Asian Education and Learning Review

Original Research Article

Received: 14 October 2023 **Revised:** 16 November 2023 **Accepted:** 16 November 2023

THE LINKAGE AMONG THE KNOWLEDGE AND INNOVATION: AN EVIDENCE FROM THAILAND

Samanan RATTANASIRIVILAI[1], Sippaphat ROTJANAWASUTHORN[2] and Vanisa PAKVICHAI[3*]

1 Graduate School, Suan Sunandha Rajabhat University, Thailand; samanan.ra@ssru.ac.th
2 Association of Legal & Political Studies, Thailand; dr.sippaphas@gmail.com
3 White Tiger Global Co., Ltd., Thailand; v.pakvichai@whitetigerglobal.com (Corresponding Author)

Handling Editor:
Associate Professor Dr.Pannee SUANPANG Suan Dusit University, Thailand
(This article belongs to the Theme 2: Learning for a Sustainable Future)

Reviewers:
1) Assistant Professor Dr.Muhammad Rais Rahmat RAZAK UMS Rappang, Indonesia
2) Dr.Andi Luhur PRIANTO UNISMUH Makassar, Indonesia
3) Dr.Cahyo SEFTYONO Universitas Negeri Semarang, Indonesia

Abstract
The purpose of the current study is to inspect the effects of knowledge management on the innovation as well as the effects of innovation on business performance along with the mediating role of innovation among the links of knowledge management and business performance in the manufacturing companies of Thailand. The data were collected by employing the questionnaire method from the R&D department of manufacturing companies and the PLS-SEM tool was used to inference the results. The findings exposed that positive linkage among all the dimensions of knowledge management and innovation and innovation and business performance. The findings also show that innovation has mediated among the links of knowledge management and business performance. These outputs give help to the innovation adoption and implementation authorities that they should more focus on innovation-related matters.
Keywords: Knowledge Management, Innovation, Manufacturing Companies, Business Performance

Citation Information: Rattanasirivilai, S., Rotjanawasuthorn, S., & Pakvichai, V. (2023). The Linkage among the Knowledge and Innovation: An Evidence from Thailand. *Asian Education and Learning Review, 1*(1), 44-58. https://doi.org/10.14456/aelr.2023.5

Introduction

The company's competitive advantage, acknowledges the demands information economy, should advance into a piece of knowledge-creating, knowledge incorporating and knowledge securing organizations. Henceforth, firms need to consistently chip away at their particular abilities, (for example dynamic capacities) to remain serious. Knowledge Management (KM) as 'the unequivocal and orderly administration of fundamental information, and its related procedures of creation, sorting out, dissemination, and abuse'. From the training viewpoint, firms are seeing the significance of overseeing information on the off chance that they need to stay serious and develop.

In the period of an information-based economy, assets and capabilities are required to be the significant elements for associations to get by in powerful and serious conditions (Asheim, Coenen, Moodysson & Vang, 2007). In the wake of calling attention to that information is an option in contrast to hardware, capital, materials, and work to turn into the most significant component underway, anticipated that upper hand in future is controlled by information assets, or what is known as information laborers (Wadhawa & Rao, 2003).

Capacities that establishes an asset perspective on the firm by, a vital job for key administration is opened (Martín-de Castro, 2015). Among the administration destinations proposed by this methodology, the administration of a company's information assets, concerning a company's creativity, has progressively stood out throughout the most recent decade. An expanding measure of research on the Innovation and key administration places information in the focal point of intrigue (Goh, 2005). In Innovation writing, information is talked about as the component of a recombination procedure to create advancement. The information has an inalienable incentive to be overseen, applied, created, and abused. Information can be viewed as a benefit that brings up conventional resource issues to the board, for example, when, how much, and what to put resources into (Leiponen, 2006). As the important elusive resources for any associations, information ought to be intricately overseen. Subsequently, the two researchers and professionals have progressively given extraordinary consideration to an association's capacity to recognize, catch, make, share, or aggregate information (Kang & Kang, 2009). Inferable from the specific properties of information, notwithstanding, information resources require unique consideration (García-Morales, Lloréns-Montes & Verdú-Jover, 2008). Information regularly installed workers, has highlights of an open decent, and can scarcely be purchased in the market. In this way, advancing modern pays a ton of regard for the uncommon necessities of intuitive information, and measurement of information (creation). Especially in the rising conveyed associations, adequacy is profoundly subject to how well information is shared between people, groups, as well as units (Chiang & Hung, 2010). Information sharing practices have been contended to add to the age of different authoritative capacities, for example, advancement, which is essential to a firm's performance. The significance of KM and its relationship with Innovation is generally recognized (Anand, Gardner & Morris, 2007). In any case, it is hard to reach determinations from the surviving writing about the connection between compelling KM, advancement, and execution. Exact work, be that as it may, is still in its earliest stages, and described by heterogeneous estimation draws near different investigations on mechanical (ICT-based), human asset, or social viewpoints of KM exist, concentrating on advancement types as a rule (Anand et al., 2007). Regardless of the significance of these outcomes, moves toward that endeavor to gauge firms' prosperity with Innovations accomplished through KM when advancement achievement is evaluated (estimated in financial terms, for example, deals produced) are still rare (Dougherty, 2004). The initial step to fill this hole in the writing is exhibited right now (Maurer, Bartsch & Ebers, 2011).

This examination means to inspect the connections between information the board exercises, advancement, and firm execution from an all-encompassing point of view (Cui & Wu, 2016).

As indicated by an overview remembering 226 specialists from 120 undertakings for Iran, which are the individuals from Iranian force syndicate, this examination utilized displaying to explore the exploration theories inside their associations (Taherparvar, Esmaeilpour & Dostar, 2014).

Along these lines, the accompanying inquiries may emerge: regardless of whether Knowledge creation, information combination, information application impacts firm execution legitimately? What are the key variables influenced by information the board exercises that lead to firm execution? Does KM, through advancement, affect an association's prosperity? As indicated by information the executives' written works, contends that, creation, information incorporation, and application of information not just have a positive relationship association with firm execution legitimately yet in addition impact Innovation speed, quality and amount that is identified with the performance of the firm (Koskinen, 2005).

Literature Review

Innovation Thailand

The development of any country up to some extent depends on the investment done by that country on innovation. It is one of the factors which helps the developing country to achieve the milestone of a developed country. Some of the highlights from Thailand are as under.

Table 1 Innovation Adoption in Thailand

Sr.	Details/Year	2019	2018	2017
1	GII	43	44	52
2	Innovation Input	47	52	65
3	Innovation Output	43	45	43

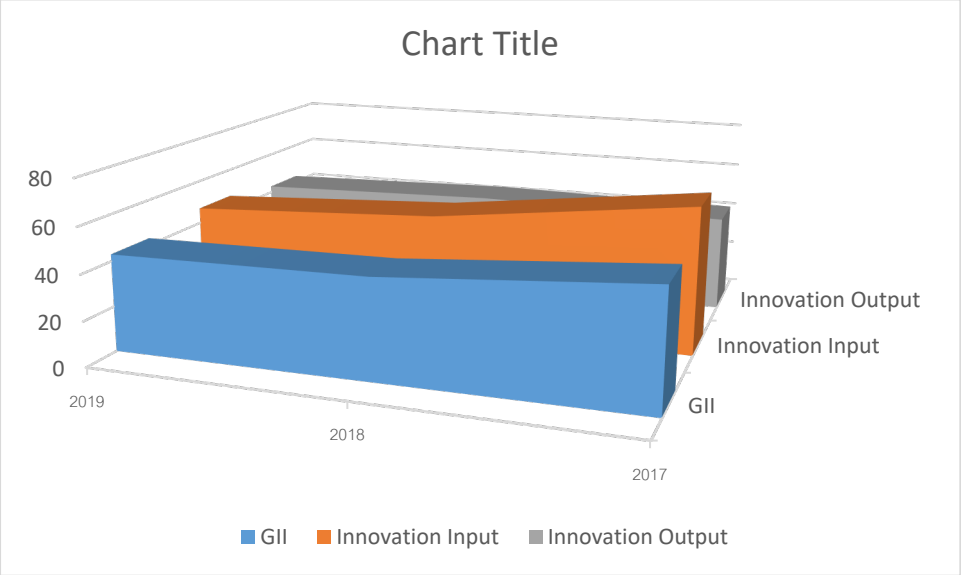


Figure 1 Innovation Adoption in Thailand

Knowledge Management

Inspected the issue of powerful KM from the point of view of authoritative abilities (Zhang, Shu, Jiang & Malter, 2010). The outcomes give a premise to comprehend serious inclination. Additionally referenced that KM capacities comprise of three interrelated procedures: information obtaining, information change, and information applicant. Information isn't just a significant asset of a firm, yet it likewise is a fundamental wellspring of the upper hand (Wang

& Han, 2011). Along these lines, KM capacities allude to the information the executives' firms that create and use information inside a firm (Shujahat et al., 2019).

A few definitions have been around KM. Various ways to deal with KM focus on the creation, dispersion, stockpiling, and use of existing, or new information puts his accentuation on the administration of existing information, reason for KM is "to amplify the endeavor's information related viability and comes back from its information resources, and to reestablish them continually" (Jermsittiparsert & Boonratanakittiphumi, 2019; Thongsri, Niamhom & Srisuantaeng, 2019). Swan, Newell & Robertson (2000) stress that KM comprises of making information noticeable and building up an information concentrated culture. A few examinations distinguished procurement, recognizable proof, advancement, dispersion, use, and storehouse of information as center KM forms. contend that information investigation and abuse are the center targets of KM. KM usage can be separated into IT-based KM, and human-asset related KM, just as procedure based methodologies (Al-Laham, Tzabbar & Amburgey, 2011).

IT-based or supply-driven KM accentuates the requirement for (simple) access to existing information put away in databases, or somewhere else (Tödtling, Asheim & Boschma, 2013). Conversely, the interest-driven methodology is progressively worried about encouraging intelligent information sharing, and information creation In spite of the fact that there are as yet numerous groupings of KM, this examination favors three Dimensions of information (Martín-de Castro, Delgado-Verde, Navas-López & Cruz-González, 2013). These measurements are: 1) Creation of Knowledge including information procurement, and information creation; 2) The mix of Knowledge including information stockpiling, and information appropriation; 3) Use of Knowledge including security, and utilization of information.

Types of the Innovation

Fundamentally, there are two sorts of advancement: item and procedure Innovation (Elche-Hotelano, 2011). These are not commonly preclusive, yet rely upon one another to a significant degree. Procedure Innovations can moreover be partitioned into association (for example new market association and inner organization association), and innovation (for example human antiquities). Innovation can be delegated three elements: instrument, machine, and robot (Tortoriello, 2015). This idea of innovation isolates us from Johnson, among others, where he makes the accompanying articulation: "information utilized in the creation process is called innovation". This inquiry ought to be posed from Johnson: shouldn't something be said about "inferred information"? In the event that "inferred information" is additionally a piece of the innovation idea, innovation will lose its investigative reason (Chiaroni, Chiesa & Frattini, 2011). This additionally applies if all express information is remembered for the innovation idea (Mothe & Thi, 2010). Innovation can likewise be viewed as steady (for example little bit by bit upgrades, or nonstop advancement), or radical (for example something subjectively new, or an achievement). Ceaseless and radical advancement can likewise be self-sufficient. One case of self-ruling advancement is "snowboard". One case of fundamental advancement is IBM's OS/2, which assumed change in different frameworks in the worth chain.

The Innovation of advanced writing gives numerous elective conceptualizations and models for the understanding of watched information. Advancement can be another item or administration, another creation procedure innovation, another structure or managerial framework, or another arrangement or program relating to authoritative individuals. Subsequently, authoritative advancement or imaginativeness is ordinarily estimated by the pace of Innovation selection. A couple of studies, be that as it may, have utilized different measures to gauge hierarchical creativity. Previous research has contended that various kinds of advancement are important for comprehension and distinguishing in associations (Goh, 2005).

Among various typologies of advancement in the writing, three have picked up the most consideration. Every middle on a couple of sorts of advancement: managerial and specialized, item and procedure, and radical and gradual. Recognized hierarchical advancement through broad writing. These five measurements are tried from part factors. They are item Innovation, showcase advancement, process advancement, conduct advancement, and key Innovation (Wadhawa & Rao, 2003). In spite of the fact that there are as yet numerous arrangements of Innovation, this investigation inclines toward three parts of innovation: Speed, which is characterized as the time passed between starting improvement, including the origination and meaning of an Innovation, and extreme commercialization of another item or administrations into the commercial center mirrors a company's capacity to quicken exercises and errands, construct an upper hand comparative with its rivals inside businesses with abbreviated item life cycles (Yazici, 2014). Accentuation on Innovation speed speaks to a change in outlook from conventional wellsprings of a bit of leeway to a vital direction, explicitly appropriate for the present quickly changing business situations. Advancement speed is a significant component to contend in the market and can prompt unrivaled execution (Wicks, Visich & Li, 2006). Observational examinations affirm a positive connection between speed-to-market and generally speaking new item achievement. Since advancement speed is a group epitomized and socially complex ability that can't be effortlessly evolved or imitable by contenders - it empowers firms to keep in close touch with clients, and their needs (Yao, Chu & Li, 2011). Moreover, the expanding pace of rivalry, mechanical improvements in the commercial center, and shorter item life cycles power organizations to hurry Innovation

The idea of Innovation quality permits us to say something in regards to the collected advancement execution in each space inside an association, by looking at the outcome, being an item, procedure or administration advancement, with the potential and considering the procedure on how these outcomes have been accomplished. With deference complexity, advancement degree, worth to the client, and then some. Comparative are the things for the procedure area of advancement quality (Chen, Wu, Su & Yang, 2008). In spite of the fact that advancement quality is one of the most significant components for the organization that applies Innovation procedure to contend in the market, deciding it may be confronted with more difficulties because of the expanded intricacy, the trouble to recognize impetuses, and the need to coordinate estimations on alleged delicate issues (e.g. relative reference proportion, reference weighted licenses, science linkage, extent of Innovations, etc.).

Amount advancement is characterized as the quantity of new or improved items and administrations propelled to the market that is better than the normal of the business. It additionally is characterized as the quantity of new or improved procedures that are better than the normal of the business.

Authoritative enthusiasm for KM is animated by the chance of ensuing advantages, for example, expanded innovativeness, and advancement in items and administrations. Truth be told, the information adds to delivering inventive considerations and producing Innovation. That is the reason advancement is viewed as the region of most prominent results from (Park, Seol & Oh, 2005).

Innovative Success: Information Management

Taking a gander at the connection among KM and innovation exercises we first draw on Schumpeter. As indicated by him, Innovation is the aftereffect of the recombination of reasonable and physical materials that were beforehand in presence. At the end of the day, Innovation is the mix of a company's current information resources to make new information. Along these lines, the essential errand of the advancing firm is to reconfigure existing information resources and assets and to look at new information. Both investigation and abuse of information have been appeared to add to the creativity of firms, and to its upper hand. Different examinations center on the job of KM in the advancement procedure. The outcomes

found by bolster the imperative job of KM in information preparing ability and thusly, in speed and movement of Innovation gives proof to help the positive job of innovation the executives in the achievement of firm Innovations. An alternate methodology is applied. He accepts that directing impacts of advertising and assembling skills, information securing, information dispersal, information combination, and information advancement improve new item execution. This finding is upheld by. They contend that the KM devices, for example, "utilization of imaginative data", "proficient data assembling" and "shared translation" improve the presentation and inventiveness of new items. With respect to uncommon spotlight on "request-driven", or "community-oriented" KM techniques, hypothetical contemplations give vague contentions. contend that too many close ties in an information-sharing network may confine information creation because of excess data (Wang, Chen, Ong, Liu & Chuang, 2006). Then again, present the defense that a mutual information base builds information creation inside the network. Experimental contextual investigation proof shows blended outcomes also. Discoveries of Darroch et al. are a genuine model. The positive job of information scattering on innovation achievement, while don't locate any noteworthy impacts. Another part of the connection among KM and advancement is the manner by which various kinds of Innovation are influenced by KM. As indicated by unique sorts of advancements require various assets and consequently a separated KM procedure (Hu, Ong, Zhu, Liu & Song, 2015).

They explore the impacts of KM on three sorts of advancement. As indicated by their discoveries diverse KM exercises are significant for various sorts of imaginative achievement. Thus, we expect that KM demonstrations distinctively on various sorts of Innovation achievements, just like speed, quality, and amount advancement achievement.

Knowledge Management Impact on Innovation

The creative endeavors incorporate revelation, experimentation, and improvement of new innovations, new items or potential benefits, new creation forms, and new hierarchical structures. Advancement is tied in with executing thoughts (Hu et al., 2015). The Literature depicts advancement as inside obtained component, new structure or managerial framework, strategy, new arrangement or program, new creation procedure, and item, or administration to an organization. The advancement process exceptionally relies upon information, uncommonly implicit information. Changing general information into explicit information, new and important information is made and changed over into items, administrations, and procedures.

A KM framework that grows the inventiveness envelope is thought to improve the advancement procedure through speedier access and pattern of new information. Additionally, compelling KM is a basic achievement factor to dispatch new items. Right now, paper underpins that one of the components impacting the advancement limit in associations is information and its administration. gives exact proof to help the view that a firm with a capacity in KM is likewise liable to be increasingly inventive. Additionally, and recount the narrative of a genuine organization that executed a KM system, and upgraded Innovation procedure and execution (Katz & Rice, 2009). likewise thought about the effect on Innovation in various KM programs executed in two associations.

In this manner, a nearby connection between the association's information and its ability to enhance exists (Ho, Moh, Walker, Hamada & Su, 2005). A couple of observational research has explicitly tended to forerunners and outcomes of the creation, Integration, and Application of Knowledge in advancement, and execution. The administration of information is oftentimes distinguished as a significant forerunner of advancement. Successful KM is exhibited in writing as a technique for improving Innovation and execution. We acquired the outcome that KM forms emphatically influence advancement. In this way, it is reasonable for presume that KM procedure and Innovation are firmly related (Sepehri & Mollabagher, 2011; Saengchai, Sawasdee & Jermsittiparsert, 2019). Therefore, we set the followings:

H1: Knowledge production has a positive impact on innovation in manufacturing companies in Thailand.
H2: Knowledge integration has a positive impact on innovation in manufacturing companies in Thailand.
H3: Knowledge application has a positive impact on innovation in manufacturing companies in Thailand.

Knowledge Management: Performance of Organization

Organizational performance is a multidimensional idea and records for uncompromising stances in regards to contenders. An extensive perspective on corporate execution thinks about the money related point of view, yet in addition, other angles that permit checking esteem creation. In view of this view, a few strategies have been created. The most well-known philosophy is Balanced Scorecard (Ebrahimi, Sharifian & Bastani, 2015).

A few examinations perceive the effect of vital KM on various components of corporate execution (Ajami & Carter, 2013). By the by, the vast majority of them center around hard money related results (for example cost, benefit, and so on.) to assess KM, while disregarding delicate non-money related results, for example, working expenses, abbreviate lead-time, and separate items growing new administrations improving its capacity to draw in, train, create, and hold worker and improving coordination endeavors. Since differing measurements of execution are influenced by the KM technique, KM framework execution should consolidate budgetary and nonfinancial measures. We propose that the effect of the KM system on firm execution ought to be better concentrated by examining various elements of corporate execution.

Three measurements will be utilized to quantify KM commitments to corporate execution: (1) monetary execution including market execution (gainfulness, Innovation, and consumer loyalty); (2) process execution, which alludes to quality and proficiency; and (3) interior execution, which identifies with singular capacities (workers' capability, fulfillment, and innovativeness). Subsequently, this examination proposes:

H4: Knowledge production has a positive impact on organizational performance in manufacturing companies in Thailand.
H5: Knowledge integration has a positive impact on organizational performance in manufacturing companies in Thailand.
H6: Knowledge application has a positive impact on organizational performance in the manufacturing companies in Thailand.

Effect of Innovation: Performance of Organization

Advancement is perceived as a huge empowering influence for firms to make esteem and support the upper hand in the undeniably intricate and quickly evolving condition. All in all, advancement not just utilizes existing assets, improve effectiveness and potential worth, yet additionally brings new impalpable resources into the association. Firms with more prominent imaginativeness will be increasingly effective in reacting to clients' needs, and in growing new capacities that permit them to accomplish better execution or unrivaled benefit. Advancement is basic to accomplish operational effectiveness just as raising help quality. As needs are, researchers gave more consideration to the impacts on firm execution.

As the time-sensitive challenge has become a significant worry for contemporary business associations, more firms perceived that the fast reaction of their rivals to new item advancement is representing a basic serious danger. Consequently, they endeavor to present new items, administrations, or procedures all the more rapidly exhibited that over a wide cross-segment of businesses, firms that focused on Innovation speed could build their piece of the overall industry. At the point when a firm is quicker than its rivals in creating, delivering and selling new items, it can make advertising sections in relationship with administration quality and

working productivity. That is on the grounds that information contained in these advancements isn't promptly accessible to contenders.

In this manner, advancement speed ensures speedier reaction to condition by propelling new items with lower times and costs, which in the long run improves firm execution. Innovation quality is another key factor affecting firm execution. A high caliber of advancement is embracing various new items, procedures or practices over a wide cross-segment of hierarchical exercises. It expects firms to make collaborations among these numerous movement spaces. Such cooperative energies ought to be made in a manner that is incomparable, urges novelty and adds to seriousness.

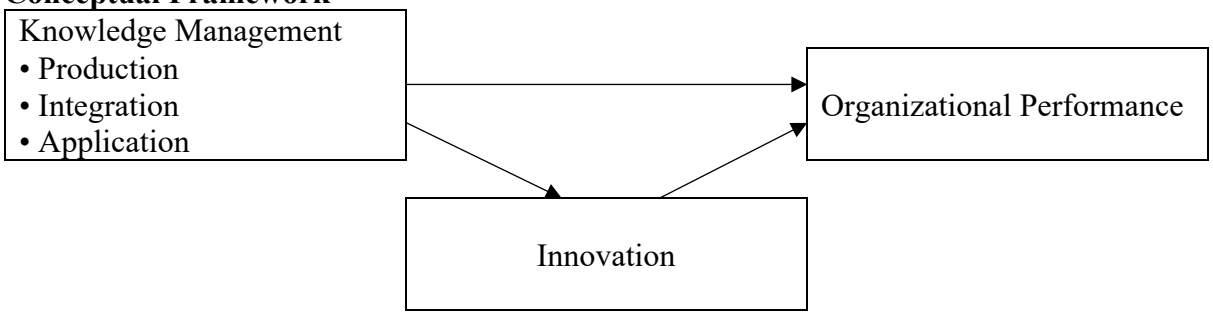
Associations profit by expanded thoughts. Creative R&D would be increasingly successful in accomplishing firm execution objectives. Amount advancement which is characterized as the quantity of new or improved items, administrations and procedure propelled to the market is better than the normal in your industry. Truth be told, the information adds to delivering imaginative considerations and creating advancement. That is the reason advancement is viewed as the territory of the most noteworthy result from KM. Despite the fact that the connections between advancement and firm execution have been examined, not many inquire about to consider the particular impacts of Innovation speed, quality, and quality on the association's presentation. So, this paper proposes the theories as follow:

H7: Innovation is positively mediated among the links of knowledge production and organizational performance in the manufacturing companies in Thailand.

H8: Innovation is positively mediated among the links of knowledge integration and organizational performance in the manufacturing companies in Thailand.

H9: Innovation is positively mediated among the links of knowledge application and organizational performance in the manufacturing companies in Thailand.

Conceptual Framework



Research Methods

The purpose of the current study is to inspect the effects of knowledge management on the innovation as well as the effects of innovation on the business performance along with the mediating role of innovation among the links of knowledge management and business performance in the manufacturing companies of Thailand. The data were collected by employing the questionnaire method from the R&D department of manufacturing companies and the PLS-SEM tool was used to inference the results. The around 450 questionnaires were distributed out of which only 370 were received back that is considered appropriate for analysis and represents 82.22 percent response rate. All the variables that are used have 66 items out of which the main variable namely organizational performance (OP) has 10 items while the mediator has 7 items. In addition, the independent variables such as knowledge production (KP) have 12 items, knowledge integration (KI) has 25 items and knowledge application has 12 items.

Research Findings

The results of Smart PLS show that convergent validity is valid because items are highly correlated and all the items loadings are higher than 0.50 while AVE of all the constructs is also higher than 0.50. In addition, CR and Alpha values are more than 0.70 that are the indications of valid convergent validity. Table 2 given below show the convergent validity.

Table 2 Convergent Validity

Items	Loadings	Alpha	CR	AVE
IN1	0.831	0.938	0.950	0.730
IN2	0.866			
IN3	0.858			
IN4	0.830			
IN5	0.880			
IN6	0.868			
IN7	0.848			
KA1	0.773	0.930	0.933	0.538
KA10	0.728			
KA11	0.732			
KA12	0.644			
KA2	0.667			
KA3	0.653			
KA4	0.771			
KA5	0.714			
KA6	0.806			
KA7	0.707			
KA8	0.815			
KA9	0.769			
KI1	0.810	0.962	0.965	0.552
KI10	0.788			
KI11	0.705			
KI12	0.814			
KI13	0.769			
KI14	0.745			
KI15	0.813			
KI16	0.774			
KI17	0.800			
KI18	0.787			
KI19	0.785			
KI2	0.773			
KI20	0.704			
KI21	0.767			
KI24	0.747			
KI25	0.807			
KI3	0.492			
KI4	0.526			
KI5	0.556			
KI6	0.549			
KI7	0.814			
KI8	0.803			
KI9	0.801			

Items	Loadings	Alpha	CR	AVE
KP1	0.842	0.936	0.947	0.603
KP10	0.567			
KP11	0.608			
KP12	0.842			
KP2	0.892			
KP3	0.827			
KP4	0.893			
KP5	0.901			
KP6	0.593			
KP7	0.561			
KP8	0.900			
KP9	0.752			
OP1	0.580	0.920	0.934	0.588
OP10	0.786			
OP2	0.765			
OP3	0.842			
OP4	0.645			
OP5	0.810			
OP6	0.798			
OP7	0.782			
OP8	0.815			
OP9	0.805			

The findings also include the discriminant validity and figures indicated the valid discriminant validity due to values of Heterotrait and Monotrait ratio (HTMT) is less than 0.90 that is the indication of no high correlation among the constructs. Table 3 as under shown the HTMT ratio.

Table 3 HTMT Ratio

	IN	KA	KI	KP	OP
IN					
KA	0.298				
KI	0.597	0.306			
KP	0.786	0.471	0.566		
OP	0.437	0.323	0.562	0.357	

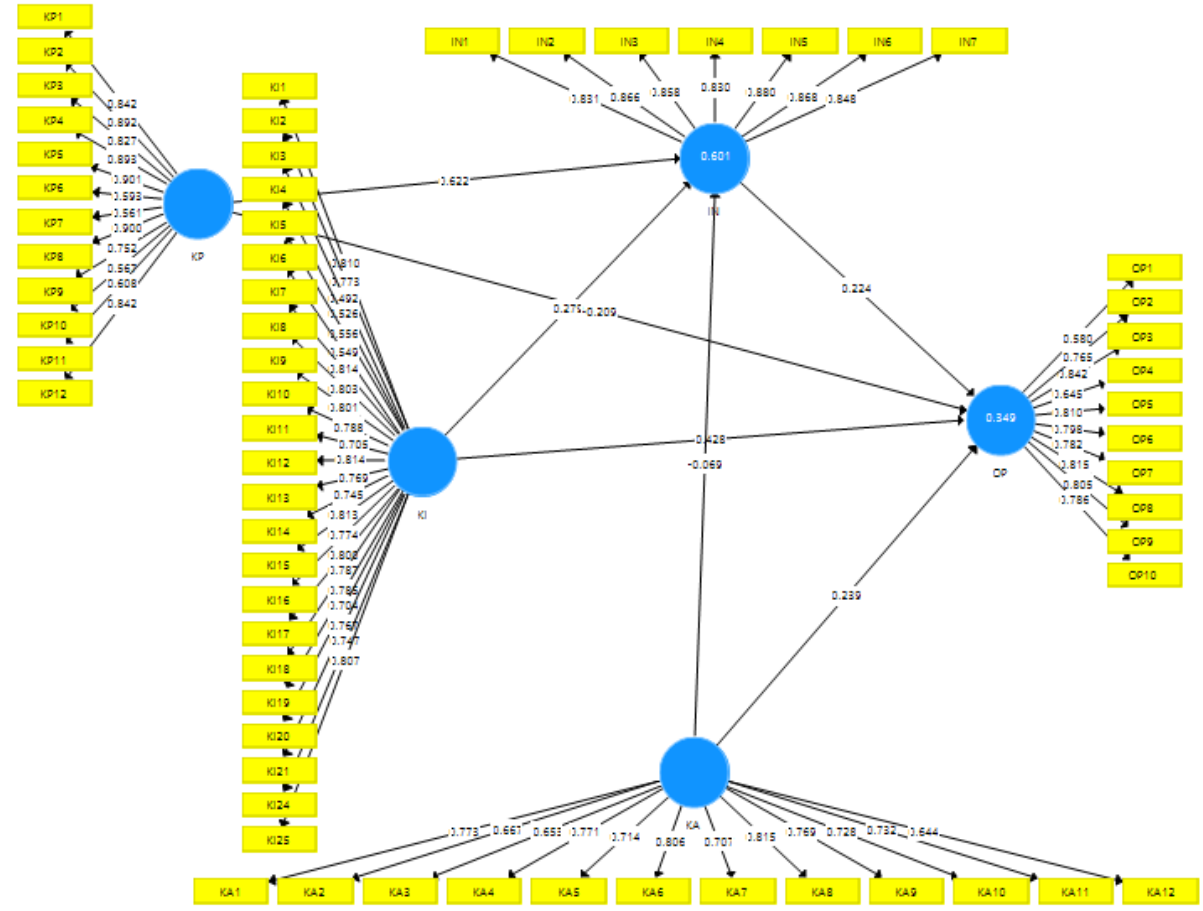
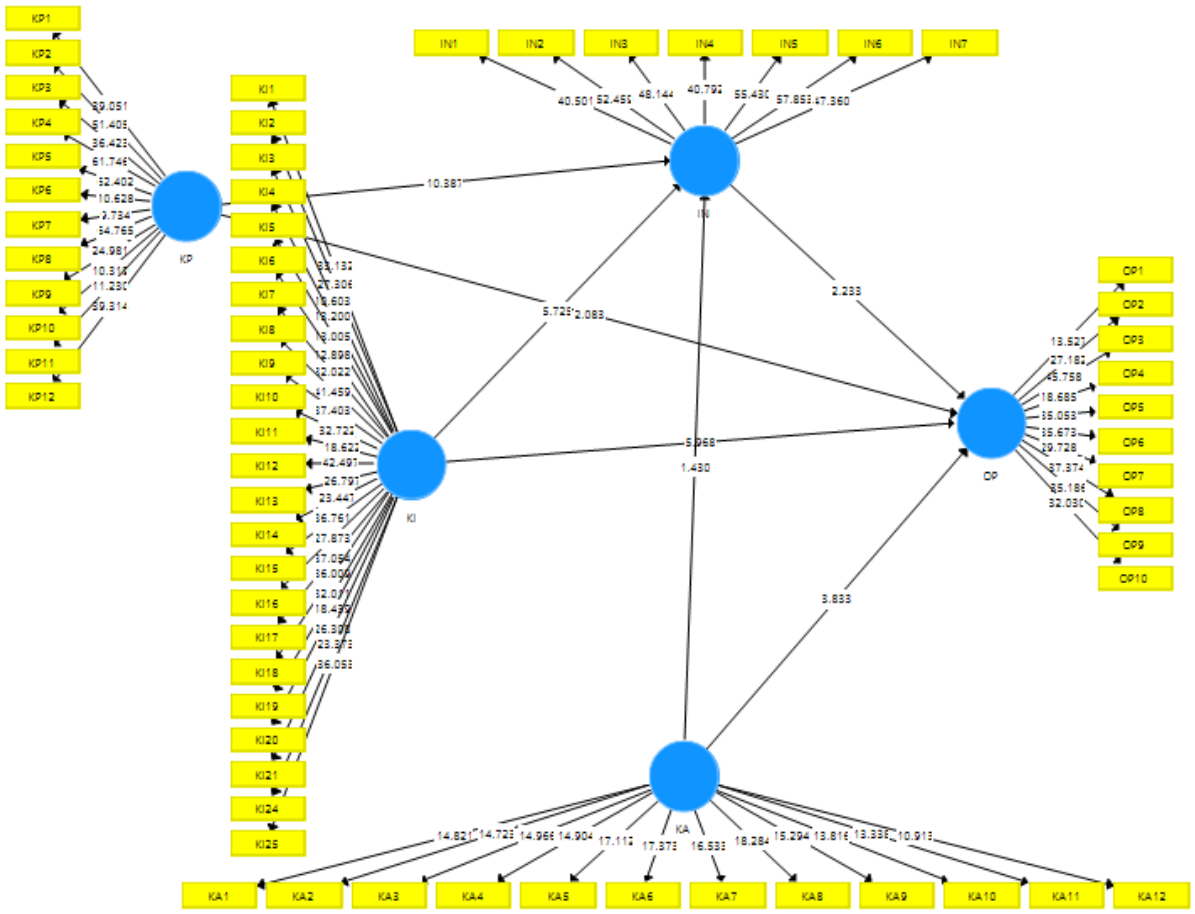


Figure 3 Measurement Model Assessment

The path analysis shows that positive as well as the significant link among the knowledge management and innovation expect the knowledge application and innovation among them the link is negative and insignificant and accept the H1 and H2 but reject the H3. In addition, the results also indicated that innovation has a positive link with organizational performance. Moreover, knowledge management all dimensions have a positive and significant link with organizational performance and accept the H4, H5, and H6. Furthermore, the innovation significantly and positively mediates the links among the knowledge management and organizational performance and accept the H7, H8, and H9. Table 4 given below shows the regression results in the head of path analysis.

Table 4 Path Analysis

	Beta	S.D.	t-values	p-values	L.L.	U.L.
IN -> OP	0.224	0.100	2.233	0.013	0.047	0.387
KA -> IN	-0.069	0.048	1.430	0.077	-0.148	0.007
KA -> OP	0.239	0.062	3.833	0.000	0.139	0.343
KI -> IN	0.279	0.049	5.725	0.000	0.206	0.363
KI -> OP	0.428	0.072	5.968	0.000	0.304	0.543
KP -> IN	0.622	0.060	10.387	0.000	0.520	0.710
KP -> OP	-0.209	0.100	2.083	0.019	-0.371	-0.048
KA -> IN -> OP	-0.075	0.013	5.769	0.026	-0.038	0.002
KI -> IN -> OP	0.063	0.031	2.038	0.021	0.014	0.119
KP -> IN -> OP	0.140	0.064	2.181	0.015	0.030	0.243



Conclusion & Discussion

The findings exposed that positive linkage among all the dimensions of knowledge management and innovation and innovation and business performance. The findings also show that innovation has mediated among the links of knowledge management and business performance. These outputs give help to the innovation adoption and implementation authorities that they should more focus on innovation-related matters. These findings are matched with the results of Nawaz & Hassan (2016) who also found positive links among innovation and business performance.

In the end, the present study concluded that if the organization implements high-quality innovation along with effective knowledge management in the organization then the performance of the organization will be enhanced gradually like in the organization of Thailand where knowledge management and innovation enhance the organizational performance.

Limitations and Future Directions

This study takes only three dimensions to predict the innovation and organizational performance and future studies should include other dimensions in their analysis. The cross-country analysis was ignored that other studies should emphasis while investigating this area in the future.

References

Ajami, S., & Carter, M. (2013). The advantages and disadvantages of Radio Frequency Identification (RFID) in Health-care Centers; approach in Emergency Room (ER). *Pakistan Journal of Medical Sciences, 29*(1), 443-448.

Al-Laham, A., Tzabbar, D., & Amburgey, T. (2011). The dynamics of knowledge stocks and knowledge flows: innovation consequences of recruitment and collaboration in biotech. *Industrial and Corporate Change, 20*(2), 555-583.

Anand, N., Gardner, H., & Morris, T. (2007). Knowledge-based innovation: Emergence and embedding of new practice areas in management consulting firms. *Academy of management journal, 50*(2), 406-428.

Asheim, B., Coenen, L., Moodysson, J., & Vang, J. (2007). Constructing knowledge-based regional advantage: implications for regional innovation policy. *International Journal of Entrepreneurship and Innovation Management, 7*(2-5), 140-155.

Chen, C., Wu, J., Su, Y., & Yang, S. (2008). Key drivers for the continued use of RFID technology in the emergency room. *Management Research News, 31*(4), 273-288.

Chiang, Y., & Hung, K. (2010). Exploring open search strategies and perceived innovation performance from the perspective of inter-organizational knowledge flows. *R&d Management, 40*(3), 292-299.

Chiaroni, D., Chiesa, V., & Frattini, F. (2011). The Open Innovation Journey: How firms dynamically implement the emerging innovation management paradigm. *Technovation, 31*(1), 34-43.

Cui, A., & Wu, F. (2016). Utilizing customer knowledge in innovation: antecedents and impact of customer involvement on new product performance. *Journal of the Academy of Marketing Science, 44*(4), 516-538.

Dougherty, D. (2004). Organizing practices in services: capturing practice-based knowledge for innovation. *Strategic Organization, 2*(1), 35-64.

Ebrahimi, S., Sharifian, R., & Bastani, P. (2015). Readiness of hospitals affiliated with Shiraz University of medical sciences for implementation of radio frequency identification technology. *Journal of Health Management & Informatics, 2*(4), 120-125.

Elche-Hotelano, D. (2011). Sources of knowledge, investments and appropriability as determinants of innovation: An empirical study in service firms. *Innovation, 13*(2), 220-235.

García-Morales, V., Lloréns-Montes, F., & Verdú-Jover, A. (2008). The effects of transformational leadership on organizational performance through knowledge and innovation. *British Journal of Management, 19*(4), 299-319.

Goh, A. (2005). Harnessing knowledge for innovation: an integrated management framework. *Journal of Knowledge management, 9*(4), 6-18.

Ho, L., Moh, M., Walker, Z., Hamada, T., & Su, C. (2005). *A prototype on RFID and sensor networks for elder healthcare: progress report.* A paper presented at the 2005 ACM SIGCOMM workshop on Experimental approaches to wireless network design and analysis, Philadelphia, United States.

Hu, L., Ong, D., Zhu, X., Liu, Q., & Song, E. (2015). Enabling RFID technology for healthcare: application, architecture, and challenges. *Telecommunication Systems, 58*(3), 259-271.

Jermsittiparsert, K., & Boonratanakittiphumi, C. (2019). The Mediating Role of Knowledge Management and the Moderating Role of Additive Manufacturing (Industry 4.0) in the Relationship between Knowledge Management Capability and Firm Performance: A Case of KPMG Thailand. *International Journal of Innovation, Creativity and Change, 8*(8), 430-449.

Kang, K., & Kang, J. (2009). How do firms source external knowledge for innovation? Analysing effects of different knowledge sourcing methods. *International Journal of Innovation Management, 13*(1), 1-17.

Katz, J., & Rice, R. (2009). Public views of mobile medical devices and services: A US national survey of consumer sentiments towards RFID healthcare technology. *International journal of medical informatics, 78*(2), 104-114.

Koskinen, K. (2005). Metaphoric boundary objects as co-ordinating mechanisms in the knowledge sharing of innovation processes. *European Journal of Innovation Management, 8*(3), 323-335.

Leiponen, A. (2006). Managing knowledge for innovation: the case of business-to-business services. *Journal of Product Innovation Management, 23*(3), 238-258.

Martín-de Castro, G. (2015). Knowledge management and innovation in knowledge-based and high-tech industrial markets: The role of openness and absorptive capacity. *Industrial Marketing Management, 47*, 143-146.

Martín-de Castro, G., Delgado-Verde, M., Navas-López, J., & Cruz-González, J. (2013). The moderating role of innovation culture in the relationship between knowledge assets and product innovation. *Technological Forecasting and Social Change, 80*(2), 351-363.

Maurer, I., Bartsch, V., & Ebers, M. (2011). The value of intra-organizational social capital: How it fosters knowledge transfer, innovation performance, and growth. *Organization Studies, 32*(2), 157-185.

Mothe, C., & Thi, T. (2010). The link between non-technological innovations and technological innovation. *European Journal of Innovation Management, 13*(3), 313-332.

Nawaz, M., & Hassan, S. (2016). Investment and Tourism: Insights from the Literature. *International Journal of Economics Perspectives, 10*(4), 581-590.

Park, J., Seol, J., & Oh, Y. (2005). *Design and implementation of an effective mobile healthcare system using mobile and RFID technology.* A paper presented at the 7th International Workshop on Enterprise networking and Computing in Healthcare Industry, Busan, Korea.

Saengchai, S., Sawasdee, A., & Jermsittiparsert, K. (2019). The Knowledge Management, Product Innovation, and Process Innovation as Antecedents of Sports Manufacturing Firms of Thailand. *Journal of Human Sport and Exercise, 14*(5 Proc), S2217-S2231.

Sepehri, M., & Mollabagher, M. (2011). A model for implementing Radio Frequency Identification technology in hospitals a case study: surgery wards in Firouzgar Hospital. *Journal of Health Administration, 14*(44), 1-7.

Shujahat, M., Sousa, M., Hussain, S., Nawaz, F., Wang, M., & Umer, M. (2019). