

The Impact of Technical and Scientific Innovation on the Organizational Innovation in the Private Companies in Thailand

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Article Info

Volume 83

Page Number: 3976 - 3986

Publication Issue:

July-August 2020

Abstract:

The investigation of the impact of technical and scientific innovation on the organizational innovation in private companies in Thailand is the main goal of the study. The employee who is related to the innovation adoption process are the respondents of the study from whom data were collected by means of questionnaires and this data was analyzed with Smart-PLS. The findings show that technical innovation has a positive association with organizational innovation. The output also shows that scientific innovation also has a positive association with organizational innovation. This study is suitable for the new studies in this area along with policy-making authorities because this study guides them on why the innovation important for the organization and how they enhance the performance of the organization.

Keywords: Technical Innovation, Scientific Innovation, Organizational Innovation, Private Companies in Thailand

Article History

Article Received: 06 June 2020

Revised: 29 June 2020

Accepted: 14 July 2020

Publication: 30 August 2020

INTRODUCTION

An innovation is careful inner to the firm's aggressive benefits; innovation study has developed into a basic of observed management question. By the highest part of the study has been loyal to accepting how firms may motivate scientific innovation. On the other hand, more presently, some studies have started to return the advantages of organizational innovation. Organization innovation advice to the basics of organization works, methods and shapes that are projected to other governmental aims. The growing discussion consists of the theoretical job, past outlines of a range of the organization's innovations and observed researches (Jansen, Van Den Bosch, & Volberda, 2006).

In the face of a present surge in educational interest, organization innovation contains an understudied topic. Complete and regular text analysis makes known that usually, just 3% of the innovation associative documents give attention to organizational innovation. On the other hand, as present job emphasizes the significance of organization innovation for the firm presentation, together as a balance to scientifically innovation and as a free event, a higher understanding of the organization innovation must be huge on the study agenda (Löf, Heshmati, Asplund, & Nääs, 2001). For instance, some argue that the systematization of the organization innovations will be a dangerous victory for the 21st-century companies. Furthermore, some other state that it is only one of the more vital and sustainable basics of the aggressive benefits, as fit

as, require to make scientific innovation job, untruthful size, its past history, it's crash on the presentation, and the related issues that affect organization innovation (H. Li & Atuahene-Gima, 2002). We primarily argue the older model and the fresh rising copy of the innovation study. Then, we additionally conceptualize organization innovation in arrange to high kind and us growth an aggressive structure that may be used to recognize where study answer about the organization innovation join and a were holes in our thoughtful exist. Furthermore, we peat out some rising study structures that have been understudied, for instance, as the connection between the scientific and the organization innovation and its gap effects on the presentation. Lastly, state the problems for other study resulting from our aggressive structure, position the document in this individual problem and how they give to our study agenda, and chose five study priorities that are in our sight may rate up the growth and information in the rather youthful field of organization innovation (Damanpour & Evan, 1984).

Table 1: Innovation and Dramatic Growth in Thailand.

Disruptive innovation	
1998	0
2000	210
2002	200

2004	290
2006	500
2008	600
2010	690
2012	1000
2014	2200

live a more and more vital role in serving us to high thoughtful innovation and its crash on the aggressiveness of countries and actions. Organization innovations can engage altering governmental form, applying fresh organization works and growing human being ability with the result of powering of the information base and civilizing governmental presentation (Rosenbusch, Brinckmann, & Bausch, 2011).

What everyone this advice that innovation as a study subject looks to be mainly level fresh innovative capabilities. So, there is required for a higher scientifically of the diverse sates of the innovation. Students have created a huge number of studies that address types of innovation, mostly scientifically. In this system, the study has a middle upon the problem for instance incremental and essential innovation and goods and methods innovation. In bad filling of the patent vital of the scientifically innovation, which have been well known in the educational text and also added over the time to among other gear the growth of most high goods, things and creations skills, other kinds of the innovation have gratefully been introduced outer the area of the skill (López-Nicolás & Meroño-Cerdán, 2011).

