

Statistical impacts of interaction between mindset and engagement on Kaizen success: Empirical case among SMEs in Vietnam



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ARTICLE INFO

Article history:

Received 25 December 2018

Received in revised form

3 March 2019

Accepted 5 March 2019

Keywords:

Kaizen success

Continuous improvement

Mindset

Engagement

Interaction

ABSTRACT

The current trend of international integration urges business organizations to continuously improve their competitive advantage for their survival and sustainable growth. And Kaizen has been a preferable approach in practice. This study aims at investigating the statistical impacts of the interactions between mindset and engagement of organization members on the Kaizen success among SMEs in Vietnam so that they can have proper actions and prioritize their operations within their available resources. It is found that not only the mindset and engagement but also their interaction positively affects Kaizen success. Among them, the interaction between mindset and engagement has the strongest impact.

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1. Introduction

The recent advances in the international integration has brought both several chances for growth and many risks affecting the survival and growth of almost every business organization. Thus, it is always desired to have better competitiveness on the marketplace (Arya and Choudhary, 2015). Among several existing strategies, Kaizen is a preferred approach for their operational excellence (Iberahim et al., 2016; Kamińska, 2015) because it greatly helps to improve the quality, increase level of efficiency, lower waste and production cost (Macpherson et al., 2015). As Kaizen needs the special engagement all organization members for continuous improvement, it is considered to have a meticulous relation to organizational improvement, corporate strategies, resulting in the economic and environmental gains in practice (Lozano et al., 2017).

In Vietnam, there are more than 561,000 enterprises of all types operating in different business sectors; about 98% of them are SMEs (VGP, 2018). It is found that the SMEs create more than 50% jobs for the local people and provide significant contribution of more than 40% of national GDP and about 18% of national budget (AFED, 2018);

consequently, they always play an important role in developing the national economy.

According to Article 6 of Decree No. 39/2018/ND-CP by the Government (Government Portal, 2018), SMEs can be grouped into three main types including micro, small and medium. They are grouped based on two measures, including: (1) Annual average number of employees contributing social insurance (Number of employee); and (2) Annual revenue or Total capital registered. Table 1 briefly presents details of these types mentioned in the Decree No. 39/2018/ND-CP (Government Portal, 2018).

Kaizen has been well noted in Vietnam for about three decades due to its great benefits once successfully implemented. Therefore, it has been preferably considered as one of the development strategies of many companies in Vietnam. However, there are only limited number of cases successfully implementing Kaizen in practice. To encourage others to try their best in implementing Kaizen, author's current project aims at identifying key determinants of Kaizen success among the successful cases. Some factors, including mindset and engagement have been identified as shown in Nguyen (2019). And this paper presents a part of the project results by investigating statistical impacts of the interaction between mindset and engagement of organization members to provide more insights of their impacts on Kaizen success as shown in STEAM-ME model (Nguyen, 2019).

The rest of this paper is organized as the following. Section 2 reviews relevant literatures about Kaizen, relevant measures of Kaizen success, brief information about mindset and engagement as

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well as some hypotheses to be investigated in this study. Section 3 presents research methods in data collection and data analysis while empirical results

are explained in Section 4. Discussion and conclusion make up the last section.

Table 1: Types of SMEs in Vietnam

Areas	Measures	SME types under Decree 39/2018		
		Micro	Small	Medium
Agriculture, forestry, aquaculture, industry and construction	No. of employee (e)*	≤ 10	≤ 100	≤ 200
	Total capital (BV)**	≤ 3	≤ 20	≤ 100
	Annual revenue (BV)**	≤ 3	≤ 50	≤ 200
Trading and Services	No. of employee (e)*	≤ 10	≤ 50	≤ 100
	Total capital (BV)**	≤ 3	≤ 50	≤ 100
	Annual revenue (BV)**	≤ 10	≤ 100	≤ 300

