Sys Rev Pharm 2019;10(2):188-197
A multifaceted review journal in the field of pharmacy

Effect of Technology Capabilities on Sustainable Performance of Pharmaceutical firms in Thailand with moderating role of Organizational Culture

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Article History: *Submitted: 20.08.2019* *Revised: 18.10.2019* *Accepted: 23.11.2019*

ABSTRACT

Sustainable performance is necessary for long term existence of any business. Implementation of technology capabilities play important role in sustainable performance of any organization and especially for pharmaceutical firms. Therefore, the basic objective of current study was to examine the influence of technology capabilities (Technical Science, Level of Skills and Physical tools) on sustainable performance of pharmaceutical firms in Thailand with moderating role of organizational culture. To accomplish the purpose of study, the quantitative research approach with cross sectional method was adopted. This study found that technology capabilities have significant influence on sustainable performance of any organization and especially for pharmaceutical firms. Study also found significant moderating role of organizational culture between the relationship level of skills and physical tools with sustainable performance of any organization and especially for pharmaceutical firms. This study offers new information to the management regarding decision-making process. The findings will assist top management in planning for sustainable performance, implementation of technology and organization culture, especially in the context of pharmaceutical firms in developing countries.

Keywords: medical call-center, medical discourse, administrator's dialogue analysis, effective communication, customer-focused service in medicine, theory of intercultural communication Technology capabilities, organizational culture, sustainable performance, pharmaceutical firm

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DOI: 10.5530/srp.2019.2.27

INTRODUCTION

Primary focus pharmaceutical sector is changing in response to the industrial revolution for operational efficiency (Lee & Trimi, 2018). In the past, quality was not much important as it is in today's world. Pharmaceutical companies must deal with the challenges by providing superiority goods at the right time, place and price. Demand of quality regarding pharmaceutical products has been focused by regulatory bodies in intervals (Sangshetti et al., 2017). The pharm sector has a significant place in in upholding the health of persons as well as of national economy that ultimately highlight the needs of competitive industry (Emond & Taylor, 2018). Ultimate goal of an industry is customer satisfaction and same is the case with the pharmaceutical industry. There two key dimensions of customer satisfaction that include customer focus (CF) and customer relationship. In contrast, CF makes a firm able to align the necessities and expectations of clients during the course of production and associated operations with it (Talib, Rahman, & Qureshi, 2010). Customer satisfaction regarded as the main force for the business sustainable performance.

Corporate performance is termed as the long-term sustainability that also includes social and environmental aspects combined with the financial feature (Salzmann, Ionescu-Somers, & Steger, 2005). The understanding of above dimensions with respect to corporate performance indicates that a business is answerable for the formation of economic value (profit), saving people (society) and the surroundings (environment). These aspects are commonly termed as three Ps (Profit, People, and Planet) of Sustainability or "Triple Bottom Line" (TBL), a term invented by Elkington (1994). The theory happens with the technique of defining the impression of corporate social performance in multidimensional concepts that include financial, legal and moral aspects. Moreover, (Carrol, 1999) also addresses the both Ps of TBL method, namely "people and planet", as the aspects of Corporate Social Responsibility (CSR) and Corporate Social Performance (CSP). Prominently, attaining the worthy firm's performance and sustainability are the business capability to gain the current requirements without sacrificing the capability to meet upcoming requirements (Lee & Trimi, 2018).

Additionally, globalization has made corporations to hold outstanding development and modification. Furthermore, industrial development results in the social and environmental concerns that gained the attention of executives and public authorities in various nations (Fischer & Sawczyn, 2013). Presently, many of these social and environmental issues are resulting in the depletion of the ozone layer, global warming, acid rain, mass

extermination of species, and much other destruction associated with natural capital (Richards, Allenby, & Compton, 2001). In contrast, ne environmental legislations regarding alleviation and the deterioration of natural resources (environment) is another concern that must be considered by organizations (Henri & Journeault, 2008). Likewise, Sierzchula et al. (2014) have the opinion that Thailand should have more focus on the environment. For the purpose, enhanced awareness of environmental responsiveness has provided business performance a more comprehensive emphasis, involving financial and nonfinancial elements that are currently being investigated. Innovation creation is regarded as a layer of superiority in encouraging business survival, as innovation has a key participation regarding improvement and sustainable greater performance through competitiveness (Castelli & Sianesi, 2015). In addition, Mehralian et al. (2016) reported that that the most gainful and innovative kinds of organizations are those that adopt proactive approach of behaviour and cooperate team orientating regarding product, operations, business and marketing innovation. Hence, the application of innovation as a driven strategy offers a response for alterations in technology, requirements, market resource accessibility, rivalry and executive initiatives combines with the conclusive purpose of distinguishing the organization from its competitor and improvising its business performance (Jansen, Van Den Bosch, & Volberda, 2006). In addition, highly competitive settings where competitors reproduce resources in quick manners for competitive edge, the innovative ability of a business based on the sustainability is crucial that focus the significance of business innovativeness. This indicates the significant position of technology in generating opportunities and competitive advantage, as well as accomplishing sustainable development.

The innovation in the digital technology helps businesses in developing the setup that encourage information coordination and e-commerce practices among the integrated global partners (Busi & Bititci, 2006). Researchers argue that digital technology advancement helps in managing the information sharing and commercial dealings at organizational level and corporate level "technology diffusion" (Hall & Khan, 2003). A large number of previous researches acknowledged the influence of technology diffusion on organizational performance (Gaiardelli, Saccani, & Songini, 2007). However, maximum of the available studies regarding issue has been conducted in the context of developed economies likewise North America and Western Europe. There are very few studies available in the context of developing markets (Anbanandam, Banwet, & Shankar, 2011). Moreover, context and settings of developing economies are far different from the developed economies and commonly face lack of developed institutions, organization and consistent guideline (Kundaje et al., 2015). Additionally, businesses operating in the developing markets face the issues of less firm level R&D competences. Some of the emerging economies having large population likewise China have witnessed rapid market growth that have become not only a key foundation of expansion and growth for international and large firms globally but have also been a source of innovation, forward and backward, that brought back to established economies (Kundaje et al., 2015). For the purpose, there is dire need of investigation regarding the impact of technology diffusion with firm performance in the context of developing markets. By the extensive study of literature, no research found in the context of Thailand that incorporates the variables of this study. The current study will possibly contribute in the prevailing literature. If possible, a large number of firms from diverse economies would be selected but this was impossible because of finance, time and geographic limitations. The producers of pharmaceutical product in Thailand are selected for current study (Al-Hakim & Lu, 2017).

Corporate sustainability is regarded as the significant element for business competitive advantage by numerous researchers and government agencies (Cacioppe, Forster, & Fox, 2008). Moreover, it is highlighted that for the attainment of sustainable development, business performance should be measured beyond financial measure; and, firms need to address three measurements of corporate performance that include economic (financial), societal (people) and environmental (planet) (Fauzi, Svensson, & Rahman, 2010). However, many of the extant review on firm performance mainly considered the financial aspect of firm performance, such as: Campbell and Mínguez-Vera (2008), Certo et al. (2006), and Talke, Salomo, and Kock (2011). Others emphasize that firm performance should also include other aspects of performance besides financial performance such as social performance (Fischer & Sawczyn, 2013) and environmental performance (Fauzi et al., 2010). Therefore, Fauzi et al. (2010) suggest that future studies should focus on sustainability concept, which covers economic, social and environmental aspects, in order to attain sustainable firm performance.

LITERATURE REVIEW

Firm Sustainable Performance

The aim of boosting the performance has been demonstrated in most studies requiring the understanding of competitive survival of an organization and response from its environment adaptation (March & Sutton, 1997). Firm performance has been pointedly considered and explained from various perspectives and it grows according to organization context that focuses on work, people, organizational structure, organizational ability to exploit resources and organizational ability for goal accomplishment (Gavrea, Ilies, & Stegerean, 2011).

