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Can strategic, operational, and environmental opportunities enhance economic aspects of sustainability performance in Thailand's pharmaceuticals sector: Role of industry 4.0 implementation?

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ABSTRACT
The aim of the current study was to know the impact of strategic opportunities on economic sustainability performance, the impact of operational opportunities on economic sustainability performance and the impact of environmental opportunities on economic sustainability performance. The study took industry 4.0 implementation as a mediator. The researcher collected past data for its critical review and drew hypothesis from the relevant studies. To testify the hypothesis, the researcher collected data from Thailand's Pharmaceutical Sector, 307 individuals were selected as a sample. The data was collected through questionnaires and then it was analyzed through SPSS and AMOS. The results of the analysis showed that, the impact of strategic opportunities on economic sustainability performance is significant, the impact of operational opportunities on economic sustainability performance is significant and the impact of environmental opportunities on economic sustainability performance is significant as well. The study took industry 4.0 implementation as a mediator which is significant as well. The study was conducted unlike the past ones, based on latest analyzing techniques and moreover, study has several implications in the practical and theoretical sector as well. But the study is limited to a single sector only and is not generalizable.

Keywords: Strategic, Operational, Environmental Opportunities, Economic, Sustainability Performance, Pharmaceutical Sector, Industry 4.0

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INTRODUCTION

The sustainability performances is considered as a major determinant to evaluate the firms' quality. The sustainability performance is also measured by three components: economic performance indicators such as turnover, sales, profit, product quality etc.; social performance indicators measured by stakeholders' right, human capital etc.; and environmental performance indicators such as waste recycling, greenhouse gas emission, water consumption. Economic sustainability performance of firms is refer to the firms' strategies opted to tap the full economic potential of firm (Schaltegger & Wagner, 2017). The economic sustainability performance of pharmaceutical industry of Thailand's highly depends on execution of the strategic and operational opportunities. The pharmaceutical industry of Thailand is one of the emerging manufacturing industry which is on the positive growth trajectory. The industry is attracting considerable foreign direct investment from multinational across the globe. However, given the low level affordability and relatively poor access to the healthcare, the industry is not tapping its full potential. The sustainable economic performance of the industry may achieved by industry 4.0 implementation (Haseeb, Hussain, Slusarczyk, & Jermsittiparsert, 2019), and by opting suitable strategic, operational, environmental options. The pharmaceutical industry is highly chemical intensive industry which considerably contributes in CO2 and greenhouse gas emission. The environmental management will reinforce the economic sustainability performance in industry. The purpose of this study is to empirically explore the impact of strategic opportunities, operational opportunities, and environmental opportunities on the economic sustainability of the pharmaceutical industry in Thailand. Moreover, study also aim to explore the mediating impact of industry 4.0 implementation on the relationships between independents and dependent variables. Strategic opportunities is an important determinant which strengthen the economic sustainability of pharmaceutical industry by dealing with the strategic issues and weakness to streamline he business performance Moreover, industry 4.0 implementation is also facilitates the adoption of favorable strategic, operational, and environmental opportunities in the firm. For instance, the industry 4.0 implementation also enable the adoption of green information system such as adoption of high-end renewable energy sources, and promotion of green manufacturing and green purchases. Pharmaceutical industry of Thailand is not exploiting its full potentials, due to ineffective operations and strategies in production processes. Moreover, the poor purchasing power of high end medicine is also incurring cost of low demand to

manufactures. In order to reinforce the economic growth of the country, it is vital to pay attention of the economic sustainability of pharmaceutical industry because of its conservable share in Gross Domestic Product. Figure 1 indicated the growth and sale of pharmaceutical in Thailand from 2016 to 2021 forecast;