Notes: * Employees; ** Billion Vietnam Dong

2. Literature review

2.1. Briefs about Kaizen

Continuous improvement (CI) has been a key concern in the current business environment to search for operational excellence and increase competitive advantage. A commonly used term in the searching for CI is “kaizen”, resulted from two independent words: “Kai” (means “change”) and “Zen” (means “good/better”). Thus, “Kaizen” is generally comprehended as “change for the better” or “continuous improvement” (Iwao, 2017), “a philosophy guiding individuals and organizations to do better achievements in the long term” (Miller et al., 2014) or “self-sacrifice for everyone’s betterment”. Over the last three decades, the term “Kaizen” has well attracted the special attention of many scholars and practitioners in the field of management science (Miller et al., 2014; Carnerud et al., 2018). Nowadays, Kaizen is considered as grand-scale, companywide, daily and everywhere improvement made by everyone. Critically, the ultimate meaning of Kaizen is to improve work area and develop responsible workforce to achieve certain objectives in an accelerated timeframe (Isenberg, 2010; Styhre, 2001; Farris et al., 2009). Thus, Kaizen is usually used as a strategic tool in production enterprises to improve their productivity because it significantly improves the working attitude of employees towards their work and enhances the self-confidence and the consciousness of their duties towards their workplace, their working processes. During the Kaizen implementation, employees are always encouraged to share their ideas to improve the existing standards (Ma et al., 2017).

In fact, Kaizen aims at making small, instant and incremental enhancements in work standards generated repeatedly by employees (Iwao, 2017). Consequently, it requires the full engagement of all members in related improvement activities (Singh and Singh, 2015; Suárez-Barraza and Ramis-Pujol, 2010); and, there is no need for organizations to muster their capital investment or pay special preparation at once. Kaizen deals with three pillars: (1) averting waste, (2) optimizing workplace and (3) standardizing processes (VGP, 2018). Therefore, Kaizen is an effective tool to: (1) economically

eliminate or reduce hidden costs resulting from undue waste; (2) enhance product quality with lower costs and short service time (Jurburg et al., 2017); (3) minimize irrecoverable downtime (Rodríguez-Padial et al., 2017), among others.

2.2. Kaizen success and its measures

2.2.1. Kaizen success

Basically, Kaizen is a deliberate and continuing process of changes rather than an abrupt disturbance and it needs full engagement of all members from high-level executives to shop-floor employees (Lewis, 2000). In the process, it is always important to have a thorough review of the current processes and recognize areas for improvement before proper training sessions and related supports are provided. Also, employees are fortified to identify all possible problems in their daily processes and think about viable enhancement solutions. Steadily, they likely take their rational ownership of their individual procedures; lastly, they will continuously improve their own processes with their honor and responsibility.

Though it is quite easy to comprehend the Kaizen principles, making it successfully implemented in practice is rather challenging (Idris and Zairi, 2006; Prajogo and Sohal, 2004; Bateman and Rich, 2003). There are several reasons for failures of Kaizen implementation, for examples, resistance to change among seniors, the vagueness of “continuous improvement” concepts (Garcia-Sabater and Marin-Garcia, 2011), the absenteeism of reward, absence of suitable training for employees and long suspensions in processing new proposals (Robinson and Schroeder, 2004), lack of necessary resources to perform improvement activities, and fail to recognize the need to change (Prajogo and Sohal, 2004), lack of acquaintance, and poor employee involvement (Dora et al., 2013), among others. In this study, only the mindset and engagement of organization members are investigated.

2.2.2. Measures of Kaizen success

Many scholars and practitioners have conducted different studies to discover the determinants of Kaizen success; however, how to effectively measure

the overall success is limitedly presented. As discussed by [Nguyen \(2019\)](#), through a qualitative research based on group discussions with leaders from six SMEs successfully implementing Kaizen, this research project investigates the following four measures for the success, including: (1) Effective usage of existing resources (space utilization included) for incremental and continuous improvement; (2) Increased efficiency by optimizing operations and processes with properly arranged layouts of work area and work flows to minimize superfluous movement or operations as well as production costs; (3) Safer, cleaner and better-organized working environment perceived by relevant stakeholders; and (4) Positive mindset of “continuous improvement” among employees.

2.3. Affecting factors

From an exhaustive review of existing literature, Kaizen implementation is affected by several factors, such as: workplace environment, policies for innovation and intercommunication ([Suárez-Barraza et al., 2011](#); [Hiam, 2003](#)), commitments from high-level management, approaches, strategies, policies for the sustainability of Kaizen activities ([Bateman and Rich, 2003](#); [Suárez-Barraza et al., 2011](#)), etc. Among them, mindset and engagement have significant impacts on Kaizen success ([Nguyen, 2019](#)). And this paper further investigates for their impacts by considering their interaction effects on the Kaizen success among the SMEs in Vietnam investigated by [Nguyen \(2019\)](#).

