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How Organizational Characteristics and Employee Involvement Affect Quality Management Practices in the Thai Food Industry

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ABSTRACT

Quality management practices can help an organization thrive in an increasingly competitive global market. Based on a comprehensive literature review, this study identifies organizational characteristics that encourage employee involvement and improve quality management practices. The sample group was comprised of 271 people representing middle management in Thailand's food industry. The variables of employee involvement were intervening latent variables in the relationship. Structural Equation Modeling (SEM) was used to analyse the results which showed that fewer hierarchies of command and decentralized decision making power had a significantly positive affect on quality management practices in organizations.

Key words: Organizational characteristics, employee involvement, quality management practices, structural equation modeling

INTRODUCTION

Organizations need to be able to respond to customer demand, improve product quality and shorten lead time of production and delivery while limiting costs to thrive in a competitive market (Kannan and Tan, 2004). Quality management practices can help an organization do this, because they emphasize employee involvement to improve product and service quality, strive for customer satisfaction (Schonberger, 2007) and respond to customer demand (Crosby, 1996).

For their ability to cultivate customer satisfaction (Schonberger, 2007), improve the quality of production and reduce production time until delivery (Jayaram *et al.*, 2010; Kannan and Tan, 2004; Lee and Whang, 2005), quality management practices have been extensively applied in business organizations (Xu *et al.*, 2006). Recently, however, many organizations have failed to apply them (Douglas and Jude, 2001; Tata and Prasad, 1998), eschewing the need to prepare for corporate cultural change and build proper organizational structure to support quality management practices (Burdett, 1994; Tata and Prasad, 1998). Corporate operating strategies, corporate culture, corporate competency and encouraging in-house employee involvement are a few of several factors that affect the successful implementation of quality management practices in organizations (Pun, 2001).

Food and agricultural products are plentiful in Thailand and the country is considered a leading producer and exporter of them (Arpanutud *et al.*, 2009). The Thai food industry is strong

and internationally competitive (Suwannaporn and Speece, 2010), consisting of small, medium and large plants. Most of the small to medium sized businesses predominantly serve the domestic market while medium to large businesses produce high-value products intended for both the domestic and export markets (Rodmanee and Huang, 2013).

The Thai food industry contributes to the national income, employment percentage, value added inducement coefficients and earnings from foreign exchange (Rodmanee and Huang, 2013). According to the National Food Institute (NFI), Thailand has 8,500 food production companies. In 2012, the Thai food industry exported USD 32.2 billion worth of products and ranked 12th in total food exports worldwide (Ngammongkolrat, 2013). However, increasing global competition and a proliferation of consumer requirements have posed significant challenges as businesses in the industry endeavor to remain competitive (Rodmanee and Huang, 2013). To do that, organizations must turn to quality management practices, the keys to success (Zhang *et al.*, 2012). Many companies in the food industry are interested in implementing quality management practices but lack the fundamental understanding of how to go about it. What is more, to date, no previous study has investigated the relationships between organizational characteristics, employee involvement and quality management practices, especially among organizations in Thailand.

To fully understand the nature of these relationships, it was necessary to study the characteristics of organizational structures to determine which of them fostered employee involvement and improved the application of quality management practices (Hendricks and Singhal, 2001). This study considers two different organizational structures: organic organizations with flat a structure and low levels of control and mechanistic organizations with a vertical structure and highly formalized system (Brief *et al.*, 1996; Spencer, 1994). The results serve as guidelines that demonstrate how to develop the right organizational characteristics and activities that will increase employee involvement.

Theoretical foundation and development of hypotheses

Quality management system theory (quality management practices): Theories dictate that quality management practices function as an independent system that can combine with other organizational assets to enhance a competitive advantage (Powell, 1995; Zhang *et al.*, 2012). What is more, quality management practices that adhere to corporate missions and objectives foster continuously effective and efficient quality development (Kim and Chajed, 2000). Quality management practices that serve manufacturers as well as consumers would best help to produce goods or services in line with predetermined standard criteria and customer requirements; for now, quality management practices serve to satisfy customers and make them feel confident that the goods or services they obtain will meet required standards of quality (Deming, 1986; Ishikawa, 1985; Phillips *et al.*, 1983; Zatzick *et al.*, 2012).

There are many studies that define quality management practices in similar ways, as shown in Table 1.