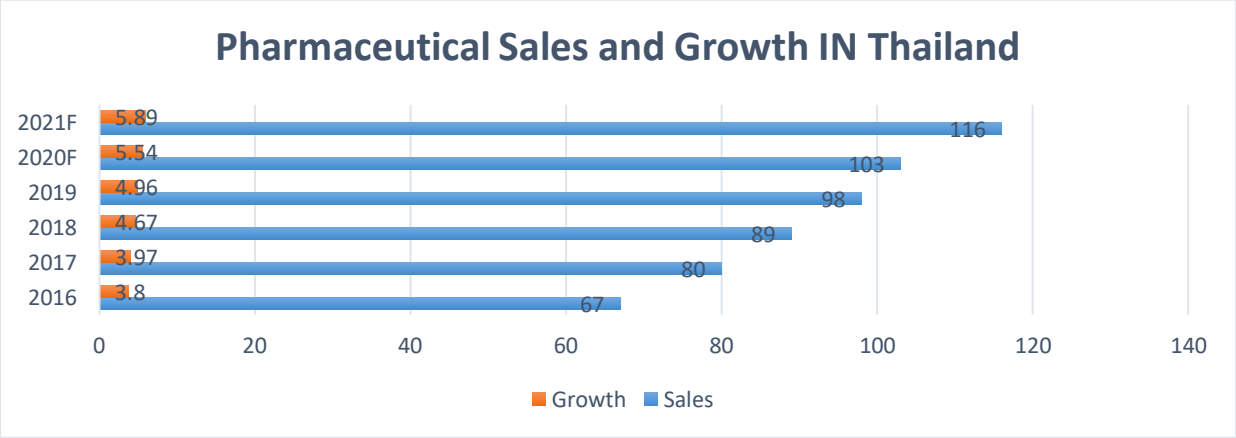


Figure 1: Sale and Growth

Despite of its significate contribution in economic growth, the research on the economic suitability of pharmaceutical is limited in literature. These study intents to fill gaps in literature by empirically investigating the effect of strategic, operational, and environmental opportunities on the economic sustainability performance of pharmaceutical industry of Thailand's, . Moreover, the novelty of the study is to measure the mediating impact of industry 4.0 implementation on the relationship between strategic, operational, and environmental opportunities, and economic sustainability performance. The study also feed back to the literature of the economic sustainability performance by debating how operational and strategic option influence the economic sustainability performance of Thailand's pharmaceutical industry. The objective of the study is:

- To explore the impact of Strategic opportunities on economic sustainability of pharmaceutical industry in Thailand.
- To investigate the mediating role of Industry 4 implementation in the relationship between Strategic opportunities and economic sustainability of pharmaceutical industry in Thailand.
- To explore the impact of operational opportunities on economic sustainability of pharmaceutical industry in Thailand.
- To investigate the mediating role of Industry 4 implementation in the relationship between operational opportunities and economic sustainability of pharmaceutical industry in Thailand.
- To explore the impact of environmental opportunities on economic sustainability of pharmaceutical industry in Thailand.
- To investigate the mediating role of Industry 4 implementation in the relationship between environmental opportunities and economic sustainability of pharmaceutical industry in Thailand.

The previous studies in literature on economic sustainability performance and industry 4.0 implementation have very positive and realistic policy implications (Müller, Kiel, & Voigt, 2018; Schmidt et al., 2015; Tortorella & Fettermann, 2018). These studies enable policy makers to pay considerable importance to digitalization of marketing by tapping strategic and operational opportunities for economic sustainability performance. The purpose of this study is to serve on the same lines. The arrangement of the sections are given as follows: Section two highlights the theoretical background and existing literature and; Section three discusses methodology and data analysis in detail; Section four enunciates the empirical findings of the study; and section five concludes the results and suggests suitable policy.

Literature Review and Theoretical background

The economic sustainability performance of the industry deals with the sustainable development in the economic aspects of industrial businesses (Barnett, Darnall, & Husted, 2015; Hami, Muhamad, & Ebrahim, 2015; Jin, Jeong, & Kim, 2017; Kuzey & Uyar, 2017). Economic sustainability is one of the key indicators of the sustainability performance of firms (Chin, Tat, & Sulaiman, 2015; Hussain, Rigoni, & Orij, 2018; Schaltegger & Wagner, 2017). Many studies has designed the theoretical mode to explain the economic sustainability performance of the firm. The determinants of the economic suitability performances explored in the literature are: human capital, research and development, innovation. Nicolăescu, Alpopi, and Zaharia (2015) also explored the characteristics of sustainability management in corporations. The study presented the elements and indicators in their study which cause the economic sustainability of corporations. In this research, to explain

the economic sustainability performance of firm the author employed the strategic, operational, and environmental opportunities inspiring from the study of Müller et al. (2018). Moreover, the researcher also incorporated the industry 4.0 implementation, inspiring from the study of (Kamble, Gunasekaran, & Dhone, 2019) as mediating variable which reinforces the relationship between independent and dependent variables such as strategic opportunities, operational opportunities, environmental opportunities, and economic sustainability of industry.

Strategic opportunities, Industry 4 implementation and Economic sustainability

The strategic opportunities of the industry, provides set of opportunities to the manufacturing industry to opt advantageous strategic option that allow to minimize the weakness and streamline the businesses in the country. The exploitation of strategic opportunities has the positive implication for the economic sustainability of the industry. Few studies in the literature highlight the importance of firm's strategic decision and strategic opportunities in bolstering the economic sustainability of the firm. Luo (2003) also empirically explored that how the industrial position and strategic option impact the managerial decision about stakeholders to enhance the economic sustainability of the industry. The theory indicate that executives of the firm faces different option and scenarios which highly influence the interpersonal ties in the industry which impact the economic sustainability of the firm. The analysis of the study based on the 364 firms in China by conducing the survey. The results indicate that good executing the strategic option such as increasing production capacities, competition and regulations will reinforce the managerial ties, and consequently the economic sustainability. Moreover, Gogoberidze and Mamaeva (2012) also proposed that properly executing the strategic opportunities for development of coastal zones and sea industrial complex will positive impact the economic development of the Russian federation. The methodology employed in the study is majorly based on the exploring the strategic options of coastal territories for increasing the marine industrial complex sustainable development (Heo, Kim, & Kang, 2019; Maleka, Nyirenda, & Fakoya, 2017; Ramanathan, 2018; Sahoo, 2019). Likewise, dealing with the strategic issues of pharmaceutics by digging out the strategic opportunities also reinforce the economic sustainability of the industry. Singh, Kumar, and Kumar (2016) also illustrated in their pharmaceuticals industry is not properly researched in the developing countries because supply chain and strategic issues. The strategic issues regarding the resources, performance and processes in pharmaceuticals highly economic sustainability of industry.

In addition. Müller et al. (2018) also indicate that from strategic view point, the implementation of industrial 4.0 has significant implications for the business model of industry. The implementation of industrial 4 model referred to the digital system of manufacturing employed for the integration of information, production, technologies, and techniques. Moreover, it also enhances the efficiency of the industrial manufacturing system (Ahuett-Garza & Kurfess, 2018). Therefore, the exploitation of the strategic opportunities in the manufacturing industry also render the firm to opt the implementation of industry 4, which consequently enhances the efficiency and economic sustainability. However, the studies on the mediating impact of industry 4 implementation of the relationship between strategic opportunities and economic sustainability is limited in literature. Therefor this study aim to explore the relations by proposing following hypotheses:

H1: Strategic opportunities has significant role in enhancing the economic sustainability of pharmaceutical industry in Thailand.

H2: Industry 4 implementation has significant mediating role in relationship between Strategic opportunities and economic sustainability of pharmaceutical industry in Thailand.

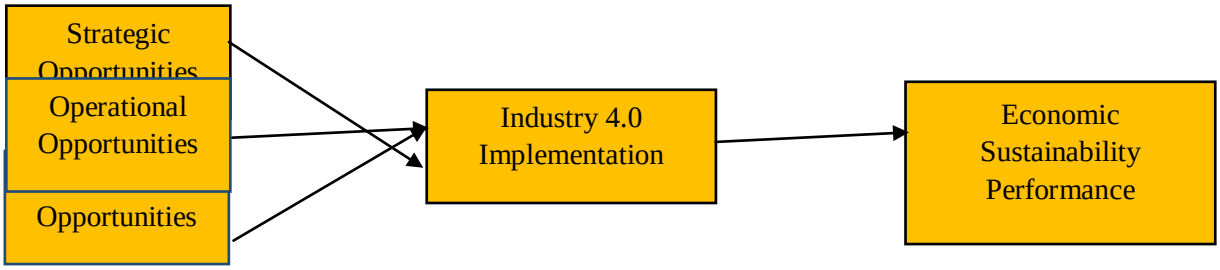
Operational opportunities, Industry 4 implementation and Economic sustainability

Operational performance of firm is requisite for the sustainable development and continuous growth of the industry. Any firm wish to improve the efficiency and performance tend to improve the operation activities and evade the operational risk in the firm. The operation opportunities mainly referred to the various technical and technological options of firms to improve the working of the business. Operational opportunities exploit by the industry not mere enhance the efficiency but also improves the economic sustainability. Mizgier, Hora, Wagner, and Jüttner (2015) also proposed that dealing with operational risk and loss by improving the process and increasing the capital adequacy of firms, consequently led the economic sustainability of the firm. The study employed that data of 5442 operational distortions by using Monte Carlo simulations process. The results indicate the process improvement is vital for dealing with operational risks. Yang, Lee, and Cheng (2017) also indicated that the Japanese firms are opting the operation improvement as measure to increase the economic sustainability and efficiency of frontline operational services. In addition, the implementation of industry is also equivalent to the exploiting the operational opportunities of industry. Industry 4. 0 improve the business processes by integrating the business process such as management of inventory, cost, and working capital through employing the industrial internet of things, wireless sensors, and information system to control the process (Müller et al., 2018). Moreover, the horizontal and vertical connection allow firm to accelerate market time by promptly responding to the fluctuation in demand or alternating in customers' orders.Müller et al. (2018) also proposed that operation, strategic, and environmental opportunities of firms are the major force of industry 4.0 implementation by employing the data of 746 manufacturing firms of five industries in Germany. Therefore, based on aforementioned literature following hypothesis is proposed:

H3: Operational opportunities has significant role in enhancing the economic sustainability of pharmaceutical industry in Thailand.
H4: Industry 4 implementation has significant mediating role in relationship between Operational opportunities and economic sustainability of pharmaceutical industry in Thailand.

Environmental opportunities, Industry 4 implementation and Economic sustainability

The environmental opportunities offered by industry 4.0 implementation considerably contribute in dealing with the green house and CO2 gas emission and environmental hazard on part of industry (Müller et al., 2018). Moreover, the environmental opportunities offered to firm is also requisite for the economic sustainability of the firm. Few studies had empirical proposed that opting the environmental opportunities such as green manufacturing, green purchasing impact the sustainability growth and competitiveness of the industry. Rusinko (2007) also empirically explored that the role of green manufacturing, for environmental protection, enhanced the competiveness of 84 manufactures of carpet in USA. The results of the study indicates that green manufacturing option enhance the economic sustainability of firms. Moreover, Green manufacturing option, for environmental protection, also eradicate municipal waste by increasing the efficiency of firms (Lee, Hu, & Ko, 2008). Likewise, opting environmental opportunity of Green purchases (refer to the firms procurement management to control the waste defecation) positively impact the economic sustainability of firm. Green purchases aligning with the sustainability performance of firms also win repute in the market (de Sousa Jabbour, de Oliveira Frascareli, & Jabbour, 2015; Lai & Cheng, 2016; Younis, Sundarakani, & Vel, 2016).
Moreover, the industry 4.0 implementation in firm also facilitates the environmental protect at part of firms by reducing greenhouse gas emission and pollutants (Hermann, Pentek, & Otto, 2016; Stearns, 2018). Green information system is also a form of industry 4.0 implementation for tapping environmental opportunities. In addition, employment of Green information system, which deals with the use of information system to promote environment friendly operations and sustainable performance, is an option to exploit the environmental opportunities of firm (Recker, 2016; Shevchuk & Oinas-Kukkonen, 2016). The environmental friendly information system optimize the firms' behaviors and activities towards clean energy and renewable energy innovations(Seethamraju & Frost, 2019).The usage of green information system for environmental protection enhances the competitive advantage and performance of firms which influence the economic sustainability performance (Chen, 2008; Dao, Langella, & Carbo, 2011).Therefore, based on aforementioned literature following hypothesis is proposed:
H5: Environmental opportunities has significant role in enhancing the economic sustainability of pharmaceutical industry in Thailand.
H6: Industry 4 implementation has significant mediating role in relationship between Environmental opportunities and economic sustainability of pharmaceutical industry in Thailand.



Theoretical Model

METHODOLOGY

Population and Sampling

The purpose of the study is to empirically investigate the role of strategic, operational, and environmental opportunities on economic sustainability of pharmaceutical industry in Thailand. The most of the variables employed in the study constructed on the basis of measures of variables adopted from the studies in literature. For those measures due to absence of secondary data, primary data is collected through online survey. The purpose of choosing pharmaceutical industry for research is that: Thailand pharmaceutical industry has recorded growth of encouraging growth during 2018; and industry is attracting substantial FDI from past couple of years. The leading manufacturer of pharmaceutical in Thailand's are employed in the study that included Pfizer, GSK, MSD, Novartis, Siam Bioscience, Sanofi Aventis, and Berlin Pharm. The primary data is gather with the help of purposive sampling technique by online distributing questionnaire to 500 respondents. In purposive sampling it is assumed that sample data is representative of population data. The researcher disseminated the questionnaire by online uploading the questionnaire on website and sent web link on emails.

Data Collection Procedure

In order to statistically analyze the effect of strategic, operational, and environmental opportunities on economic sustainability of pharmaceutical industry, the study devised a survey to collect primary data. After constructing the

survey questionnaire, the researcher run a pilot survey to check the authenticity and credibility of questionnaire by distributing sample questionnaire to 20 respondents of leading pharma companies in Bangkok. The researcher tries to meticulously measure the each indicator by accurate theme and valid conceptualization. The researcher also get the feedback from PHD scholars having expertise in relevant field. After incorporating the feedback of expert, the author sent 400 questionnaires to respondents. Few respondents abandoned the survey in the middle and few did not seriously filled the questionnaire, therefore researcher discarded half-filled and wrong filled questionnaires. Resultantly, author left with 307 questionnaires which made the valid sample size for analysis.

Measures of the variables

In literature, limited research is conducted on the strategic opportunities, operational opportunities, and environmental opportunism, and its consequences on the economic sustainability of pharmaceutical industry of Thailand. Therefore, due to absence of secondary data on few variables the study conduct survey to collect primary data. However, study also referred to existing literature to construct the measures of the variables. The researcher align the construct of measures with the context of this particular study. The sustainability opportunities is measured by emulating the scale of the study (Müller et al., 2018; Schmidt et al., 2015; Tortorella & Fettermann, 2018). The construct of the strategic opportunities is based on three survey points based on the following indicators: business model based on 4.0 industry implementation, new value offer to increase competiveness. The response of the variable is measured on five point Likert scale from strongly disagree to strongly agree. Following the construct of variable operation opportunities is based on the measures of two studies (Müller et al., 2018; Schumacher, Erol, & Sihn, 2016) which elicit the responses of respondents on efficiency, cost, quality, load balancing, speed, and flexibility to measure exploitation of operational opportunities. Moreover, the construct of environmental opportunities is based on four survey points which elicit responses of the respondents on renewable energy adoption, green purchase, and green manufacturing, and waste recycling. In addition, the dependent variable economic sustainability performance of pharmaceuticals is proxied by the sales, profit turn over, and capital adequacy of pharmaceutical firms. Industry 4.0 implementation is the mediating variable in the study which is proxied by the scale used in the study of (Kamble et al., 2019) by eliciting response on six survey point on five point Likert scale from strongly disagree to strongly agree.

Data Analysis

In order to empirically estimate the theoretical model the study opted AMOS and SPSS for statistically analysis of hypotheses. Both software estimated six different test for data analysis, descriptive statistics and estimations. The researcher employed AMOS to estimate Structure Equation Modeling (SEM), confirmatory factor analysis and model fitness test. The purpose of *CFA* test is to inspect that how well the estimated variables represents the number of constructs. Moreover, the structural equation model is used to estimate regression coefficient of constructed variables. Moreover, researcher used SPSS to perform descriptive analysis, reliability analysis, and frequency distribution on data.

Results and Analysis

The data has been gathered from 307 residents of Thailand. Among these, the share of male respondent is 52.4 percent where the females constitute about 47.6 percent share. Moreover, the share of graduate and post graduate respondents is significantly high about 12.1 percent and 43.3 percent, respectively. The high share of post graduate respondents is beneficial for this study as they were easily capable of grasping the topic and its nature. As far as age of respondents was concerned, most of sample resident's fall in the age between 41-50 years. Moreover, out of total 307 respondents about 83.8 percent respondent were less than 50 years old.

Table 1: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error
SO	307	1.00	5.00	3.5505	1.14645	-.729	.139
OO	307	1.00	5.00	3.4518	1.10458	-.611	.139
EO	307	1.00	5.00	3.5679	1.14840	-.785	.139
II	307	1.00	5.00	3.5592	1.08742	-.796	.139
ES	307	1.00	5.00	3.5713	1.07299	-.868	.139
Valid N (listwise)	307						

Table 1 depicts the descriptive statistics of indicators such as mean, maximum and minimum values. The minimum values of all the variables is 1 and the maximum value of all the variable is 5, which denotes that indicators are measured on five point Likert scale. The mean values of all the variables hovered around 3.5-3.6 which denotes that most of the respondents are agree or neutral with the statement. In addition, the statistics of skewness confirm the normal distribution in all indicators as values of skewness lies between -1 and 1 which is thumb rule for normal distribution.

Table 2: Factor Loading and Convergent Validity

	OO	ES	II	EO	SO	CR	AVE
OO2	.897					0.931	0.784
OO3	.895						
OO4	.876						
OO1	.874						
OO8	.853						
OO7	.849						
OO10	.841						
OO5	.834						
OO9	.823						
OO6	.815						
ES6		.834				0.957	0.736
ES4		.832					
ES7		.829					
ES5		.826					
ES3		.818					
ES8		.813					
ES2		.755					
ES1		.679					
II6			.853			0.932	0.701
II5			.849				
II4			.829				
II3			.779				
II1			.768				
II2			.766				
EO3				.857		0.923	0.799
EO2				.837			
EO1				.811			
SO2					.816	0.926	0.808
SO3					.806		
SO1					.760		

Table 2 presents the findings of component factor analysis (CFA) by indicating rotated component matrix of variables. The results of CFA test also support the validity of all measures as all the variables holding load factors higher than 0.7, which is threshold value for validity of variable. Moreover, the issue of cross loading has also not identified. In addition, the "convergent and discriminant" test also confirm the validity of variables' construct.

Table 3: Discriminant Validity

	SO	**OO**	**EO**	**ES**	**II**
SO	**0.899**				
OO	0.380	**0.885**			
EO	0.594	0.427	**0.894**		
ES	0.603	0.502	0.516	**0.858**	
II	0.543	0.428	0.449	0.529	**0.837**

Table 3 illustrate the findings of "convergent and discriminant" validity test. The values of AVE and CR represent the confirmation of convergent validity. The threshold value of AVE and CR is 0.75 and 0.7, respectively. The diagonal CR values endorse that variables are relatively more related with itself than other variables. The high diagonal values than off diagonal values in table indicate the discriminant validity of indicators.

Table 4: Confirmatory Factors Analysis and KMO

CFA Indicators	CMIN/DF	GFI	IFI	CFI	RMSEA	KMO
Threshold Value	≤ 3	≥ 0.80	≥ 0.90	≥ 0.90	≤ 0.08	0.6 – 1.0
Observed Value	2.503	0.811	0.942	0.942	0.070	0.951

Table 4 shows the results of KMO and Bartlett's Test. KMO results by confirming adequacy in sample data. The threshold range is proposed between 0.6 - 1.0 for Confirmatory Factors Analysis. The observed values of KMO of all the variables are 0.90, which endorse adequacy in data.