Most corporations are seen to have social, environmental and economic impact which is well-known as sustainability that influence people, communities and the natural

environment, either intended or unintended (Jermsittiparsert, Sutduean, & Sutduean, 2019). The notion of sustainability has been described and clarified in numerous ways and circumstances of firm sustainability are explained in the three scopes of firm performance, namely: an economic "financial", a social "people" and an environmental "planet" performance (Fauzi et al., 2010; Wagner & Schaltegger, 2003). Financial performance refers to financial feasibility or the degree to which a firm attains its economic goals (Fershtman & Muller, 1986) and social performance is the "business firms configurations or principles of social responsibility, processes of social responsiveness policies programs and observable outcomes as they relate to the firm's societal relationship" (Wood, 1991). Environmental performance, on the other hand refers to the level of effect an organization makes on the natural environment (Lieberman et al., 2010; Somjai & Jermsittiparsert, 2019). Dyllick and Hockerts (2002) have also stated that sustainability "represents the potential of societal progression in the direction of an impartial and wealthy world in which the natural environment and our cultural triumphs are well maintained for generations to come".

Salleh, Yusoff, and Saad (2015) described firm performance into intended and unintended effects where intended effects refer to the production of product or process, including return for the shareholders, and accounted for the organization. They are usually involved in performance measurement and management choices. Conversely, unintentional outcomes are consequential to the natural environment, such as diffusion of air pollution, customization of waste and energy, and hostile effects on human lives, their property as well as their prosperity and well-being which are conventionally not encompassed in performance measurement or management decisions. Hence, it is safe to conclude that intended effects are actually financial performance while unintended effects are non-financial performance. However, unintended effects turn out to be intended effects when these effects are integrated in management decisions. Moreover, it is seen that besides governments and activist, the media and consumers also demand that firms should be held responsible for the social and environmental concerns of their organizational actions (Salleh et al., 2015). As a result, a growing volume of firms' endeavour in not simply for monetary impact, but also strive for environmental as well as social effect of the society, including planned and unplanned positive plus negative effects, for both long term and also short term effects in their respective actions (Blackburn, Hart, & Wainwright, 2013). Hence, when measuring a firm's performance, it is crucial to measure all aspects, financially and non-financially. Fischer and Sawczyn (2013) studied the association among corporate social performance and corporate financial performance for large German listed firms shows there is evidence of positive and significance association of social performance and financial performance. It could be concluded that socially responsible organizations enhance their financial performance and these firms with larger financial surplus may apply their excessive of economic or non-economic resources for additional developments of their social performance. Thus, attaining profit and added value especially through research and innovation has been the focal purpose of corporations. This concept is further explained in innovation practices which are seen as a potential fundamental factor for social and environmental challenges facing our contemporary society (Matei & Drumasu, 2015). Therefore, firm's performance should not primarily be measured through financial performance or social performance, but to measure it through both financially and socially especially when considered through the lens of innovation.

The notion of social performance including its environmental facet is similar to the concept of social accountability as well as socially accountable actions. Sometimes, the idea of social performance is incorporated underneath the umbrella of social responsibility (Nyirenda, Ngwakwe, & Ambe, 2013). In this study social responsibility and social performance serves similar connotation. The expressions "social" and "environment" have been enclosed in the notion of social responsibility which means that the environmental aspect is measured as part of the paradigm. Nevertheless, because of the rising significance of environmental issues, it highlights the necessity to discrete the environmental performance from the social performance (Salleh et al., 2015), and the concept of performance measurements should reflect on three aspects including financial, social, and environmental (Fauzi et al., 2010). Hence, in the context of the current study, the concept of performance includes financial, social and environmental performance. Financial performance is defined as "financial viability or the extent to which a company achieves its economic goals". Sirelli (2000) has emphasized that frequently, the firm financial performance or the economic-performance measures have also been studied in terms of growth rates of sales, sales per employee, total assets in addition to total employment, and return on investment plus operation profit ratio.

The performance of an organization is influenced by its actions and strategies in market and non-market settings (Sabir, Mohammad, & Shahar, 2019). However, one concept that possibly takes into the main component of these non-market strategies is firm's social performance. Therefore, firm's social performance could be explained as: In prior studies, social performance is measured by few scopes, which are: social performance confessions, social performance reputation assessments, social performance processes and social audits, also observable outcomes, in addition to managerial social performance principles and values (Hull & Rothenberg, 2008). Recently, social performance has becoming increasingly significant, due to the rising stakeholder necessities about a firm's

environmental and social apprehensions (Velte, 2017). Fischer and Sawczyn (2013) also proposed that by fulfilling stakeholder prospects and requirements by apparent corporate actions possibly will truly develop a firm's standing and monetary result.

In those economies, where firms face constructive environmental pressures and declining natural capital they tend to embrace an active strategy for the environment, and there is possibility of achieving competitive advantage in the future. However, irrespective of the explanations firms might give for deciding to be environmentally proactive, they commonly express two kinds of challenges when endeavouring to expand environmental performance, such as supplementary financial expenditures and changes into organizational culture, structure and values, in addition to that, they also face less earnings on environmental performance investments. However, increase of environmental concern juxtaposes the importance of including environmental performance in their firm performance evaluation (Fauzi et al., 2010).

The impact firms do have on the natural environment or their environmental performance has attracted considerable attention in previous literatures. The notion that industries are destructively affecting the natural environment has steered to increased government regulation and stakeholders' predicament. In response to such pressures, various firms have initiated plans to aggressively manage their environmental leaking. Several firms have taken a positive environmental stance, and have further enhanced their environmental performance beyond the necessities of regulations. Therefore, as stated earlier, proactive environmental organizations advance environmental performance mainly by improving resource efficiency, by decreasing waste through recycling and reuse programs, as well as by way of innovation for the environment. Thus, including the environmental aspect of firm performance is critical in evaluating overall sustainable firm's performance.

Relationship between Technology and OP

Strong competition had driven firm to manage their resources including technology strategically. The always strive to improve skills, productivity, quality and finally sustainable performance (Schneider et al., 2013). Duffy and Fearne (2004) described globalization as changing the level of competition in interesting ways. Advances in technology not only enable large firm to compete but also SMEs in the face of rapid technology changes in the manufacturing sector. In other words, Advanced Manufacturing Technology (AMT) enables all sizes of firm to compete successfully and secure their respective objectives and sustainable performance measures (Maina & Waiganjo, 2014). Dynamic firms enhance their efficacies for innovation as a means of staying current in their field.

Firms using advance technology need continuous technological upgrades in order to remain competitive (Chuang & Lin, 2015). They address customer satisfaction through the latest technology and at the same time achieve their intended sustainable performance. In other words, the latest technology improves operating practice, and the superiority and amount of goods and services (Imran, Maqbool, & Shafique, 2014). Shehu and Mahmood (2014) believe that efficient utilization of physical forces with the help of different types of technology and innovation influences the production of goods, and services, and OP. In many organizations, technology provides the needed force if different ways by which goods and services are generated are to be implemented. Imran et al. (2014) continued that this might be in the form of machines, communication, equipment and information, which is the combination of methods, information, tools and systems, focussed to work in a specific way.

After analysing the business environment, small-scale industries must focus on the development of effective strategies (Fathoni, Siswanto, & Hasim, 2018). Markets are more competitive in this changing environment especially in sectors requiring a high level of product quality, priced competitively. Firm will re-organize their work process to respond to these changes by adapting strategies that are strongly customer oriented. Many firms have invested in AMT such as computer-integrated manufacturing (Aliqah, 2012), which results in improvement of quality, flexibility and productivity as well as cost reduction (Idris, Wahab, & Jaapar, 2016). Baldwin and Yan (2015), found plants with technologically advanced equipment are more productive and record superior performance. This study will analyse the influence of technology on OP.