As firms are looking with the high struggle and speed up the pace of the scientifically alter, they require to judge non-scientific innovation that is most hard to repeat and may add to higher lasting aggressive benefits. These non-scientific types of innovation have been advised to as direction innovation, governmental innovation, and organization innovation (García-Morales, Ruiz-Moreno, & Llorens-Montes, 2007). These means have a vital overlie and are old separate from the scientific method innovations, and from the good and repair innovation. So, in spite of overlying, direction innovation, governmental innovation, and organizational innovations are not the same. Directional innovation has short attention than governmental innovation, for instance, in relation to the organization's innovation, directional innovation is typically linked with a short variety of innovations around the supply part. Governmental shape and human being supply policies and excludes actions and workplace organization (Löf & Heshmati, 2006).

The idea of the organization innovation is mostly about as it advises to changes in the sight the job of the organization is performed. Moreover, governmental innovation has regularly old in the sight of the border to distance alter that is any scientifically or governmental. In an analysis, some others describe governmental innovation in a very wide language that contains the chase of some innovative ability within the herds. This description, on the other hand, does not confine the job of the manager as an important place within the governments or alter to how the job of directional is performed (Aragón-Correa, García-Morales, & Cordon-Pozo, 2007).

Management Innovation Research

Whereas scientific innovation is worried about the opening of alter in the science linking to a governments main action, organization innovation reproduces alter in the sight organization job is performed, linking a removal from usual methods that alter ambitions in shape, and in skills. In

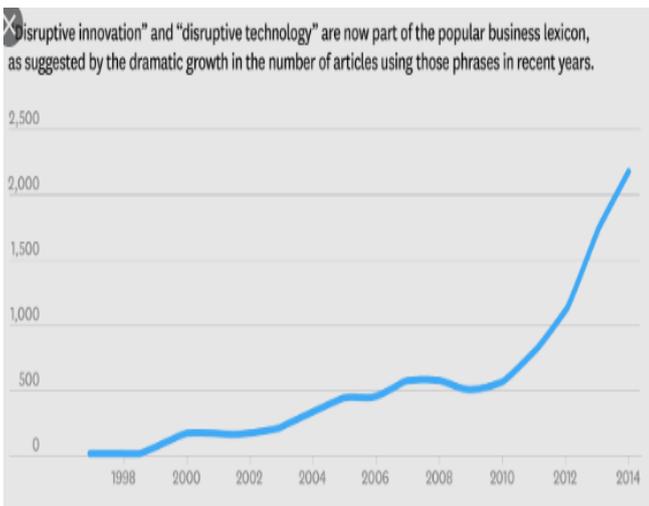


Figure 1: Innovation and Dramatic Growth in Thailand.

The Old Paradigm of Industrial Innovation under Scrutiny

Innovation is careful to be the basic driving army of growth and wealth, together at the point of the personal firm and of the finical in common. In picky, the capacity to innovate has turned in to more and more important as researches have connected that innovative hard tend to display huge benefits, higher workplace value, advance thank points, and higher odds of endurance, in spite of these important results of the innovation, innovation study itself is focus to creative obliteration (Mazzola, Bruccoleri, & Perrone, 2012; Sawasdee, Saengchai, & Jermstittiparsert, 2020; Somjai, Vasuvanich, Laosillapacharoen, & Jermstittiparsert, 2020; Vasuvanich, Somjai, Rattamane, & Jermstittiparsert, 2020). The past model of personal innovation laid on scientifically indentations looks today to be escorted by further forms of unlike levels of innovation: governmental innovation, organization innovation, sustainable innovation, trade growth, and the eco-innovation. These fresh regions sometimes well the past trade innovation model, but most over and over again they lift fresh logical challenges. Fresh behavior of moving out study outer the trade study, sometimes in associations with another one, have begun to appear. Fully fresh types of innovation without usual study are becoming usual; open, innovation is creature purse by the other one firms, including more high input by the users (Ndubisi & Iftikhar, 2012). Furthermore, non-scientific innovation often advised to as organization innovation, is

connection to this, some other proposals that organization innovation tends to surface by requirement, as different to scientific innovation that may initially be growth for which a claim may alter be found and in a laboratory (Naranjo-Valencia, Jiménez-Jiménez, & Sanz-Valle, 2016). Moreover, by its environments, organization innovation is usually to represent a quiet spread and unlike to replicate quality for any herd who effectively grows someone's definition of organizational innovation. he also describes organization innovation as the common and realization of a fresh organization innovation works, methods, shape or the skill that is fresh to the province of the talent and is future to other governmental aims on the subject of the freshly of organization innovation, fresh can be totally fresh to the firm and fresh to the world (Tsai, 2001).