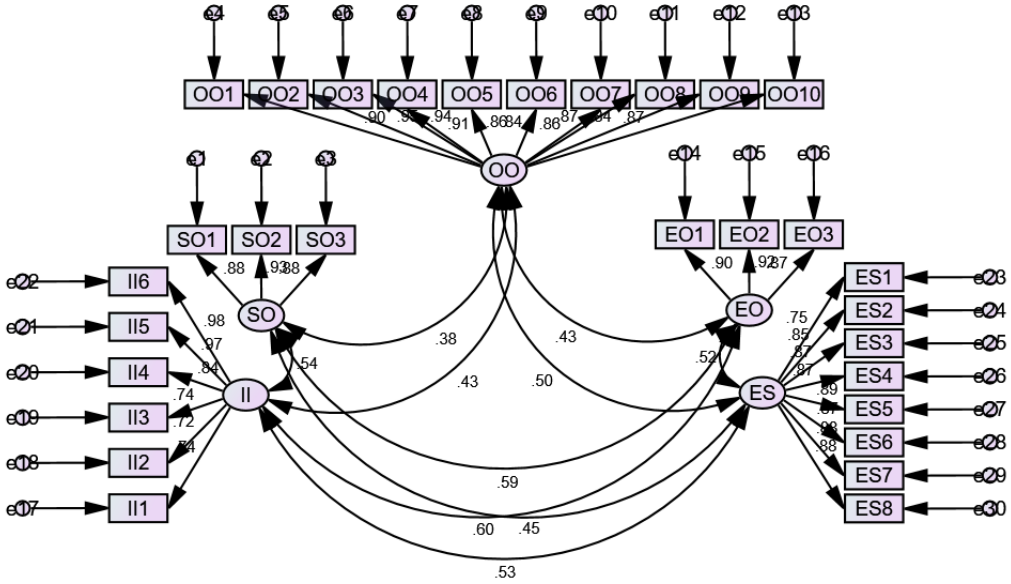


Figure 2: CFA

Table 5 represents the emprical findings of the theoretical model estimated by employing SEM model. The SEM model is run on AMOS. The SEM model is used to investigate the significae of relationships between dependent and independent varibles. The results indicate that strategic opportunities has significant impact on economic sustainability performace of pharmacutical in Thailand as p-value is less than 0.05. The coeffcient indicates that 1 unit increase in stratgic opportunites will enhace the economic sustainability performace by 31 percent. Moreover, the mediatory impact of industry 4.0 implementation on the relationship between strategic opportunities and economic sustainability performace is also significant and positive. The coeffcient indicates that one unit increase in industry 4.0 implementation will increase the economic sustainability performace about 8.1 percent due to strategic opportunites. The coeffcient of operational opportunites indicates that 1 unit increase in operational opportunites will enhace the economic sustainability performace by 22.9 percent. The mediatory impact of industry 4.0 implementation on the relationship between operational opportunities and economic sustainability performace is also significant and positive. The coeffcient indicates that one unit increase in industry 4.0 implementation will increase the economic sustainability performace about 5.4 percent due to operational opportunites. Likewise, the mediatory impact of impact of industry 4.0 implementation on the relationship between enviromental opportunities and economic sustainability performace is also significant and positive

Table 5: Structural Equation Modeling

Hypothesis	B-Value	SE	P-Value	Decision
SO→ES	.310	.051	.000	Accepted
OO→ES	.229	.047	.000	Accepted
EO→ES	.124	.049	.018	Accepted

SO→II→ES	.081	.051	.000	Accepted
OO→II→ES	.054	.049	.000	Accepted
EO→II→ES	.032	.052	.006	Accepted