Based on the above information, quality management practices can be broken down into 7 types: (1) Management leadership, (2) Strategic planning, (3) Quality training provided to employees, (4) Supplier relationship management, (5) Encouragement of effective teamwork, (6) Process management and (7) Data and information management. According to Table 1, all researchers agree that management leadership and data and information management are necessary components of quality management practices.

Table 1: Comparison of strategies applied in quality management practices from relative literature reviews

Researchers	Quality management practices						
	Data and information management	Effective teamwork	Management leadership	Strategic planning	Process management	Supplier relationship management	Quality training
Deming (1986)	✓	✓	✓	✓	✓		✓
Juran (1986)	✓	✓	✓		✓	✓	
Saraph <i>et al.</i> (1989)	✓	✓	✓	✓	✓	✓	✓
Badri <i>et al.</i> (1995)	✓	✓	✓	✓	✓	✓	✓
Crosby (1969)	✓	✓	✓				✓
Black and Porter (1996)	✓	✓	✓	✓	✓	✓	
Hua <i>et al.</i> (2000)	✓	✓	✓	✓	✓	✓	
Zhang <i>et al.</i> (2000)	✓		✓	✓	✓	✓	✓
Antony <i>et al.</i> (2002)	✓		✓	✓	✓	✓	✓
Singh and Smith (2004)	✓	✓	✓	✓	✓	✓	✓
Lakhal <i>et al.</i> (2006)	✓	✓	✓	✓	✓	✓	✓
Phan <i>et al.</i> (2011)	✓	✓	✓	✓	✓	✓	✓

Related concepts and researches of organization characteristics affecting quality management practices: Quality management practices should include an effective communication structure and a clear training policy; they should encourage employee teamwork and offer a precise and clear understanding of problems that arise from operations; they should promote systematic problem solving skills, such as the ability to analyze the actual causes of problems, the ability to immediately find solutions following incidents and the ability to prevent similar issues from recurring (Motwani, 2001; Karuppusami and Gandhinathan, 2006; Thiagarajan and Zairi, 1998).

Recent research on organizational structure has determined that organizational characteristics like corporate operating strategies and corporate culture are crucial to the successful application of quality management practices (Hellsten and Klefsjo, 2000; Lagrosen and Lagrosen, 2005). The foundation for quality management practices-system design and process management for the growth of customer satisfaction-has to depend on the systematic compliance of in-house employees and proper organizational characteristics that support the effective movement of the system (Ross, 1999; Zhang *et al.*, 2012). Ugboro and Obeng (2000) suggested that an organization successful in applying quality management practices should have a supportive structure for data flow-a mission, a policy, an objective, a target, an operating plan and an effective operating standard to ensure that all employees are well-informed. What is more, organizations should have a clear training policy in place so that employees correctly understand problems that occur during operations and can analyze the roots of problems, develop solutions and stay up-to-speed to prevent them from happening again (Karuppusami and Gandhinathan, 2006).

Most researchers who study design theory consider there to be two types of organizations: organic and mechanistic (Robbins, 1997). The organic structure is characterized by flexibility and complex integrating mechanisms; a smaller division in work groups than mechanistic organizations; various channels of leadership; informal, lateral and often verbal communication and decentralization. Organic structures encourage decision making by all levels of personnel and include few regulations. Employees adapt smoothly to volatile situations and often work together and coordinate tasks. However, there might be weaknesses in the structure-it is highly variable and

Table 2: Characteristics of organic organizations and mechanistic organizations

Robbins (1997)	Tata and Prasad (1998), Jabnoun (2005)	Robbins and Decenzo (2001)
Flexible or strict organizational structure	Horizontal or vertical organizational structure	Horizontal or vertical organizational structure
Decentralize decisionmaking power to employees or centralize the power to executives	Decentralize or centralize decision making power	Decentralize or centralize decision making power
Wide span of control (giving orders from various directions) or narrow span of control (limited work area)	Control by sharing power with employees or clearly delineating work area	Tasks are easily modified by employees or strict and difficult to change
Employees share opinions or communicate by adhering to organizational layers	Complexity of communication processes, low or high	Informal or formal communication channels
Divided into cooperative groups of workers from various backgrounds or divided into numerous groups of specialized workers	Synergetic network or specialized	Emphasis on cooperation between sections or strictly follow organizational layers
Few rules and easy to change or strict rules and practices	Low or high formality	Few or many rules
	Low or high organizational layers	

it is difficult to control and supervise employees. In comparison, a mechanistic organization is characterized by strict control, a well-defined hierarchy of authority, rigid individual specialization in tasks, standardized regulations, highly centralized decisionmaking, hierarchical structures of power and mostly vertical communication. Workers are like machines but with a high level of certainty regarding operations and low variability (Jabnoun, 2005; Robbins, 1997).

The different dimensions applied to the analysis of organizational characteristics and quality management practices are shown below in Table 2.

Table 2 summarizes all five variables examined in this study regarding in-house employee involvement and the improvement of quality management practices. Those variables are: Organizational structure, decisionmaking patterns, span of control, formality in communication and reports and the degree of specialization. The literature discussed above subsequently leads to the following hypotheses:

- **H1:** Organizational characteristics significantly affect quality management practices
- **H2:** Organizational characteristics significantly affect employee involvement

Related researches of employee involvement affecting quality management practices:

Employee involvement refers to an employee's ability to control the tasks that he/she is responsible for Lawler *et al.* (1992). Employees from all levels should be involved in decisionmaking in every activity that falls within the parameters of their responsibilities. Furthermore, they should share their opinions on or give recommendations for task designs (Guimaraes, 1996; Kanungo, 1982). Organizational performance (Mohrman *et al.*, 1996) as well as organizational and individual job satisfaction improves when employees are involved in such a manner (Elias, 2009; Igbaria *et al.*, 1994).

In an older study, Taylor (1911) found that organizations that provided knowledge training, assigned work properly and promoted organizational commitment raised employee involvement and consequently, operated effectively.

Maciariello *et al.* (1989) found that encouraging employee involvement resulted in a higher level of employee satisfaction, better employee morale, greater efficiency, a higher level of corporate competency and a motivated workforce that was more effective in performing routine operations. In addition, as employees became more involved at work, they more easily accepted organizational change, like quality management practices that increased their workloads. Research also found that organizations that have to depend on in-house employees for the movement of their activities-i.e., the elements of quality management practices, such as continuous improvement and development, systematic problem solving and process waste reduction-needed to foster employee involvement (Deming, 1986; Flynn *et al.*, 1995; Jack *et al.*, 2001; Rao, 1996; Shin *et al.*, 2010).

Reger *et al.* (1994) studied the factors of success and failure in implementing quality management practices by considering only the relationships between individual variables. The researchers found that the failure of quality management practices occurred when organizations did not invite employees to get involved in decisionmaking in activities or projects related to quality management practices; when employees were not trained in the rules, regulations, equipment and techniques they needed to know to make them understand and follow quality management practices and when employees lacked executive support in teamwork, qualitative group activities and rewards. The result of this study was similar to the study of Karia and Asaari (2006) which examined two key factors in rolling out quality management practices: Employee training and education. Boyer and Smith (2001) supported the previous two studies, claiming that for an organization to successfully introduce quality management practices that would improve performance, organizations needed to pay attention to employee characteristics: employees needed to be proficient and skilled, have good attitudes toward quality management practices and have experience that related to quality management projects or activities. Deming (1986) paid special attention to employees, defining the way that they affected the success or failure of quality management practices: Employees needed to be properly trained and supported in order to proud organizational leaders involved in operations. Moreover, Sun *et al.* (2000) found that organizations had to involve their employees in the sharing of knowledge, rewards and power; increase their understanding and provide sufficient and suitable training if they wanted to successfully introduce quality management practices.

Lawler *et al.* (1992) found that employee involvement not only affected the application of quality management practices but also affected corporate efficiency. Four aspects of in-house employee involvement had to be emphasized: information sharing, knowledge and skills sharing, reward sharing and power sharing. This was consistent with the patterns of involvement that Cummings and Worley (2005) explained. Now, these variables have become widely used in the study of employee involvement (Pazy and Ganzach, 2009). Thus, the literature discussed above leads to the following hypothesis:

- **H3:** Employee involvement significantly affects quality management practices

MATERIALS AND METHODS

Sample and data collection: The populations studied were made up of middle management representing 244 organizations in Thailand's food industry, with a certification in either quality management system ISO 9000, HACCP or GMP registered with the Thai Industrial Standards Institute (Thai Industrial Standards Institute, 2012). These people were the keystones of quality management practices, making contact and communicating throughout the company, linking policy

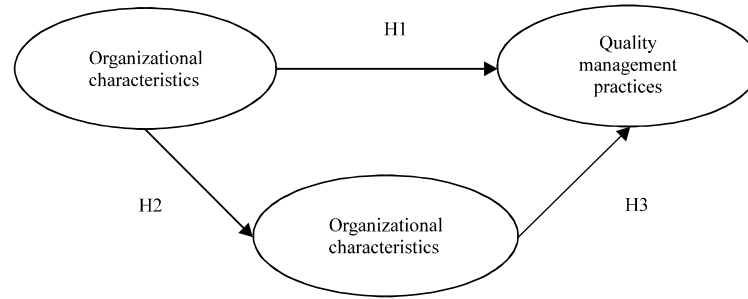


Fig. 1: Conceptual framework

and guidelines from top management to operating level employees and reporting to top management about the progress as well as the problems of operating level employees (Bardoel and Sohal, 1999; Wilkinson and Witcher, 1991). These organizations had a sturdy foundation in quality management practices, their available representatives well-educated in the practices and able to provide precise data (Sun *et al.*, 2000).

The 271 people representing the 74 companies examined in this research were derived from simple random sampling. Structural Equation Modeling (SEM) was applied to a sample size of 5-15 respondents per parameter for each variable (Hair *et al.*, 2010). A questionnaire, based on a 5-level Likert Scale, was employed. Respondents that rated at the highest level in each aspect were determined to be working within organic structures. These respondents were highly involved in different aspects within their organizations and they put a great emphasis on quality management practices. The data was gathered from January to May, 2013.

Variable measurement: Based on the above literature review, the variables that affect quality management practices include three latent variables and the following observed variables: (1) Organizational Characteristics (OC) consisting of five observed variables [organizational structure (os), decisionmaking patterns (dm), span of control (sc), formality in communication and reports (fm) and level of specialization (ls)]; (2) Employee Involvement (EI) consisting of four observed variables [power sharing (ps), information sharing (is), knowledge sharing (ks) and reward sharing (rs)]; (3) Quality Management Practices (QMP) consisting of seven observed variables [management leadership (mL), strategic planning (sp), quality training (qt), supplier relationship management (sm), effective teamwork (et), process management (pm) and data and information management (di)]. The conceptual framework is shown in Fig. 1.

The following hypotheses have been developed for this research:

- **H1:** Organizational characteristics significantly affect quality management practices
- **H2:** Organizational characteristics significantly affect employee involvement
- **H3:** Employee involvement significantly affects quality management practices

RESULTS

Profile of Respondents: The 46.1% of the sample was male and 53.9% was female. All of the respondents were Thai. 47.6% of the respondents were section chiefs and 30% were managers. A fuller description of the participants is shown in Table 3.

Table 3: Characteristics of the respondents

Characteristics	No.	(%)
Gender		
Male	125	46.1
Female	146	53.9
Age		
22-30	110	28.8
31-45	205	53.7
over 45	67	17.5
Education level		
Lower than bachelor's degree	27	10.0
Bachelor's degree	163	60.1
Higher than bachelor's degree	81	29.9
Position		
Section chief	129	47.6
Manager	142	52.4

Table 4: Measures of the fit model of the structural model

Goodness of fit measures	Recommended value	Structural model (result)
χ^2 -Test statistics/df	$\leq 3.00^a$	1.371 (p = 0.179)
GFI	$\geq 0.90^a$	0.984
AGFI	$\geq 0.90^a$	0.960
CFI	$\geq 0.90^a$	0.996
NFI	$\geq 0.90^a$	0.985
RMSEA	$\leq 0.08^a$	0.037

Sources: ^a Hair *et al.* (2010)

Confirmatory factor analysis and structural equation modeling analysis: AMOS 21 was used to analyze the data, starting with a confirmatory factor analysis for each latent and observed variable. Then, the remaining variables were examined using SEM, focusing on the latent variables (Lee *et al.*, 2010; Hair *et al.* 2010) to determine the relationship between them. This program is one of the most popular methods used to determine relationships between latent and observed variables in modern research (Schaupp *et al.*, 2010).

SEM was then conducted, improving the initial model until the fit model conformed to the empirical data that considered the different values, as shown in Table 4. The fit model would later be applied to explain the causal influence of other variables present in this model.

From Fig. 2, the results of the confirmatory factor analysis show that the variables of organizational characteristics can be measured from two observed variables: decision making patterns and organizational structure pattern, with standardized loadings: $\lambda = 0.86$ and 0.62 , respectively. The variables of employee involvement can be measured from three observed variables: Information sharing, reward sharing and knowledge sharing, with standardized loadings: $\lambda = 0.87$, 0.85 and 0.79 , respectively. Two observed variables served as measurements in certain cases: Management leadership with standardized loadings: $\lambda = 0.85$ and strategic planning with standardized loadings: $\lambda = 0.76$. All observed variables were significant when considering p value<0.001.

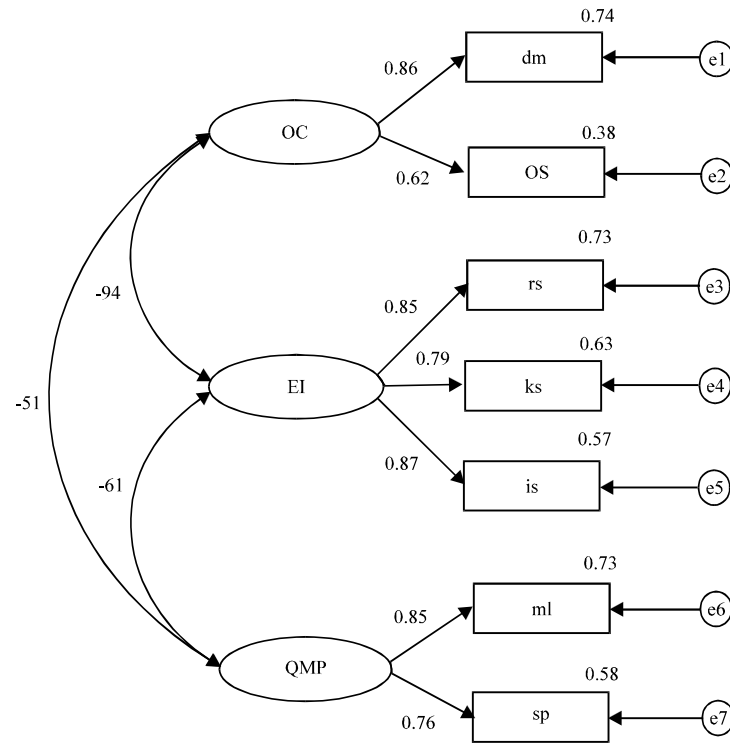


Fig. 2: Confirmatory factor analysis of organizational characteristics, employee involvement and quality management practices

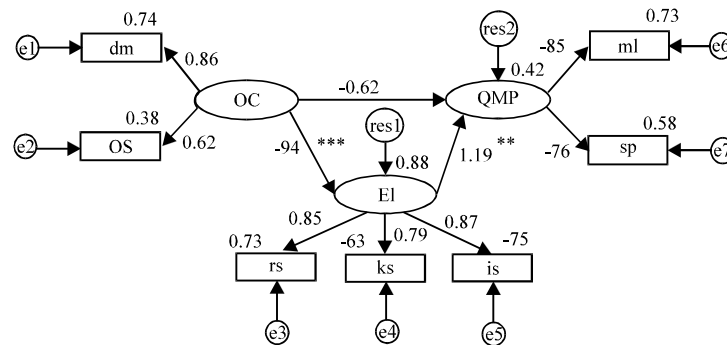


Fig. 3: Results of the structural modeling equation of organizational characteristics, employee involvement and quality management practices **p<0.05. ***p<0.001

According to the results shown in Fig. 3, the variables of employee involvement had a direct and positive effect on the application of quality management practices, with a standardized regression coefficient: $\beta = 1.19$ and p value <0.05. The variables of employee involvement describe the variations of quality management practices at 42% ($R^2 = 0.42$). In addition, the findings show that organizational characteristics had a direct and positive effect on the encouragement of employee involvement, with a standardized regression coefficient: $\beta = 0.94$ and p value <0.001. The variables of employee involvement describe the variations of employee involvement at 88% ($R^2 = 0.88$). Organizational characteristics had no direct effect on the application of quality

Table 5: Structural modeling results

Hypothesis	Path	Std. estimate	S.E.	C.R.	P	Remarks
H1	OC --> QMP	-0.62	0.41	-1.18	0.235	Not supported
H2	OC --> EI	0.94	0.08	11.68	<0.001	Supported
H3	EI --> QMP	1.19	0.40	2.34	0.019	Supported

management practices with statistical significance; however, they had an indirect and positive effect on employee involvement, with an indirect standardized regression coefficient: $\beta = 1.118$ (Calculated by multiplying the standardized regression coefficient (β) value of OC-->EI by EI-->QMP).