Organization innovation covers alter in the what and how of what director do in managing directions, making result, coordinating actions and inspiring public. These alter expose themselves by the fresh management works, shapes or the methods and it is context-specific, vague and solid to copy, creating them a vital income of aggressive benefit. Even though a firm can make on the organization innovations of further firms, its victory is also firm by how these organization innovations are accepted to the single framework of the government (Theyel, 2000).

Model types of organizational innovation are fords touching the meting line and the multi-direction shape of common motors. Other present types of organization innovation contain full quality organization and itself manage groups. At the same time as it is needed for the innovation, alter do not in itself compose organization innovation. For example, downsizing can bring by altering to a government, but not be watched as organization innovation if the executive job itself continues unmoved. Genuine organization innovation must engage largely alter in how the government is managed, reproduced in the opening of fresh works, methods, shapes, and skills (Wang & Wang, 2012).

Organizational innovation commonly has a reason for raising the usefulness and competence of inner governmental methods. As a result, organization innovation raises the competitiveness and output of the firms and shows finical growth. However, growing thing an organization innovation is a hard method and contain external and inner alter agents. Inner alter agents contain a firm director and workers who are drawn in organizational innovation. Outer alter agents can be guiders, educational or other outer actors who power the accept of organizational innovation. They start and make the methods, and the naturally vague understood and hard organization innovation appears without dedicated transportation (Hogan & Coote, 2014).

An Integrative Framework of Management Innovation

Innovation is a greatly different field, as is plain in a large amount of the academic perspectives and observed build that has brought to stand on the subject. To smooth the progress of the growth of scientific information of organization innovation, we give a vital frame that underlines the major experiences and results of the organization's innovation (Lindgreen et al., 2008). The

frame identifies usual areas of study in the condition of experiences of organization innovation, size of organization innovation, results of organization innovation in the condition of the diverse size of presentation and related issues that shape organization innovation. The frame is old to recognize where study answers about the organization innovation join in this pretty fresh pasture and where holes in our kind exist. Below us talking about the structure blocks and results of organization innovation as fit as the related factors that involve it (Jiménez-Jiménez & Sanz-Valle, 2011).

Managerial Antecedents of Management Innovation

Several students have investigated guidance variables, the top management team (TMT) and chief executive officer (CEO) demographics and organization uniqueness and their result on the organization's innovation. Someone described in huge sample research as fit as in an fully case research of that working together transformational as fit as transactional guidance attitude smooth the progress of the search of organization innovation by allowing organization to pressure the gaining of results while also hopeful testing with the fresh works, methods, and shapes (García- Morales, Matías- Reche, & Hurtado- Torres, 2008). Transformational guider who motivates group victory and growth trust and polite connections laid on the usual aims enable governments to pursue alters an organization works, methods or shapes. Transactional guidance, on the further hand, may be useful in the completion of organizational innovation by suggesting governmental members to make to complete target, not only by the income of the trust organization process, but also location target and satisfying governmental members depends upon the skill of aims connected with the organization innovation (Bain, Mann, & Pirola-Merlo, 2001).

Intra-organizational Antecedents of Management Innovation

Other students have select to attention much on the micro fundamentals of the organization's innovation, for instance, education routine, supply share mechanisms and motivation scheme in the government. The document by another one in this particular problem describes that these micro fundamentals are vital for realizing organization innovations, we must see this in conditions of fresh structural outline that smooth the progress of the accept of shade computing (Pitt & Tucker, 2008). Furthermore, a dangerous problem of inner alter agents and a cultured workplace, are together important realizing organization innovation. Following others we offer that inner alter agent take a part in mainly connect jobs as they personals winning the opening of organization innovation in arrange to made governments more helpful. In the longitudinal research of the accept of self-control groups at DSM the Anti-Infective place, inner alter agents at diverse hierarchical points added to search organization innovation. While the place directors making the best situation, at the ready level, opening line workers and their controller were the answer alter agents

who implemented and activated with the fresh works, methods, and shapes (McDermott & Prajogo, 2012).

Inter-organizational Antecedents of Management Innovation

The search of the organization innovation is also unfair by the outer agents as fresh works, methods or shapes are often twisted by third works for instance as educational and consultants. In picky, advisors are seen by the more as answer agents in the gaining fresh organization ambitions and works accept within the governments (Hervas-Oliver, Sempere-Ripoll, & Boronat-Moll, 2014). Getting information from the outer income and education from the followers are grave inner governmental experiences of organizational innovation. Also, common system parts and other levels power the inclusion of fresh organization innovations outer the firm or still outer the trade. The research by others in this important problem enables how organization innovations of recognized methods manufacturing herds are activated by the employ of public outer test services. This intra government context serviced these firms to grow fresh to the firm organization's actions to the advance scientific method innovation, namely situation subjects, inspiring workers, coordinating actions and management (Grawe, Chen, & Daugherty, 2009).

Technological Innovation

Scientific innovation may be described at diverse levels. At a short level, scientific innovation engages the age group and accepts a fresh ambition about physical gear, skills systems, and tools which widen the firm's capabilities into ready methods and good systems. On the other hand, a detection that gives no finical principles and which not flows opposite those who come positive with the opening ambition still an innovation. At an outer level, skills innovation also contains fresh goods, services, and methods to create and bring them. As a result, at this point, it may be described as the age group accepts of a fresh ambition into ready methods, creation systems services and products (Hitt, Hoskisson, & Ireland, 1994).

Emerging Research Themes of Management Innovation

The frame also describes to rising shapes that areas still understudied. For example, the multidirectional causalities between organizational innovation and scientific innovation and the diverse effects on the presentation are an income of more hypotheses in the innovation ground (Lanoie, Laurent- Lucchetti, Johnstone, & Ambec, 2011).

Hypotheses 1: Technical innovation has a positive association bon the organizational innovation in the private organization of Thailand.

Contextual Factors that Affect Management Innovation

Several inner and outer related variables activate organization innovation. For example, higher firms have been exposed to be mush creative than the short one, but they require to introduce fresh organization innovations is also higher. Furthermore, the job by others describes the result of transformational guidance on the organization's

innovation raise with the mass (Darroch, 2005). They say that transformational guidance has a short result on the search of organization innovation is short firms. On the further hand, the research describes that transactional guidance effects organization innovation mostly in short government. The testing finical situation also activates organization innovation, but can also limit the figure of choice a firm has to act in response to the reason for incomplete incomes (Salter & Torbett, 2003). They require accepting to altering situational setting is over and over again what gives the goad to victory organization innovation. For example, the shortage of resources of activated the growth of Thailand organization system. The research by the others in this important problem describes how the stage of the goods workplace struggle effects scientific as fit as organization innovation. They give a possible viewpoint on the diverse kinds of innovation and discover that, in the organization's innovation, the power of the struggle has a helpful effect on the herd's tendency to accept job place and information organization innovation (Y. Li, Zhao, & Liu, 2006).

Outcomes of Management Innovation

Organization innovation has a helpful result on the growth of lively capacities, on the outcome growth, and on the firm presentation. It is mostly connected with the success and good organization of inner governmental methods. The hard presentation results normally used to calculate organization innovation contain outputs, success, growth and aggressive benefit. On the other hand, organization innovation does not just outcome in the attainment of hard aims but also softer aim (Lau, Tang, & Yam, 2010). For example, organization innovation can reduce worker income, raise client approval, and raise the approval and drive of the other stakeholders, for instance, workers. It may also power a firm's situation to crash. In the rest of this document, we extra talking about the raising shapes of organization innovation resulting from our frame, talk to the presentation implications, and increase some problems to another study. On the other hand, we place the documents built-in in the important problem and give detail on how they speak to several problems of our study agenda (Montes, Moreno, & Morales, 2005).

Dimensions of Management Innovation

The organization works a device to what director do as a piece of their work on a daily to daily basis and contain location objects and connected creations, orders works and job, grow thing skill and submit a variety of stress from stakeholders. The opening of the self-managed groups at the other alters the job of director in that workers become in the blame of location their own aims and decide how and when works were left to be done. Organization methods advise to regular that the role of the job, picture from the theoretical ambition and rotating them. These regulars contain calculated planning, work organization and presentation judgment (Koellinger, 2008). Governmental shape advice on how governments order their message and how they support and hardness the pain of their part. The governmental shape was also tainted as the hierarchical cover was indifferent