2.3.1. Mindset

This factor is newly proposed in this research project through a formal qualitative research. The term “mindset” used in this study context is generally referred to the mindset of all members in an organization. Mindset is defined as the views a person adopts for himself/herself and it significantly influences his/her usual behaviors and relevant responses to his/her daily affairs ([Dweck, 2007](#)). Or, it is also defined as the attitudes, behaviors and practices which shape the way an organization approaching and executing its strategies ([Thomas et al., 2007](#)). There are two major types of mindset: fixed mindset and growth mindset ([Dweck, 2007](#)). Between them, the latter is more vital due to its benefits in terms of creating resilience ([Dweck et al., 2014](#); [Miele et al., 2013](#); [Nolan et al., 2014](#)), tenacity ([Dweck et al., 2014](#)), improving collaboration, engagement and communication ([Nolan et al., 2014](#)), and offering motivation for better performance ([Haimovitz et al., 2011](#)). However, relationships between mindset and Kaizen success is left mysterious in the existing literature. Therefore, investigating its impacts on the success is one of the key contributions presented in this study. With this factor, the following hypothesis will be investigated:

- H1: Mindset has positive impacts on the Kaizen success.
- H2: Mindset has positive impacts on the engagement of participants.

2.3.2. Engagement

Several studies have pointed that the Kaizen success is significantly affected by the proactive engagement of all management levels and employees in seeking for operational excellence through continuous improvement. Management levels engage in the process by providing not only physical supports but also spiritual encouragement, commitments, motivational policies, etc. Meanwhile, employee engagement in the field of organizational behavior has been differently defined; but generally, it is all about how employees stay either passionately, cognitively or substantially attached with their organizations ([Mehrzi and Singh, 2016](#); [Wellins and Concelman, 2005](#); [Catlette and Hadden, 2001](#)). Thus, employee engagement is considered as one of the most critical factors for an organization to gain high performance outcomes and competitive benefits over its rivals ([Anitha, 2014](#)). With engaged employees, organizations can better serve their customers to make them satisfied and loyal and improve their productivity as well as financial profit ([Harter et al., 2002](#)). Moreover, engaged employees tend to believe that they are an important part of their organization ([Agyemang and Ofei, 2013](#)), thus, they are usually more contented with their jobs, devoted and dedicated to their workplace ([Ortiz et al., 2013](#)). Consequently, engaged employees tend to proactively and eagerly take part in consigned activities with their full charges. [Stadnicka and Sakano \(2017\)](#) pointed that proactive engagement of all members plays important role in the Kaizen success of an organization. Such engagement will gradually result in significant improvement in their mindset. Hence, with this factor, the following hypothesis will be investigated:

- H3: Engagement has positive impacts on the Kaizen success.
- H4: Engagement has positive impacts on the mindset of participants.

Moreover, this paper also examines the interactive effect between the mindset and engagement on the Kaizen success. Hence, the following hypothesis will be investigated:

- H5: The interaction between mindset and engagement has positive impacts on the Kaizen success.

Thus, the research model proposed in this study is visually presented in [Fig. 1](#).

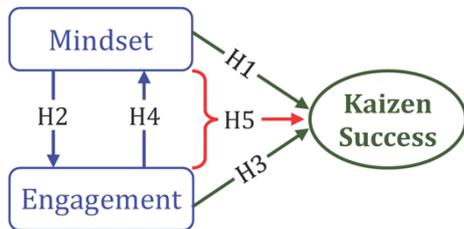


Fig. 1: Proposed research model

3. Research methods

This study is conducted in three main stages. Specifically, the first stage aims at constructing a complete questionnaire for a formal survey. The qualitative research invited seven experts (including one director, one vice director, three managers of warehouses and production departments, two Kaizen leaders) from two enterprises successfully implemented Kaizen located in Dong Nai and Binh Duong. The practical experiences from these experts would provide clear discernments about these determinants in designing initial survey questionnaire which was used in a pilot test with 4 participants from high-level executives of other two enterprises located in Ho Chi Minh City to evaluate the rationality of each statement in terms of meaning and word usage. Their responses were carefully considered and incorporated into a refined questionnaire to be used in an official survey. The two factors, mindset and engagement, consists of 10 observed variables, each of them was evaluated for their importance level based on a 5-Likert scale towards the Kaizen success in their organizations; where 1 indicates the least important level and 5 indicates the most important level. In addition, the Kaizen success is composed of 6 observed items whose success levels are evaluated on a 5-Likert scale where 1 indicates lowest level and 5 indicates highest level. In this study, an average value of the observed items of each factor is assigned as the value of the factor.