As shown in Table 5, organizational characteristics had no significant direct effect on quality management practices ($p = 0.235$). Therefore, H1 was not supported. However, organizational characteristics had a significant positive influence on employee involvement, with a confidence level of <0.001 and employee involvement had a significant and direct positive effect on quality management practices, with a confidence level of <0.05 ($p = 0.019$). Therefore, H2 and H3 were supported.

DISCUSSION

The aim of this study is to find which types of organizational characteristics encourage employee involvement and improve the application of quality management practices as well as to determine how industrial businesses can use this information in practical application. According to the findings of the study, suitable organizational characteristics should adhere to the principles of organic organizations (Jabnoun, 2005; Spencer, 1994; Tata and Prasad, 1998), in which the variables of employee involvement are intervening latent variables (Reger *et al.*, 1994).

The appropriate organizational characteristics should resemble those of the horizontal organizational structure-few hierarchies of command, operational flexibility for quickness and effectiveness and decentralized decisionmaking power (Ambroz, 2004; Jabnoun, 2005; Karuppusami and Gandhinathan, 2006). However, the scope of control, degree of formality in communications and reports and level of specialization in tasks were not found to be significant impediments to the application of quality management practices. In part, this is explained by the fact that most practitioners see value in some level of formalization for the sake of achieving quality of conformance (Jabnoun, 2005).

The aforementioned organizational characteristics have a great effect on employee involvement, in particular, an employee's feelings toward work and the sharing of information, knowledge and rewards (Ismail *et al.*, 2012; Pool, 2000). Organic structures emphasize employee involvement as well as access to data that is essential to employee operations; obtaining work-related knowledge training will therefore boost employee motivation and foster a sense of loss and gain within the organization (Tata and Prasad, 1998). Furthermore, if an organization is to successfully implement change, a strategy must be developed that takes the employees' psychological processes into account. A failure to do so may very well result in the change initiative failing (Douglas and Judge, 2001; Elias, 2009; Lines, 2005).

The relationship between organizational characteristics and employee involvement mentioned above affects the application of quality management practices-specifically, it affects management leadership and strategic planning by corporate employees, since this is the basis of the initiative; moreover, it shapes the development and reinforcement of the effective application of quality

management practices (Lakhal *et al.*, 2006; Phan *et al.*, 2011; Ugboro and Obeng, 2000). Douglas and Judge (2001) suggested that management should decentralize decisionmaking power rather than centralize it to positively influence quality management practices.

CONCLUSION

The right kinds of organizational characteristics influence quality management practices, enabling them to be more effectively implemented (Ross, 1999; Sitkin, 1994; Zhang *et al.*, 2012). Therefore, these characteristics need to encourage operational systems to work efficiently (Jabnoun, 2005; Tata and Prasad, 1998). Key organizational characteristics that promote quality management practices include the decentralization of decisionmaking power, few hierarchies of command or complexities in operating structures and support for employee involvement (Ambroz, 2004; Jabnoun, 2005). The study of Maciariello *et al.* (1989) explained that employee involvement helped to uplift employee satisfaction, motivating them to work efficiently and allowing them to easily accept change in the management system. Organizations can support employee involvement by sharing information, knowledge, skills, rewards and power (Sun *et al.*, 2000). By adhering to the aforementioned principles and striving to attain key characteristics, organizations seeking to implement quality management practices will prove to be successful.

Managerial implications and limitations: This study provides an understanding of what factors influence the application of quality management practices. Being aware of these factors will help organizations anticipate what activities and philosophies should be followed for a successful launch of these practices.

This study does have its limitations, however and they must be addressed for future research on this topic. First of all, this study focuses on only the manufacturing sector within the food industry. Future research could expand its focus beyond manufacturing and consider service industries. Secondly, the target participants were limited to middle management. Quality management practices are company-wide processes that incorporate all employees working in an organization. Future research could consider other levels of employees, such as top executives and lower management (Lee *et al.*, 2012). By widening the scope of their studies, researchers interested in examining quality management practices could develop new angles and discover different, practically applicable conclusions.

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