following accept of self-managed groups (Lau et al., 2010). An organization skill involves a device, approach or method that is accepted in the trade frame. One such fresh organization skill is a reasonable score certificate. There is more haziness about the whole property of organization innovation against scientific innovation. The goal of the outlook study can be to attitude a regular study and growth of the different attitude ways in which the organization innovation and its power of the scientific innovation can be diverse sight in which organization innovation and its power of scientific innovation can be enlarged within the herd, between firm by the open innovation systems, and during communication with the organizational stakeholders, as fit as by the high height and monitor in common. In link to scientific innovation calculated by the growth of budgets, information of skill involved, information of rights or easily by the R&D operating as profit of turn over organization innovation in condition of great organization capacity, organization works and organization values of the innovation are more diverse to charge and calculate (Bossert, 1998).

The document by the other in this important problem advises that the organization's innovation and fresh scientific information are positively connected to each other. The document by the other one gives on outline of three diverse perspectives on the connection between organization innovation and scientific: that scientific innovation mostly preceded the gaining of the organization innovation or vice versa, and that each kind of innovation are equally inner dependent and are so tangled over time (Nybakk & Hansen, 2008). Others are advice that organization innovation over and over again guide to scientific innovation. On the other hand, so, other ones advise that organization innovation and fresh scientific information have a j-structure relation results

on the innovation victory. Where there are short types of organization innovation, adjustments in organization works, methods, shapes and skills are not effectively associated with, fresh scientific innovation enable how the good adjustment can guide high innovation victory. On the other hand, innovations methods are hard and hope a study is required to discover the connection between organizational innovation and scientific innovation (Otero- Neira, Lindman, & Fernández, 2009).

Hypotheses 2: Scientific innovation has a positive association bon the organizational innovation in the private organization of Thailand.

RESEARCH METHODS

The investigation of the impact of technical and scientific innovation on the organizational innovation in private companies in Thailand is the main goal of the study. The employee who is related to the innovation adoption process are the respondents of the study from whom data were collected by means of questionnaires and this data was analyzed with Smart-PLS. The method of data collection such as questionnaire method that was adopted by the study should follow the complete process such as the permission of data collection were gathered from the concerned authorities and after getting permission a personal visit was organized to distribute the 740 questionnaires and after 40 days another visit was organized to collect the valid questionnaire and collect only 510 questionnaires that are only 68.92 percent rate of response. The variable of organizational innovation (OI) has 10 items while the predictors namely technical innovation (TI) has 25items and the last predictor such as scientific innovation (SI) has 12 items. The variables are shown in Figure 2.

Theoretical Framework

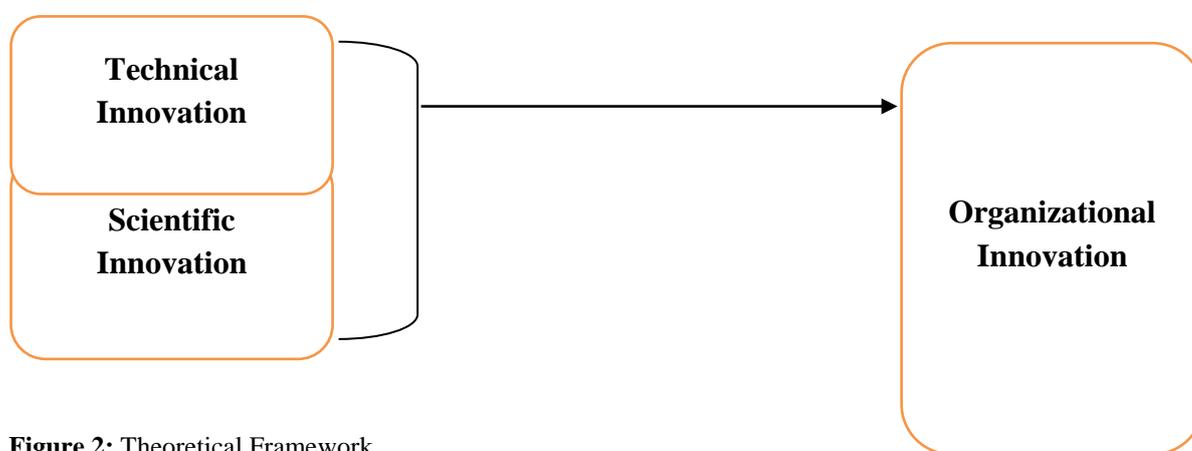


Figure 2: Theoretical Framework

FINDINGS

The findings are extracted by using the PLS-SEM and show the reliability in terms of Alpha as well as composite reliability (CR) that have more than 0.70 values that is the indication of valid reliability of the data. In addition,

convergent validity is also shown by the findings in terms of loadings and AVE and the values of both are greater than 0.50 and [roved the convergent validity as valid and this figure is shown in Table 2 given below:

Table 2: Convergent Validity

Constructs	Items	Loadings	Alpha	CR	AVE
Organizational Innovation	OI1	0.581	0.920	0.934	0.588
	OI10	0.787			
	OI2	0.765			
	OI3	0.843			
	OI4	0.646			
	OI5	0.812			
	OI6	0.797			
	OI7	0.780			
	OI8	0.814			
Technical Innovation	OI9	0.802	0.962	0.966	0.558
	TI1	0.833			
	TI10	0.804			
	TI11	0.707			
	TI12	0.832			
	TI13	0.780			
	TI14	0.758			
	TI15	0.822			
	TI16	0.781			
	TI17	0.822			
	TI18	0.806			
	TI19	0.802			
	TI2	0.779			
	TI20	0.707			
	TI21	0.776			
	TI24	0.760			
	TI25	0.816			
	TI3	0.422			
	TI4	0.470			
	TI5	0.482			
TI6	0.476				
TI7	0.837				
TI8	0.821				
TI9	0.823				
Scientific Innovation	SI1	0.782	0.930	0.933	0.540
	SI10	0.724			
	SI11	0.728			
	SI12	0.640			
	SI2	0.664			
	SI3	0.651			
	SI4	0.780			
	SI5	0.705			

SI6	0.815
SI7	0.698
SI8	0.825
SI9	0.773

The discriminant validity that shows the links among the constructs is verified by the method of Fornell Larcker and the values show the constructs are not highly correlated and the values are shown in Table 3.

Table 3: Fornell Larcker

	OI	TI	SI
OI	0.767		

TI	0.540	0.747	
SI	0.380	0.376	0.735

The discriminant validity that shows the links among the constructs is verified by the method of cross-loadings and the values show the constructs are not highly correlated and the values are shown in Table 4.

Table 4: Cross-loadings

	OI	TI	SI
OI1	0.581	0.307	0.362
OI10	0.787	0.480	0.303
OI2	0.765	0.488	0.310
OI3	0.843	0.446	0.300
OI4	0.646	0.271	0.282
OI5	0.812	0.455	0.321
OI6	0.797	0.393	0.246
OI7	0.780	0.404	0.245
OI8	0.814	0.440	0.272
OI9	0.802	0.390	0.277
TI1	0.477	0.833	0.282
TI10	0.454	0.804	0.291
TI11	0.341	0.707	0.249
TI12	0.453	0.832	0.307
TI13	0.389	0.780	0.272
TI14	0.407	0.758	0.306
TI15	0.401	0.822	0.242
TI16	0.304	0.781	0.210
TI17	0.464	0.822	0.332
TI18	0.473	0.806	0.309
TI19	0.457	0.802	0.288
TI2	0.299	0.779	0.207
TI20	0.354	0.707	0.248
TI21	0.393	0.776	0.272
TI24	0.402	0.760	0.301
TI25	0.401	0.816	0.241
TI3	0.287	0.422	0.310
TI4	0.388	0.470	0.212
TI5	0.280	0.482	0.326
TI6	0.263	0.476	0.312
TI7	0.463	0.837	0.284

TI8	0.453	0.821	0.301
TI9	0.466	0.823	0.342
SI1	0.203	0.149	0.782
SI10	0.117	0.074	0.724
SI11	0.095	0.121	0.728
SI12	0.096	0.141	0.640
SI2	0.421	0.485	0.664
SI3	0.434	0.488	0.651
SI4	0.201	0.157	0.780
SI5	0.263	0.197	0.705
SI6	0.221	0.189	0.815
SI7	0.261	0.194	0.698
SI8	0.225	0.214	0.825
SI9	0.143	0.165	0.773

The values of the Heterotrait Monotrait (HTMT) ratio was lower than 0.90 that shows the constructs are not highly correlated and the link with variable itself always higher than the link with any other variable and these values are shown in Table 5.

