge is not equally distributed. Everybody has different capability to absorb knowledge because individual capabilities rely on prior related knowledge such as prior educational background and exposure to that particular field, and the motivation of the individual workers. Under certain condition, the compulsory skill to observe, interpret, apply, and improve the knowledge only belong to certain employees, while others might not possess those skills (Hamel, 1991). When this occurs, the effectiveness of knowledge transfer activities in either inter or intra-firm knowledge transfer will be lower in view of the fact that individual employees in a firm play a vital role in overall knowledge transfer process (Tang et al., 2010). This statement is

supported by Kwok and Gao (2006) stating that individuals who possess better absorptive capacity will be more competent in learning, assimilating, and utilizing knowledge. Hence, the initiative to strengthen the individual absorptive capacity in organization is important in order to stimulate the organizational absorptive capacity that results in better outcome for the organization such as better organizational performance and the-state-of-the-art of innovation (Park, Suh & Yang, 2007; Lichtenthaler, 2009; Vinding, 2006; Arbussa & Coenders, 2007).

### **Knowledge Acquisition**

Past research in the field of international business studies has established the benefit of MNC spillover effects to developing nations through the spillover of advance technologies, knowledge, and skills to individuals, firms, and industries (Teece, 1980). The technology, knowledge, and skill spillover however relies heavily on the effectiveness of knowledge acquisition activities among local employees. MNCs normally expand their operations through transferring knowledge from headquarters to subsidiaries (Minbaeva et al., 2003). However, the transfer process requires reciprocity from both MNCs and their employees. On the recipient side, the effectiveness of knowledge acquisition is identified as the main driver for successful knowledge transfer within MNCs. Similarly, intra-organizational knowledge transfer is also related to the extent to which individuals acquire and apply the knowledge they have obtained (Minbaeva et al., 2003). This directly reflects to the role of individuals in knowledge transfer process that is conceptualized as knowledge acquisition process. This process is also related to the capabilities of acquiring, integrating, storing, sharing, and applying knowledge that is crucial in building and sustaining the competitive advantage of a firm (Anh, Baughn, Hang, & Neupert, 2006). In order to perform knowledge acquiring activity, firms need to rely on the availability of domain expert from among their employees in the firm.

Generally, knowledge acquisition is an activity within the knowledge management domain that has been widely practiced among firms, especially to those who want to gain a specific knowledge in a very specific context from the targeted activities. According to Huber (1991), knowledge acquisition is the process by which knowledge is obtained. Specifically, knowledge acquisition is defined as "the acquiring of information directly from domain experts" (Mykytyn et al., 1994, p. 98). It is also refers to the involvement of the employees in certain activities that enables the employees to recognize and acquire the tacit or explicit knowledge (Zahra & George, 2002). During that process, it also requires organizational members to identify the value of knowledge, acquire, and apply it for daily tasks in their organization (Cohen & Levinthal, 1990; Todorova & Durisin, 2007).

Even though scholars in international business view knowledge acquisition as an organizational level constructs applied by firms and not by individuals (Lyles & Salk, 2007; Inkpen, 2000; Ranft & Lord, 2000; Tsang, Nguyen, & Erramilli, 2004; Hau & Evangelista, 2007; Evangelista and Hau, 2009); however, the knowledge acquisition constructs originating from these perspective only focused on issues regarding international joint-ventures and the activity between head-quarters and their subsidiaries. Furthermore, the abovementioned studies only measured knowledge acquisition process occurring at the organizational level only.

On the contrary, past research by Anderson (1987), Kanfer & Ackerman (1989), Mykytyn et al. (1994), Ackerman, Kanfer, & Goff (1995), Anderson, Fincham, & Douglas (1997), Politis

(2003), Junaidah (2007), and Liu & Liu (2008), view knowledge acquisition as an individual level constructs applicable and measurable at the individual level. This perspective originates from Polanyi (1967) who stated that organizational knowledge is actually rooted in individuals and must be acquired at individual level before it is transformed into organizational knowledge. Likewise, Tosi et al. (2003, p.32) assert that knowledge acquisition as “an overt act of the person that can be observed and measured”. In addition, Bourdieu (1990) also agree that knowledge acquisition is an individual behaviour derived from an individual’s interaction with tasks, resources, and people within a particular situation. Furthermore, knowledge acquisition is suitable to be measured as individual behaviour and analysed at individual level since individuals in firms are the one who acquire knowledge while organization just create the context for individuals to support the knowledge acquisition activities (Anh et al., 2006).