Technical Science

Technical science contributes to increase of productivity, efficiency and greater competitiveness. For example, a new technology, Radio Frequency Identification (RFID), has been introduced and can be used for many businesses in order to inventory assessment to gain access. The technique has greater importance for varying use in many industries with several practical applications (Zhu, Mukhopadhyay, & Kurata, 2012). Firms always look for technology that is appropriate to support their specific business objectives. Appropriate technology must be able to help them reduce cost, be easy to maintain, and produce minimum negative impact such as pollution (air, water, noise etc.) (Cohen-Gilbert et al., 2014). In today's era of competition, especially for technically unsophisticated products production would benefit from technically advanced machinery with technically competent operator with high level of technical skill (Mason et al., 2015).

Level of Skill

In production system, employees should be well informed about their role in supporting the organization in terms of communal, technical and environmental obligations. They are stimulated to be self-assured and acquire numerous abilities for the performance of various tasks (Dennis &

Dowswell, 2013). Most prominently, employees are authorized to make design and process alterations if this leads to product and process improvements respectively (Netland, 2013). (Adler, 2012) warned that formal work principles established and imposed by business engineers on workers may be separating. Nevertheless, measures that are determined by employees themselves better productivity, quality, skills, or understanding. Multi-functionality refers to workers' skills in performing multiple tasks within a given unit. Organizations in fast-changing markets need product and process flexibility and a multi-functionally workforce (Fetcho-Phillips, 2011). 'Mechanistic' organizations can achieve flexibility by hiring specialists and experts, while 'organic' organizations achieve it through training employees to be multi-tasking. The quality of work will be enhanced if employees can influence decisions that affecting their jobs. In addition, employee competence enhances productivity and sustainable performance of firms (Bowker et al., 2012).

Physical Tools

Physical tools in the technology triangle comprise equipment such as materials, machines, hardware, procedures and physical facilities owned and used by every manufacturing company. A good plan involving types of tools to use and well-trained human resources enable the firm to convert raw materials into finished goods. Application of technology in the manufacturing sector involves not only implementation, but also the impact of such technology, especially on the environment. Every firm needs equipment to produce good-quality products and achieve targeted performance, and appropriate manufacturing technology helps the company in this (Bowker et al., 2012). Pusparini and Wibisono (2013) described the age and condition of a technology as effecting a firm's ability to execute its production strategy. New technology is usually more efficient and effective than old technology. Therefore, investment in advanced technology to improve production capacity and efficiency is highly recommended especially for firms that intend to use production capacity as a competitive advantage (Pusparini & Wibisono, 2013).

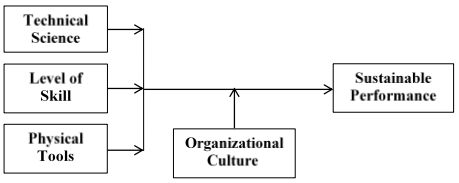
Organizational Culture (OC)

OC is the "underlying values, beliefs, and principles that serve as foundation for an organizations as well as a set of management practices and behaviours that both exemplify and reinforce those basic principles" (Amah & Ahiauzu, 2014). Culture is a critical factor for every organization (Schein, 2004), and an appropriate culture can improve its performance (Bakar et al., 2011). Corporate culture is often defined as values that are understood and adhered to by all the staff, making them feel like a family and using it as a catalyst to achieve and the firm's objectives (Silverthorne, 2004). Silverthorne (2004) also suggested that culture is a composite mixture of assumptions, behaviours, stories, myths, metaphors and various other ideas that became one, to determine what it means to be members of a particular community. OC include a numbers of important insights, such as norms, attitudes, and beliefs, Shared by members of an organization. It stems from social interaction among members of organizations, further interacting with other variables such as technology and structure (Unger-Aviram & Erez, 2016). OC has an impact on employee motivation which, in turn, affects organizational productivity and performance (Trivellas & Dargenidou, 2009). OC is positively related to organizational activities and performance. OC could moderate the effect of technology on sustainable performance of firms.

RESEARCH FRAMEWORK:

This study is planned to examine the effect of Technology capabilities on Sustainable Performance of pharmaceutical firms in Thailand with moderating role of organizational culture. The proposed research framework of this study is presented Figure 1.

Figure 1: Proposed research framework



H_1: Technical Science has a significant positive role on sustainable performance of pharmaceutical firms in Thailand.

H_2: Level of Skills has a significant positive role on sustainable performance of pharmaceutical firms in Thailand.

H_3: Physical tools have a significant positive role on sustainable performance of pharmaceutical firms in Thailand.

H_4: Organizational culture has significant moderating role on the relationship of technology capabilities with sustainable performance of pharmaceutical firms in Thailand.

METHODOLOGY

The research design refers to the master plan which specifies the approaches and techniques for the purpose of gathering as well as examining the information in a study. In this study, the quantitative approach was used. The purpose of this study is to investigate the influence of technology on sustainable performance of pharmaceutical firm in Thailand. The data was collected from Chief Executive Officer (CEO), Chief Operation Officer (COO), Executive Directors and General Managers. They are chosen since they are directly or indirectly involved in firm strategic decisions and activities. To measure the firm financial performance, instruments used by McNally, Cavusgil, and Calantone (2010) as well as Prieto and Revilla (2006) were adapted and improved to measure the financial aspect of firm performance. For technology the instruments

adapted from the study of by (Garniati et al., 2014), Cohen-Gilbert et al. (2014), and Pusparini and Wibisono (2013). For organizational culture the questioner was adapted from the study of Trivellas and Dargenidou (2009).

Analysis and Discussion:

This section presents data analysis and for this purpose Smart-PLS software was used. Two step analyses were applied in this study. "Assessment of Measurement Model" carried out for reliability and validity of scale and structure model was used for hypotheses testing.

Assessment of Measurement Model

"Reliability and validity" of scale were examined by the help of measurement model (Hair Jr & Lukas, 2014). Reliability of scale was checked by the values of cronbach's alpha and composite reliability whereas validity of scale was investigated by the correlation values Hair Jr and Lukas (2014). Table 1 presented the value of "measurement model".

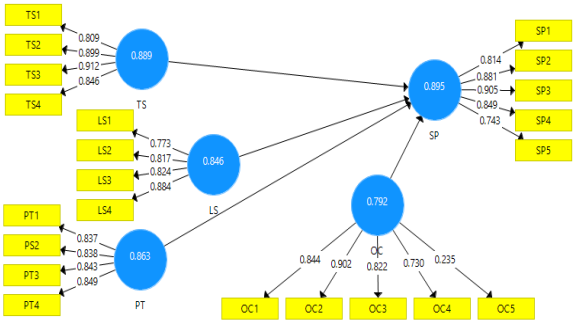


Figure 2. Measurement Model Assessment

Table 1: Values of alpha, CR and AVE

Sr#	Constructs	Cronbach's alpha	CR	AVE
1	**LS**	**0.846**	**0.895**	**0.681**
2	**OC**	**0.792**	**0.850**	**0.558**
3	**PT**	**0.863**	**0.907**	**0.708**
4	**SP**	**0.895**	**0.923**	**0.706**
5	**TS**	**0.889**	**0.924**	**0.752**

The value of discriminant presented in **Table 2**

Table 2: Discriminant Validity

Sr #	Constructs	1	2	3	4	5
1	**LS**	**0.825**				
2	**OC**	0.401	**0.747**			
3	**PT**	0.568	0.485	**0.841**		
4	**SP**	0.453	0.461	0.552	**0.840**	
5	**TS**	0.633	0.314	0.611	0.468	**0.867**

Structure Equation Modelling

Structure model was assessed for the estimation of hypotheses of the study.

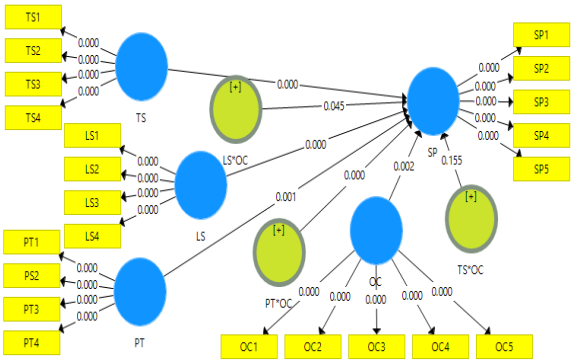


Figure 3. Structural Model Assessment

Table 3: Direct Relationship

Hypothesis	Relationship	Std. Beta	S.E.	t-Value	P-Value	Decision
H_1	**TS -> SP**	0.342	0.081	4.222	0.000	Supported
H_2	**LS -> SP**	0.307	0.073	4.205	0.000	Supported
H_3	**PT -> SP**	0.264	0.081	3.275	0.001	Supported