	OI	TI	SI
OI			
TI	0.562		
SI	0.323	0.306	

Table 5: Heterotrait Monotrait Ratio

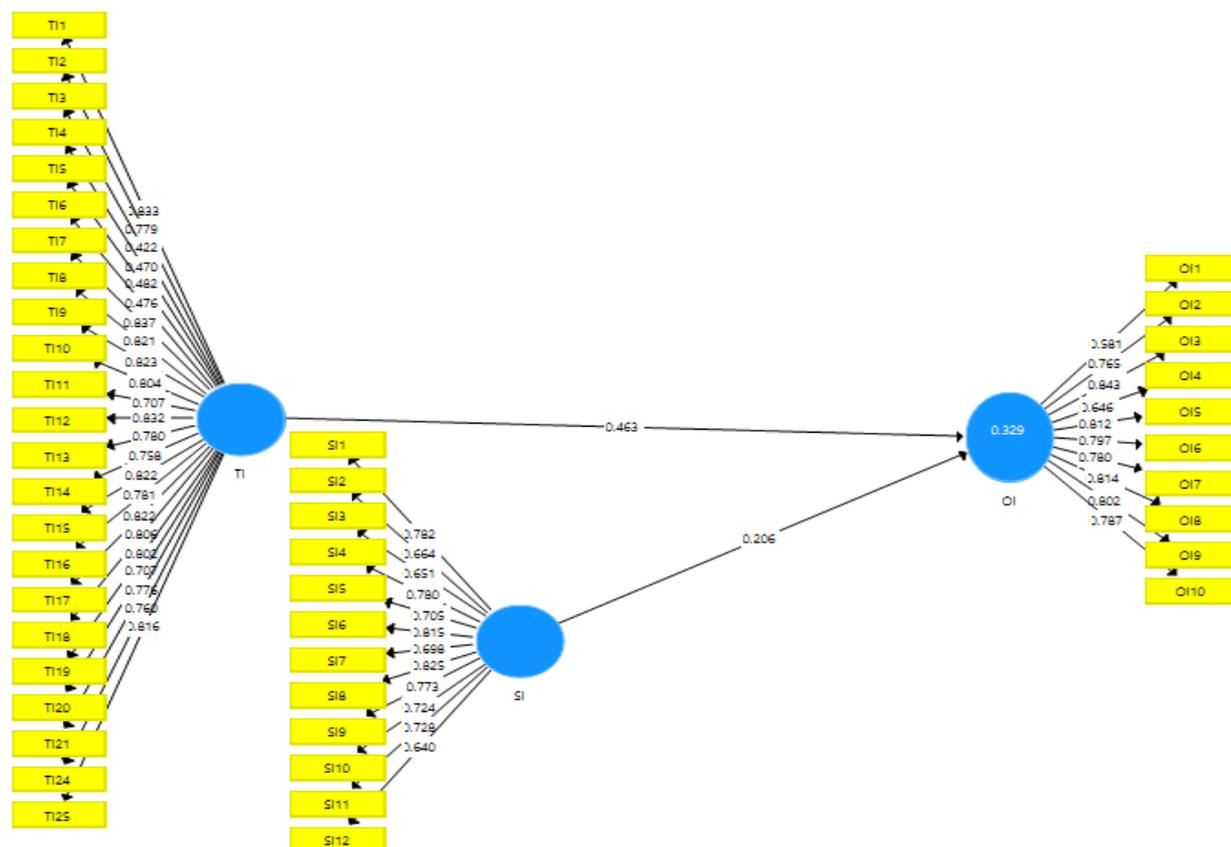


Figure 3: Measurement Model Assessment

The links among the technical innovation and organizational innovation are positive because the positive beta and more than 1.64 t values and less than 0.05 probability values and

accept H1 while one unit increase in technical innovation, the organizational performance will also increase by 0.463 units and vice versa. In addition, the links among the

scientific innovation and organizational innovation are positive because the positive beta and more than 1.64 t values and less than 0.05 probability values and accept H2

while one unit increase in technical innovation, the organizational performance will also increase by 0.206 units and vice versa. These figures are shown in Table 6.