Prior to knowledge acquisition, the individual’s background and internal capabilities such as existing skills and individual traits will dominate the effectiveness of knowledge acquisition of a worker (Politis, 2003). In a narrower context, the existing skills and individual traits that encourage knowledge acquisition activities is similar to absorptive capacity. All of the elements pre requisite to knowledge acquisition such as having a prior knowledge in related area, possessing good skills, and positive individual traits are connected to absorptive capacity. Generally, knowledge management scholars define knowledge acquisition as a part of the process in knowledge transfer activities (Darr et al., 1995; Argote & Ingram, 2000) and it involves accessing and sourcing knowledge from those who are already in possession of that knowledge (Gnyawali, Singal, & Mu, 2009).

Additionally, individuals are naturally heterogeneous, and therefore their capability to acquire knowledge and the behavioural pattern of knowledge acquisition itself will manifest at different stages especially in the context of intra-organizational knowledge transfer, where knowledge acquisition will ensue when it is only required. In order to absorb the knowledge transferred from transferor, employees must have prior knowledge related to that area in order for the knowledge to be transferred smoothly (Minbaeva et al., 2010; Cohen & Levinthal, 1990). Moreover, knowledge acquisition also involves acquiring information and knowledge to be applied for problem solving activities. In this aspect, individual cognition will have priority, in order to facilitate how the data are acquired, organized, assimilated, and applied within a specific organizational context (Lemon & Sahota, 2004).

Further explanation concerning knowledge acquisition is also described in Anderson’s Skill Acquisition Model (Anderson, 1982; 1983). This model explains the flow in the acquisition process. During the first stage or at ‘declarative stage’, knowledge is acquired as a set of facts verbally. It is followed by ‘knowledge compilation stage’, referring to the conversion of knowledge into a procedural form of practice. The last stage refers to the ‘procedural stage’ involving application of knowledge in an appropriate manner (Anderson, 1982; 1983). In this study, knowledge acquisition will be portrayed as behaviour consistent with the social cognitive theory that explains the interaction between environment, individual, and behaviour.

#### **Self-Efficacy as moderator for Individual Absorptive Capacity and Individual Knowledge Acquisition**

Self-efficacy is a type of internal confidence of oneself towards his or her ability to achieve goals. It drives the motivational development of a person that led them to achieve

their objective. The inter-relationship between individual absorptive capacity and self-efficacy is obvious since the level of confidence of oneself towards their ability is related to their perceived capabilities that they have. Without prior related knowledge or experience in any related areas, it is hard for any individual to believe in their ability in achieving any goal in that discipline since the confidence level of oneself comes from their absorptive capacity level.

In social science, self-efficacy is the motivational force that can influence someone to perform certain behaviour, to endure the challenges, obstacles, and difficulties (Stajkovic & Luthans, 1998). Moreover, the existence of self-efficacy in oneself also increases the tendency of oneself to perform a specific challenging behaviour (Bandura, 1997) especially if it involves acquisition of new knowledge and performing an innovative behaviour in an organization. Acquiring new knowledge is considered as challenging behaviour for an individual since the process of knowledge acquisition involves sophisticated learning activities that require integration between both cognitive and behavioural elements during the learning process.

In addition, the existence of self-efficacy in knowledge acquisition activities is important as previous research has revealed that there is huge impact of cognitive and affective consequences on skill or knowledge acquisition (Ackerman et al., 1995). Self-efficacy is an important element from motivational perspective as it is expected to increase when a particular knowledge is acquired (Kanfer & Ackerman, 1989). To portray the importance of link between self-efficacy and individual knowledge acquisition, Ackerman et al. (1995) summarize the phenomena of self-regulated motivation and knowledge acquisition as below:

“As skills are acquired, greater demands on motivational control are expected. Positive motivational thought frequencies may be expected to change in concert with positive self-regulatory processes.” p. 273

From the above statement, self-efficacy is related to positive self-regulatory process, in addition to positive motivational control that acts as an inner drive to stimulate the person’s behaviour. In motivational theory as those favoured by Kanfer & Ackerman (1989) also raises the concern of the importance of self-regulatory skills on knowledge acquisition performance. From this perspective it is believed that self-efficacy which is referring to self-believe of a person’s capabilities to attain goal (Bandura, 1986) will enhance the effort to acquire more knowledge that finally will end up with more knowledge acquisition activities. Meanwhile, people with low self-efficacy will result lower levels of effort to achieve something they want (Bandura, 1986). In this context, low self-efficacy is perceived to have lower effort on knowledge acquisition activities among individuals.

#### **H1: Self-efficacy of a person moderates the relationship between individual absorptive capacity and individual knowledge acquisition.**

H1a: Self-efficacy of a person moderates the relationship between the ability to identify knowledge and individual knowledge acquisition.