Table 3 represented the direct relationship of independent variables (Technical Science, Level of Skills and Physical tools) with sustainable performance of pharmaceutical firms in Thailand. The values that extracted from the statistical analysis show that Technical Science positively and significantly effect to sustainable performance of pharmaceutical firms in Thailand. The t-value 4.222 that higher than the standard value of 1.96 and p-valve 0.000 was according to the standard value shows that H_1 was accepted. Results indicated that Level of Skills also has significant relationship with sustainable performance of pharmaceutical firms in Thailand. The β value 0.307 was witnessed that it has positive effect on sustainable performance of pharmaceutical firms in Thailand. The t-value is 4.205 shows that H_2 also accepted on statistical grounds. Moreover, findings also illuminated that Physical tools contribute in sustainable performance of pharmaceutical firms in Thailand. The β value 0.264 was revealed that Physical tools positively influence to the sustainable performance of pharmaceutical firms in Thailand. Statistical value i.e t-value 3.275 and p-value 0.001 indicated that H3 was accepted. Additionally, these result are in line with the results of (Khan, Masrek, & Nadzar, 2015).

Table 4: Moderating Relationship

Hypothesis	Relationship	Std. Beta	S.E.	t-Value	P-Value	Decision
H_{4a}	TS*OC -> SP	-0.111	0.078	1.425	0.155	Not Supported
H_{4b}	LS*OC -> SP	0.169	0.077	2.194	0.045	Supported
H_{4c}	PT*OC -> SP	0.188	0.066	2.848	0.000	Supported

Table 4 present moderating results organization culture on the relationship of Technical Science, Level of Skills and Physical tools and sustainable performance of pharmaceutical firms in Thailand.

Findings show that organizational culture has no moderating effect between the relationship of Technical Science and sustainable performance of pharmaceutical firms in Thailand. The t-value was 1.425 and p-value 0.155 discovered that H_{4a} was rejected on statistical ground. Additionally results show that organizational culture significantly moderating the relationship of Level of Skills and sustainable performance of pharmaceutical firms in Thailand. The t-value was 2.194 and p-value 0.045 proved that H_{4b} was accepted on statistical ground. Findings also show that organizational culture significantly moderate the relationship of Physical tools with sustainable performance of pharmaceutical firms in Thailand. The t-value was 2.848 and p-value 0.000 verified that H_{4c} was accepted.

CONCLUSION:

The core objective of current study was to examine the influence technology capabilities (Technical Science, Level of Skills and Physical tools) on sustainable performance of pharmaceutical firms in Thailand with moderating role of organizational culture. To the accomplishment of purposes of this study the data was collected from the owners and managers of Thai pharmaceutical firms by using survey questioners. The results indicated that Technical Science, Level of Skills and Physical tools positively contribute in sustainable performance of pharmaceutical firms in Thailand. These elements are significant antecedents of sustainable performance of pharmaceutical firms in Thailand. The results of this study are consistent with the findings of preceding research studies as illustrated in discussion section of the study. Furthermore, this study also investigated the moderating role of organization culture on the relationship of technology capabilities (Technical Science, Level of Skills and Physical tools) with sustainable performance of pharmaceutical firms in Thailand. This study found that organizational culture significantly moderate the relationship of level of skills and physical tools with sustainable performance of pharmaceutical firms in Thailand. However, it has no moderation role on the association of technical science with sustainable performance of pharmaceutical firms in Thailand. This study offers information related to the management decision-making process. The results will assist top management in planning for sustainable performance, especially in the context of implementation of technology and organization culture.

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