The official survey was conducted from March 15, 2018 to June 20, 2018. Totally 254 hard copies of the final questionnaire were directly delivered to 254 people working as directors, vice directors, department managers, or Kaizen leaders in 62 SMEs successfully implementing Kaizen. Therefore, 237 out of 254 pieces of completed questionnaires were collected. Among them, there were 24 pieces invalid; so, data from 213 valid observations were finally analyzed in this study. This study employs traditional linear regression models to test the proposed hypotheses. Specifically, Table 2 briefly presents relevant models to be investigated in this study.

Table 2: Regression models investigated in this study

Model	D.Var. ^a	I.Var. ^b	Hypothesis
LRM1	ENG	MIN	H2
LRM2	MIN	ENG	H4
LRM3	SUC	MIN, ENG, MIN*ENG	H1, H3, H5

Notes: ^aDependent variable; ^bIndependent variables; * Interaction; ENG- Engagement; MIN- Mindset; SUC- Kaizen Success

In addition, t-tests and one-way ANOVA tests are also used to explore the difference in the evaluation of the Kaizen success based on the sociodemographic characteristics of the respondents.

4. Empirical results

4.1. Descriptive statistics of respondents

Table 3 briefly presents the sociodemographic characteristics of the 213 respondents.

Table 3: Descriptive statistics of respondents

Demographic Characteristics		Frequency	%
Working Position	Kaizen leader	62	29.1
	Department Manager	107	50.2
	Director/Vice Director	44	20.7
Enterprise Location	South of Vietnam	172	80.8
	Middle of Vietnam	7	3.2
	North of Vietnam	34	16.0
Enterprise Size	Micro	14	6.6
	Small	84	39.4
	Medium	115	54.0
Ownership Type	State-owned	9	4.2
	Private	37	17.4
	Joint-venture	79	37.1
	Foreign-owned	88	41.3

4.2. Linear regression analysis

Table 4 briefly presents the analysis results of the three regression models.

Table 4: Analysis results of regression models

Model	D.Var.	I.Var.	Std.Co.*	Sig.**	Hypothesis
LRM1	ENG	MIN	0.102	***	H2 supported
LRM2	MIN	ENG	0.102	***	H4 supported
LRM3	SUC	MIN	0.214	***	H1 supported
		ENG	0.185	***	H3 supported
		MIN*ENG	0.293	***	H5 supported

Notes: * Standardized Coefficients; ** Significance; *** < 0.001

Table 4 shows that all of the five hypotheses are well supported. This means that there is significant relationship between the mindset and engagement of the participants, i.e. a growth mindset tends to get them more engaged in the continuous improvement and more engagement will lead to a more positive mindset. These two factors also significantly affect the Kaizen success. With the standardized coefficient of 0.214, mindset has stronger impact on the Kaizen success than the engagement. This implies that fostering a growth mindset among all members is more critical than getting them engaged in the activities. As mindset positively affects the engagement of the participants (standardized coefficient of 0.102), the fostering also helps to improve the engagement of the participants in the Kaizen implementation. With the standardized coefficient of 0.185, the engagement is also found to have positive impacts on the Kaizen success. This finding further validates the role of engagement of all members in the organizational success in implementing Kaizen. These findings further support those in Nguyen (2019).

In addition, among the three investigated variables in LRM3, the interaction between mindset and engagement has the highest coefficient value of 0.293. This indicates that organizations should pay special attention to both fostering the growth mindset among their members and engaging them in related activities to successfully implement Kaizen in their practical operations.

4.3. Impacts of sociodemographic characteristics

This section investigates impacts of socio-demographic characteristics of the respondents, including working position, business location, company size, ownership type, on the Kaizen success. These characteristics were first tested for their homogeneity of variances among the groups. With the analysis results shown in Table 5 and the given significance level of 5% used in this study, the

variances of the dependent variable SUC among respondents' groups are found different based on the ownership type and their location. From the results in Table 5, the results of tests for equality of means of the dependent variable SUC among the groups within each characteristic are briefly shown in Table 6 which clearly shows that there are certain differences in the evaluation of SUC among groups based on the working position, ownership type and enterprise size.

Table 5: Tests of homogeneity of Variances

Characteristic	Levene Statistic	df1	df2	Sig.
Ownership type	3.4894	2	210	0.032
Enterprise location	3.9012	2	210	0.022
Enterprise size	1.9781	2	210	0.141
Working position	1.1278	2	210	0.326

Table 6: ANOVA

Characteristics	Sum of Squares	df	Mean Square	F	Sig.	
Ownership type	Between ^a	2.16	2	1.08	3.80	0.02
	Within ^b	59.71	210	0.28		
	Total	61.87	212			
Enterprise location	Between ^a	0.56	2	0.28	1.00	0.37
	Within ^b	59.44	210	0.28		
	Total	60.00	212			
Enterprise size	Between ^a	2.31	2	1.15	4.10	0.02
	Within ^b	59.15	210	0.28		
	Total	61.46	212			
Working position	Between ^a	1.99	2	0.99	3.53	0.03
	Within ^b	59.15	210	0.28		
	Total	61.14	212			

Notes: ^a Between Groups; ^b Within Groups

From the results in Table 5 and Table 6, the following results are obtained from post-hoc tests to investigate which groups are different from others. It is found that Kaizen leaders and department managers have the same evaluations because they are the ones directly engaging in the implementing of Kaizen events and supervising the improvement in their workplaces; and, they tend to be more contented with the Kaizen success. Thus, they have higher evaluations than those of directors/ vice directors. In addition, it is also found that medium enterprises gain better outcomes than micro and small ones due to their sufficient resources to support their Kaizen activities.

Based on ownership types, the joint-venture and foreign-owned enterprises, especially Japanese-based ones, have higher success than other types because they better recognize the importance of Kaizen in their business operations and invest more resources to make it happened in practice. However, business location fails to have noteworthy impacts on the Kaizen success investigated in this study.

5. Discussion and conclusion

The finding of mindset of all leaders and employees in this study further supports that of Thomas et al. (2007) who pointed that the mindset is vital to sustain organizational accomplishments as it

helps to improve their productivity, revolution, and diligence. Growth mindset should be turned into organizational practices to produce a culture of continuous improvement and operational excellence (Nguyen, 2019; Thomas et al., 2007). Consequently, SMEs should foster and cultivate the growth mindset in quality culture and continuous improvement practices among their staffs through motivational policies. To do that, top-level and department managers should first take refresh training workshops on Kaizen so that they can clearly understand Kaizen approach and potential gains once Kaizen is successfully implemented. Such mindset helps them to persistently pursuit Kaizen as one of their operational strategies and allocate enough supports as well as create good working environment for all of their employees. After that, they should also offer similar training to their employees by either sending them to similar workshops or organizing some internal coaching sessions by either Kaizen experts or the trained executives/ managers. With encouraging and open environment, the employees can effectively apply their new knowledge and experiences captured from the trainings; thus, we can witness instant enhancements. From such trainings, all members will shape their own Kaizen mindsets which drive them to: (1) consider continuous improvement as a permanent need in every daily operation; (2) always

welcome suggestions for improvement; (3) always strive for better productivity and quality because there are several areas for improvement existing; (4) appreciate team works and constructive contributions; and (5) always consider “sustainability” in every solutions or activities for long-term achievements. Such Kaizen mindsets will steadily transform into organizational culture of continuous improvement and sustainable development.

On the other hand, fixed mindset should be steadily relayed and altered. However, as changing the mindset of a person is always a difficult task in practice, it is suggested that having them participated in relevant activities will help to improve their mindset; thus, along with the mindset, all members in an organization should proactively and fully take part in the improvement process to ensure Kaizen success.

Kaizen has been well recognized as a strategic tool for organizations across different sectors in several countries to pursuit as it has brought significant benefits in terms of efficiency, productivity, and overall performance. Among several affecting factors existing in the current literature, this study aims at investigating the impacts of interaction between mindset and engagement of organization members on the Kaizen success among SMEs in Vietnam because SMEs provide significant contributions to the development of Vietnam economy. It is found that not only the mindset and engagement but also their interaction positively affects Kaizen success. Among them, the interaction between mindset and engagement has the strongest impact.

Compliance with ethical standards

Conflict of interest

The authors declare that they have no conflict of interest.

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