H1b: Self-efficacy of a person moderates the relationship between the ability to assimilate knowledge and individual knowledge acquisition.

H1c: Self-efficacy of a person moderates the relationship between the ability to apply knowledge and individual knowledge acquisition.

**Table 1. The structural interaction model results base on PLS Product Indicator Approach for the relationship between ABS and IKA with the presence of SE**

H1	Structural Relation	Model 1 (Main Effect)				Model 2 (Interaction Model)				β Diff.
		Path Coeff.	Sig. R <sup>2</sup>	STERR	T- Stat	Path Coeff.	Sig. R <sup>2</sup>	STERR	T- Stat	
-	ABS1 → IKA	0.1624	20.5%	0.0615	2.6422**	0.150	25.2%	0.1107	1.3553 <sup>++</sup>	-0.0124
-	ABS2 → IKA	-0.0008		0.0822	0.0101 <sup>++</sup>	-0.0038		0.0853	0.0440 <sup>++</sup>	-0.0030
-	ABS3 → IKA	0.2758		0.0821	3.3587**	0.2017		0.1762	1.1447 <sup>++</sup>	-0.0741
-	SE → IKA	0.1071		0.0599	1.7891*	0.1018		0.1628	0.6256 <sup>++</sup>	-0.0053
H1a	ABS1 * SE → IKA					-0.073		0.2056	0.3549 <sup>++</sup>	
H1b	ABS2 * SE → IKA					0.0509		0.1148	0.4434 <sup>++</sup>	
H1c	ABS3 * SE → IKA					-0.1901		0.2820	0.6742 <sup>++</sup>	

Note:.(\*) Significant at p<0.05, (\*\*) Significant at p<0.01, and (++) is not significant that based on one-tailed t-statistics table, as t-value greater than 1.65, it is significant at p <0.05, while t-value at 2.35 or greater, it is significant at p<0.01.

**Methodology**  
**Data Collection Method**

In the sample selection process, the researcher began with identifying the MNCs that operate in electrical and electronic (E&E) sector. A master list that contained 334 MNC companies that actively operate in E&E sector was obtained from Malaysian Investment Development Authority (MIDA). Out of 334 MNCs, the sample companies are randomly chosen based on systematic sampling technique. All odd numbered firms from the list were chosen as sample companies for data collection process. Out of 334 companies from MIDA directory, 169 companies were chosen. For each company, five questionnaires were distributed to the engineers via the human resource manager, which involves a total of 845 set of questionnaires distributed.

In this study, the data was collected via survey method. The survey questionnaires were distributed through mail survey and ‘drop and collect’ approach. The reason for the selection of these two methods is due to the ability to obtain the data in a wider geographical area with lower costs compared to interview and phone call approaches (Hochstim & Athanasopoulos, 1970), respondents can answer the questionnaire conveniently, the identity of the respondents are kept confidential, and the data is able to portray the population accurately (Zikmund, 2003; Bryman& Bell, 2011).

In this study, a total of 1245 questionnaires were distributed using mail survey and drop-and-collect approach. The reason for applying various techniques in data collection procedure is due to the ability of the combination techniques to gain higher response rate (Parker, 1992; Schaefer & Dillman, 1998). In this study, the questionnaires’ distribution was broken-up into 845 questionnaires for mail survey and 400 questionnaires for drop-and-collect approach. Of 400 questionnaires distributed via ‘drop-and-collect’ approach, there were 111 responses from this method and there were 194 responses from the mail survey method. In total there were 305 (24.5%) responses.

To test the hypotheses of this study, PLS (Partial Least Square) analysis was utilized as it is the most appropriate method to meet the research objectives and to adapt to the research data conditions. Conceptually, the partialleast square (PLS) is similar to multiple regression analysis because both objectives are to maximize the explained variance in the dependent constructs (Marcoulidesetal., 2009).

**Measures of Individual Absorptive Capacity**

The measurement for individual absorptive capacity in this study was adapted from the work of Wall et al. (2011), Pedrosa and Jasmand (2011), Whangthomkum et al. (2006), Kwok and Gao (2006), and Flatten et al. (2011). The justification behind

the selection of the instruments from these authors is due to the inability of the instrument from a single individual author to properly capture the concept of absorptive capacity. The combination of instruments from different authors into specific dimensions is essential in order to match it to the central conceptualization of absorptive capacity based on Cohen and Levinthal (1989; 1990). They conceptualized the absorptive capacity as the capability to identify, assimilate, and apply knowledge. In this study, the instrument of individual absorptive capacity is divided into three dimensions, which involve the ability to identify, assimilate, and apply. All of the items apply five-point scale, ranging from very low (1) to very high (5).

