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Factors Affecting the Transformational Leadership of Small and Medium Medical Device Enterprises in Thailand

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ABSTRACT

This study investigates factors affecting the transformational leadership of small and medium medical device enterprises in Thailand, using quantitative research methods by collecting questionnaire data from 283 employees, Stratified sampling was used to identify subgroups of the population, then a simple random assignment was used without replacement. Descriptive statistical analysis, including frequency, percentage, means and standard deviations, was used to clarify personal factors such as type of personnel, gender, age, educational level, the period of business operation, and the number of employees, multiple regression was used for test for demographic characteristics and transformational leadership. The research found entrepreneurs that most of 65.5% were male; 83% were 41-50 years. For levels of education, 45.5% had master's degrees. For period business operation, 6-10 years comprised 47.2% of the sample. 57.4% worked in companies with 51-100 employees. For category of medical equipment business, medical materials were 39%. Age, educational level, and the period of business operation could explain the variation on transformational leadership; at 49% percent significance at the 0.05 level, these had the strongest relation with transformational leadership. This research was limited by the fact that not all the questionnaires could be returned. For future research we suggest that new variables may be added to reflect modern conditions such as digital leadership.

Keywords: Transformational leadership, Medical Device, Entrepreneurs

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INTRODUCTION

Research findings show that transformational leadership affect every step of the strategic management process. In 1978, Burns first coined the concept of transformational leadership in the United States, and his definition has since been expanded by other researchers (Avolio *et al.*, 1999; Bass & Riggio, 2010; Shin & Zhou, 2003). This concept has inspired an intense empirical investigation of how transformational and transactional leadership behaviors are related to various important work outcomes, such as organizational commitment and identification (Effelsberg *et al.*, 2014; Simosi & Xenikou, 2010), and work performance (Carter *et al.*, 2013; Wang *et al.*, 2011). Transformational leaders reframe the situation and provide creative insight, prompting higher levels of creativity among their subordinates (Henker *et al.*, 2015). Previous studies have shown that knowledge sharing effectively promotes team collaboration (Wang *et al.*, 2011), and triggers organizational change ranging from small matters such as revisions of work policy to significant changes such as new product designs (Grant, 2013). Thus, it is crucial for leaders to facilitate knowledge sharing among followers. Over the past decade, an increasing number of scholars have emphasized the effects of various leadership styles on knowledge sharing (Nguyen and Mohamed, 2011; Xue *et al.*, 2011; Li *et al.*, 2014; Han *et al.*, 2016; Masa'deh *et al.*, 2016; Dong *et al.*, 2017). The degree of success of entrepreneurs and small and medium enterprises in the cassava processing industry cassava in the northeastern, Thailand has been shown to depend on three factors: transformational leadership, knowledge management, and social responsibility, which establishes a shared vision that inspires significant followers to achieve teamwork (Charoenpru and Rungsawan, 2015).

Transformational leadership facilitates collaboration by supporting team resources and encouraging followers to follow open ideas beyond routine (Eisenbeiß & Boerner, 2013), thus improving personal development and operational expectations (Bass, 1985) and changing their personal values for higher levels

of needs and aspirations, improving their efficiency. Leadership stimulates change in areas: idealized influence, individualized consideration, inspiration motivation, and intellectual stimulation — all of which have a statistically significant positive effect on the overall performance above 0.01 (Chaobanpho, 2017).

The health and medical-related industries are likely to continue to grow. The global medical equipment market has grown rapidly by more than 6.4% per annum, making medical equipment manufacturing a promising industry for the economy. As a result, Thailand has established medical and public health issues as one of its future goals in its 20-year national strategy. By 2036, it is hoped that Thailand will be established as an international health center, also known as a medical hub. In addition, there is a roadmap to drive Thailand 4.0 health, wellness and bio-med groups as well as develop the medical infrastructure to make Thailand into ASEAN's medical hub by 2025.

According to the Medical Devices Intelligence Unit of Thailand, in 2020, A total of 974 medical equipment companies can be classified by product group as follows: medical products: 266 companies; reagents and diagnostic kits: 53 companies; services & software: 66 companies; medical materials: 382 companies; and 207 other companies (information as of 20 December 2020).

A study reviewing the concept and theory of transformational leadership has found a broad literature of many researchers and academics (Agyemang *et al*., 2017; Analoui *et al*., 2013; Avolio & Weber, 2009; Bass, 1985; Bass & Atwater, 1996; Dong *et al*., 2017; Jung & Wu, 2003; Munevver & Sehkar, 2015; Wang *et al*., 2018). This literature defines elements of transformational leadership consisting of four elements: 1) idealized influence, 2) individualized consideration, 3) inspiration motivation, and 4) intellectual stimulation.

PURPOSES OF RESEARCH

1. To study the nature of the transformational leadership of small and medium medical device enterprises in Thailand.
2. To study the demographic factors influencing the transformational leadership of small and medium medical device enterprises in Thailand.

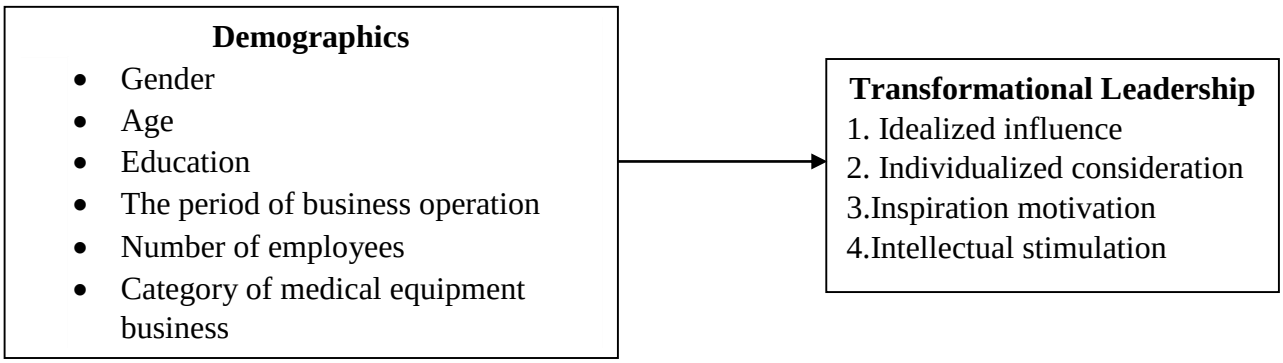

Figure 1. The conceptual framework of demographic factors affecting the transformational leadership of small and medium enterprises medical device in Thailand.

RESEARCH METHODOLOGY

We used quantitative research methods by collecting data from questionnaires from 283 entrepreneurs, and according to Taro Yamane's calculation. Stratified sampling was used to identify subgroups of the population, then simple random assignment was used without replacement.

STATISTICAL ANALYSIS

Descriptive statistical analysis including frequency, percentage, means, and standard deviations was used to clarify personal factors such as type of personnel, gender, age, education, the period of business operation, and number of employees, and multiple regression to test for demographic characteristics and transformational leadership.

RESULTS

In total, of the 283 entrepreneurs, 65.5% were male, 83% of participants were the age range 41-50 years. For levels of education, the majority of participants had master's degrees (45.5%). Regarding the period of business operation, most of participants were 6-10 years comprised (47.2%). For number of employees, 51-100 employees were 57.4%. With regards to medical equipment business: medical materials were 39% (see Table 1).

Table 1. Characteristics of the participants

Demographic characteristics	Percent (%)
Gender	
Male	65.5%
Female	34.5%
Age (year)	
< 40	2%
41-50	83%
51-60	12%
> 60	3%
levels of education	
Advanced degrees	13.2%
Master's degrees	45.5%
Bachelor's degrees	41.3%
The period of business operation (year)	
1-5	20.8%
6-10	47.2%
11-15	25%
> 15	7%
Number of employees	
0-50	15.6%,
51-100	57.4%,
101-150	27%
Category of medical equipment business	
Medical materials	39%
Medical products	27%
Other of medical	21.5%
Services & software	6.9%
Reagents and diagnostic kits	5.6%

Factor related to transformational leadership. Show the analysis of feedback-level data, that the respondents had a high level of feedback about transformational leadership 4.31 ± 0.57 (Mean ± *SD*). Opinions about transformational leadership can be sorted from questions with the highest average to lowest the as follows: inspiration motivation 4.39 ± 0.54 (Mean ± *SD*) , individualized consideration 4.30 ± 0.64 (Mean ± *SD*) idealized influence 4.29 ± 0.59 (Mean ± *SD*) and intellectual stimulation 4.26 ± 0.65 (Mean ± *SD*) (see Table 2).

Table 2. Provides analysis of feedback level data on transformational leadership (*N*=283)

Transformational Leadership	*M*	*SD*	Score
1. Inspiration Motivation	4.39	0.54	High
2. Intellectual Stimulation	4.26	0.65	High
3. Individualized Consideration	4.30	0.64	High
4. Idealized Influence	4.29	0.59	High
Total Average	**4.31**	**0.57**	**High**

Inspiration motivation was the high, followed by individualized consideration, idealized influence and intellectual stimulation.

Table 3. Provides analysis of feedback level information on transformational leadership, Inspiration Motivation (*N*=283)

Inspirational motivation	*M*	*SD*	Score
1. You urged employees to be inspired to work for the medical equipment business.	4.29	0.65	High
2. You encouraged employees to find creative ways to address problems related to medical equipment work.	4.55	0.60	Highest
3. You assigned a task to the employee that felt challenging.	4.52	0.66	Highest
4. You made the employees feel connected to the organization.	4.49	0.67	High
5. You incentivized employees to see future goals as employees of medical equipment organizations.	4.48	0.64	High
6. You give employees the opportunity to participate in the organization.	4.40	0.67	High

Inspirational motivation	*M*	*SD*	Score
7. You can clearly and clearly know about the medical instruments' organization.	4.35	0.70	High
8. You urged employees to be conscious of working together in the organization.	4.18	0.78	High
9. You urged employees to be active in working with the organization.	4.36	0.71	High
10. You explained to employees what it means to be an employee of a medical equipment organization.	4.23	0.75	High
Total Average	**4.39**	**0.54**	**High**

In inspiration motivation aspects, respondents had a level of feedback about transformational leadership. Overall, this aspect had the high level 4.39 ± 0.54 (Mean ± *SD*). The items with the highest average score and lowest are: You encouraged employees to find creative ways to address problems related to medical equipment work 4.55 ± 0.60 (Mean ± *SD*); You assigned a task to an employee that felt challenging 4.52 ± 0.66 (Mean ± *SD*); and You encouraged employees to be conscious of working together in organizations 4.18 ± 0.78 (Mean ± *SD*) (see Table 3).

Table 4. Analysis of the feedback on transformational leadership, intellectual stimulation. (*N*=283)

Intellectual stimulation	*M*	*SD*	Score
1. You give employees the opportunity to think freely and to offer opinions about the organization.	4.29	0.75	High
2. You applied his knowledge as an employee to the organizations work on medical instruments.	4.32	0.71	High
3. You urged employees to be aware of the problem of being an employee of the medical instrument's organization.	4.19	0.80	High
4. You urged employees to find new ways to work in relation to the medical equipment business.	4.28	0.72	High
5. You give employees the opportunity to offer feedback on the organization while talking to you.	4.27	0.74	High
7. You always encouraged employees to find solutions in new angles. When an employee crashes in working with an organization, the employee has the problem.	4.23	0.75	High
8. You give employees the opportunity to participate in the problem of the organization staffing.	4.23	0.72	High
Total Average	**4.26**	**0.65**	**High**

In the field of intellectual stimulation, respondents' feedback about transformational leadership reached the high–level 4.26 ± 0.65 (Mean ± *SD*). The items with the highest average score and lowest are: You applied his knowledge as an employee to the organization's work in medical instruments 4.32 ± 0.71 (Mean ± *SD*); you give employees the opportunity to think freely and to offer opinions about the organization 4.29 ± 0.75 (Mean ± *SD*); and You urged employees to be aware of the problem of being an employee of the medical instrument's organization 4.19 ± 0.80 (Mean ± *SD*) (see Table 4).

Table 5. Analysis of feedback on transformational leadership, individualized consideration. (*N*=283)

Individualized consideration	*M*	*SD*	Score
1. You have the opportunity to talk to or ask the staff about working in the organization.	4.27	0.69	High
2. You accept the ability of employees in the organization.	4.34	0.70	High
3. You listen to your employees' problems attentively.	4.33	0.70	High
4. You encouraged employees to exchange information with each other about the organization's affairs.	4.29	0.72	High
5. You encourage your employees to develop their potential as medical equipment employees.	4.31	0.75	High
6. You teaches and counsels when employees need guidance on how to work in the organization.	4.27	0.78	High
7. You can assess the progress of employees without feeling that they are being monitored in their work.	4.33	0.74	High

Individualized consideration	*M*	*SD*	Score
8. You advises employees about the benefits employees of developing their own medical equipment knowledge.	4.26	0.75	High
Total Average	**4.30**	**0.64**	**High**

The overall level was 4.30 ± 0.64 (Mean ± *SD*). The items with the highest average score and lowest are: You accept the ability of employees in the organization 4.34 ± 0.70 (Mean ± *SD*). You can assess the progress of employees without feeling that they are being monitored in their work 4.33 ± 0.74 (Mean ± *SD*) and You advises employees about the benefits employees of developing their own medical equipment knowledge 4.26 ± 0.75 (Mean ± *SD*) (see Table 5).

Table 6. Analysis of opinion about transformational leadership, Idealized Influence (*N*=283)

Idealized Influence	*M*	*SD*	SCORE
1. You share your success in working with your employees	4.27	0.75	High
2. Your employees are respectful of you.	4.22	0.75	High
3. You have a moral and work ethic.	4.26	0.77	High
4. You're a good role model for your employees.	4.15	0.73	High
5. The staff are very trusting in you.	4.16	0.76	High
6. You do not exercise power for its own sake.	4.23	0.78	High
7. You act according to the principles and reasons in your work.	4.27	0.72	High
8. You was responsible for the employee when the employee crashed.	4.47	0.59	High
9. You tried to behave as a good role model for his employees.	4.42	0.64	High
10. You tend to take into account the public interests rather than personal interests.	4.45	0.63	High
Total Average	**4.29**	**0.59**	**High**

The overall level was 4.29 ± 0.59 (Mean ± *SD*). The items with the highest average score and lowest are you was responsible for the employee when the employee crashed 4.47 ± 0.59 (Mean ± *SD*); you tend to take into account the public benefits rather than personal benefits 4.45 ± 0.63 (Mean ± *SD*); and you act as a good role model for employees 4.15 ± 0.73 (Mean ± *SD*) (see Table 6).

Table 7. Coefficients and test statistics of individual factors and transformational leadership (*N*=283)

Measure	Unstandardized Coefficients		Standardized Coefficients	*t*	*p*-value
	B	Std.Error	Beta		
Constant	1.96	0.18		8.69	0.00
Gender	0.54	0.04	- 0.11	1.57	0.11
Age	0.35	0.02	0.57	3.75	0.00*
Education	0.11	0.04	- 0.18	3.56	0.01*
The period of business operation	0.21	0.04	- 0.29	4.06	0.00*
Number of employees	0.02	0.04	- 0.031	2.34	0.59
Category of medical equipment business	0.16	0.04	- 0.23	3.71	0.65

Note: *p*-value <0.05, R=.60, R^2=.49, *F*= 61.435

Multiple correlation coefficients were analyzed at .60, indicating that the age, education level, and the period of business operation, could explain the variation on transformational leadership at 49 percent statistically significance at the 0.05 level (see Table 7).

DISCUSSION

Most, at 65.5%, were male; 83% were between 41-50 years old; 45.5% had master's degrees. The period of business operation was 6-10 years for 47.2%, while 57.4% worked at companies with 51-100 employees were 57.4% and 39% of the medical equipment businesses were in medical materials. The respondents rated inspiration motivation high overall. This means that medical equipment operators encourage employees to find creative ways to solve problems related to medical equipment work and assign tasks to employees that feel challenging and encourage them to be conscious of working together in the organization. The respondents

rated intellectual stimulation high overall picture. This means that medical equipment operators use their knowledge as employees in the organization to work in medical instruments, give employees the opportunity to think freely and to offer opinions about the organization, and are encouraged to be conscious of the problems raised by medical equipment organizations. The respondents rated individualized consideration high overall. This means that medical equipment operators accept the ability of employees in the organization, listen to the problems of their employees with the intention of assessing the progress of employees without the employee feeling audited, and are encouraged to emphasize to the employees the benefits of developing their own medical equipment knowledge. The respondents rated idealized influence high overall. This means that medical equipment operators share responsibility with employees when they are at work, often taking into account the benefits to the public rather than the personal interests and exemplifying good conduct for the employees. Similar research by Avcı, (2018) on teaching assistants showed none of the transformational leadership behaviors but did uncover a positive statistically significant relationship between number of years as a TA and teaching self-efficacy. A study by Yıldırım, & Çelikten, (2019) revealed that woman school administrators generally show transformational leadership. The study by Asif Khan *et al*. (2020) on Spanish tourism firms found that firm size and age moderate the relationship with transformational leadership. These researches have relation my research in some aspect, such as age and period of business operation.

RECOMMENDATIONS FOR FURTHER STUDY

1. A comparative study at an equivalent organization on the theme of transformational leadership
2. New variables may be changed to reflect modern conditions such as digital leadership.

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CONFLICT OF INTEREST

The authors declare no conflicts of interest.

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