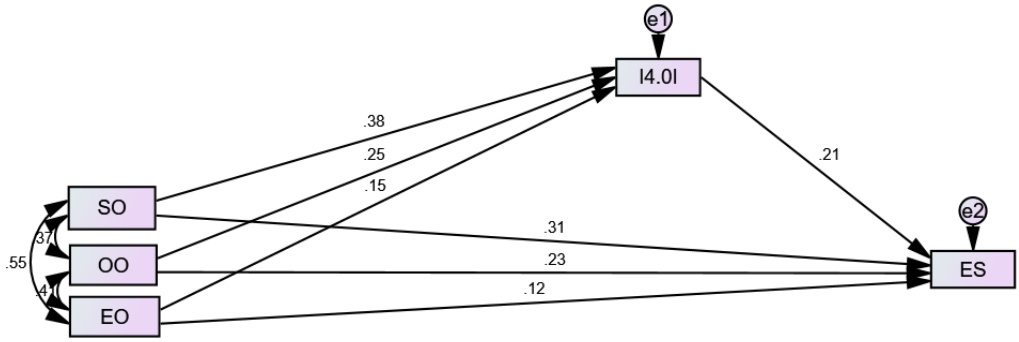


Figure 3: SEM

DISCUSSION AND CONCLUSIONS

DISCUSSION

This research focuses on investigation of the role of the strategic, operational and environmental opportunities for enhancing the economic sustainability of the pharmaceuticals in Thailand through the mediating effects of the implementation of industry 4.0, by formulating various hypotheses. All the hypotheses formulated in this study were accepted through the various tests conducted on the collected data. The first hypothesis stated that strategic opportunities have a direct significant impact on the economic sustainability of Thailand's pharmaceuticals. The second hypothesis stated that operational opportunities have a direct significant impact on the economic sustainability of Thailand's pharmaceuticals. The third hypothesis stated that environmental opportunities have a direct significant impact on the economic sustainability of Thailand's pharmaceuticals. All these direct impacts were proved to have positive effects of 31, 23 and 12 percent respectively. Hypotheses four through to six stated that these opportunities have indirect impact on economic sustainability through mediating effects of industry 4.0 implementation. These indirect impacts also have proved to be positive. Strategic, Operational and Environmental opportunities impact implementation of 4.0 industry by 38, 25 and 15 percent respectively whereas industry 4.0 implementation puts a collective impact of 21 percent on economic sustainability of pharmaceuticals in Thailand. The results of this study can be confirmed in various studies (Abdul-Rashid, Sakundarini, Raja Ghazilla, & Thurasamy, 2017; Ding, 2018; Grzybowska & Łupicka, 2017; Jackson, Gopalakrishna-Remani, Mishra, & Napier, 2016; Thuemmler & Bai, 2017; Wan et al., 2018).

CONCLUSION

This study considers the role that the opportunities in terms of strategic, operational and environmental nature have on the economic sustainability in pharmaceutical companies in Thailand. The implementation of industry 4.0 is studied for its mediation role in this study. For this purpose, data was collected from Thailand's pharmaceutical companies. The sample was extracted from the received responses and a sample of 307 respondents has been selected. Many statistical tests were applied to this data and repeated procedures showed that the opportunities considered in this study have positive impact on the economical sustainability of Thailand's pharmaceutical companies through mediation roles of 4.0 industry implementation. The author has outlined implications of theoretical, practical and policy making contexts in the next section.

Implications

The current study aims to outline the effects that the strategic, operational and environmental opportunities have on the economic sustainability of pharmaceutical companies in Thailand and therefore this study has several implications in theoretical, practical and policy making contexts. This study has abundant information on the opportunities that arise in the market in terms of new strategies, environmental sustainability and operational processes used. This information and knowledge can help peer researchers and academics to take guidelines for future studies. Moreover, this study can help the pharmaceutical companies to design and deploy practical plans for using the emerging opportunities to improve their economic standing in the pharmaceutical market. In addition, the government of developing countries can use this information to design policies that can help improve the performance and economic productivity in industrial sectors like pharmaceuticals.

Limitations and Future Research Recommendations

The research conducted in any field has scope for improvement, no matter the volume and quality of research. The improvement scope allows for finding future research directions and recommendations for

improvements in literature and practice. The first limitation in this study is that the variables used in this study are fixed and the whole study revolves around them. Future researches can add new variables or study current ones in different contexts. This limitation may be improved by adding some other variables or group of variables by other researchers in their studies. The next limitation is that author has used some specific types of tests and approaches for the analysis of data. Peer researchers may also use some other types of tests and technique. In addition, as this whole study revolves around Thailand, the other researchers may choose some other country or group of countries and increase the spectrum of their research.

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