**Measures of Individual Knowledge Acquisition**

Basically, knowledge acquisition is defined as accessing and getting knowledge from other parties, manuals and self-learning through trial and error (Gnywali et al., 2009). Knowledge acquisition is classified as a behavior and it ‘could be further deconstructed into internal process’ (Minbaeva et al., 2010, p.5). In other words, knowledge acquisition is also ‘an overt act of the person that can be observed and measured’ (Tosi et al., 2003, p.32). Therefore, the constructs must fall under behavioral domain, specifically in this context applied as individual behavior. Rooted from an extensive literature review, eight items were adapted from Junaidah (2007), Kim and Lee (2010) and Silver and Marvel (2011). The purpose of these instrument items is to obtain the information concerning the engagement of local employees in MNCs knowledge acquisition activities at their workplace. The measure applies five point scale ranged from (1) for “strongly disagree” to (5) for “strongly agree”.

**Measures of Self-efficacy**

Self-efficacy is defined as “beliefs in one’s capabilities to mobilize the motivation, cognitive resources, and courses of action needed to meet given situational demands” (Wood & Bandura, 1989, p. 408). The history of self-efficacy construct development began with Sherer et al. (1982) who developed 17-item General Self-Efficacy Scale (SGSE). Consequently, it has been widely used in clinical and organizational research. After several years, scholars found that serious discrepancy exists between the conceptualization of GSE “as an undifferentiated belief in one’s generalized ability as a unitary construct on and the multi-factorial structure of the SGSE scale on the other” (Chen, Gully, & Eden, 2001, p. 66). This discrepancy leads the researchers to validate the SGSE model again and the final result end-up with new 8-item SGSE, from initially comes with 17-item. This study adopted this new revised 8-item SGSE measure with 5-point Likert scale ranging from strongly disagree (1) to strongly agree (5).

### Data Analysis

The moderating variable is referred to as the “... variable that affects the direction and/or strength of the relation between an independent or predictor variable and a dependent or criterion variable” (Baron & Kenny, 1986, p. 1174). To test the moderating effect of self-efficacy on the relationship between individual absorptive capacity and individual knowledge acquisition, the research employed PLS Product Indicator Approach as suggested by Chin, Marcolin, and Newsted (2003). The PLS Product Indicator Approach is a technique that uses the predictor's and moderator's indicators to create interaction between both of them. The result from the interaction is known as a product term from  $X$  and  $Z$  interaction that used to reflect the latent interaction variables.

The result from statistical test as displayed in table 1 above shows that the hypothesis H1a, H1b, and H1c are not significant at  $p < 0.05$  at path coefficient  $-0.073$  ( $T = 0.354$ ) for H1a,  $0.05$  ( $T = 0.44$ ) for H1b, and  $-0.19$  ( $T = 0.67$ ) for H1c. In other words, there are insufficient evidence to support the presence of self-efficacy as a moderating variable in the relationship between individual absorptive capacity and individual knowledge acquisition. The structural model also shows that the appearance of moderating variables doesn't give significant effect size or  $f^2$  to the criterion variable with the value at  $f^2 = 0.00963$ . Even though all relationships in interaction model and effect size are not significant, the  $R^2$  value shows five percent increase when the moderating variable was introduced in the model.

### Conclusion

Based on the literature, previous study had established self-efficacy as a moderating variable between individual absorptive capacity and individual knowledge acquisition. However, surprisingly, the findings of the current study indicated otherwise, as all the hypotheses were not supported, indicating there were insufficient evidence to prove the effectiveness of self-efficacy in its role as the moderator between the two variables. From the statistical analysis, the insignificant results could be the result of inadequate strength of the structural model to detect the significant interaction effect of for the predictor and moderator variables on the criterion variable. In the context of this study, inadequate strength refers to the insignificant increase in  $R^2$  value after the interaction variable was inserted in the structural model.

In conclusion, the study indicates that even though the Malaysian employees are embedded with self-efficacy but it might not compensate for higher level of individual innovative behaviour or better individual knowledge acquisition. While the result of the study was contradictory to the findings in motivational studies, for e.g. by Ackerman, Kanfer and Goff (1995) and Kanfer and Ackerman (1989), but it has revealed other aspects that could be investigated in the future. Elements specific to MNCs such as salary level, organisational culture, and innovation activities taking place during the knowledge transfer process between the headquarters and subsidiaries might provide an explanation why the workers' self-efficacy have not significantly influenced the relationship between absorptive capacity and knowledge acquisition.

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