Table 6: Path Analysis

	Beta	S.D.	t-values	p-values	L.L.	U.L.
TI -> OI	0.463	0.047	10.156	0.000	0.387	0.538
SI -> OI	0.206	0.050	4.250	0.000	0.131	0.299

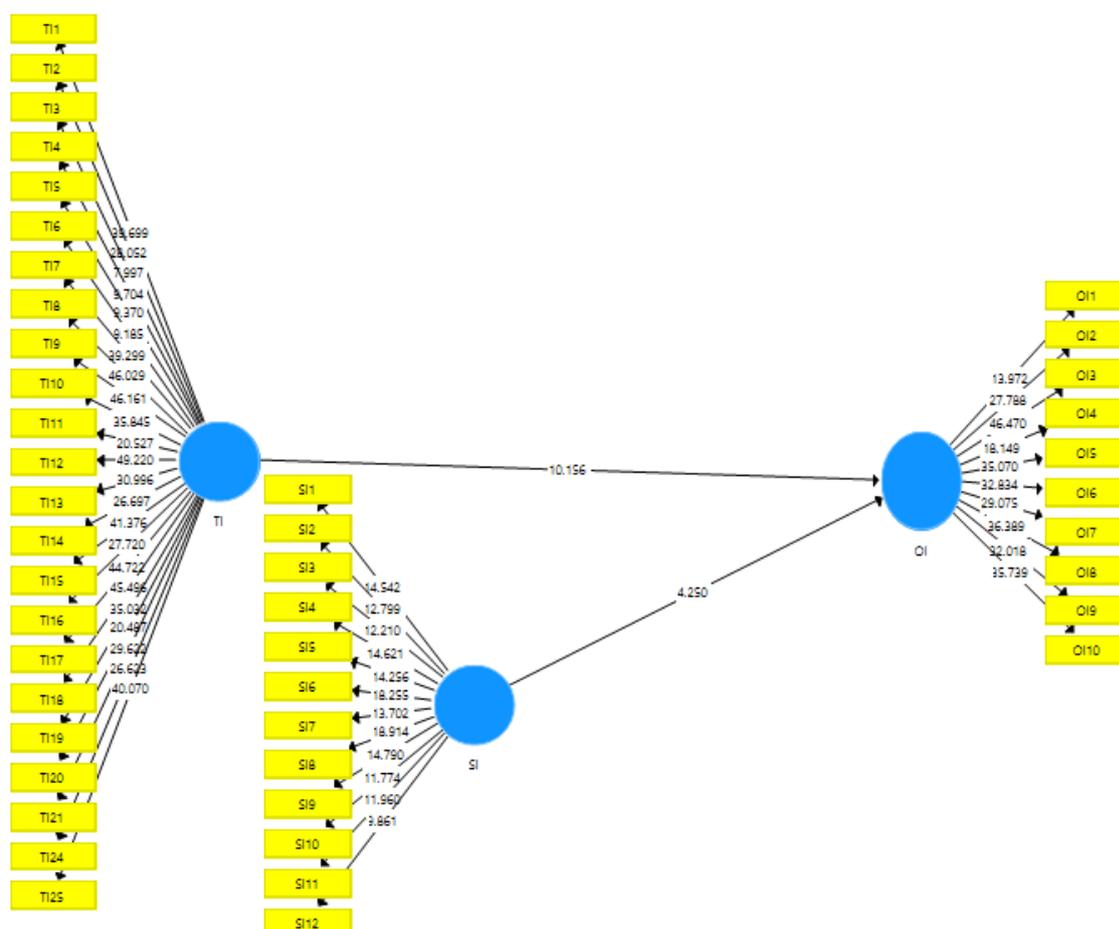


Figure 4: Structural Model Assessment

DISCUSSIONS

The findings show that technical innovation has a positive association with organizational innovation. The output also shows that scientific innovation also has a positive association with organizational innovation. These studies' findings are the same as the past study's output that also exposed technical innovation has a positive link with organizational innovation. This study is suitable for the new studies in this area along with policy-making authorities because this study guides them on why the innovation important for the organization and how they enhance the performance of the organization.

CONCLUSION

The conclusion is drawn by the study that the private organization in Thailand is providing the best innovation

practices to their environment that is the reason they have a highly innovative environment that is necessary for the improvement in the performance of the institutions.

Limitations and Future Directions

This study has some limitations like it takes only limited variables such as two predictors only due to which scope is very limited and suggested that future study will remove this limitation. In addition, the result of this study only generalized in the health sector and in Thailand only and the current study recommended that future studies would expand the scope.

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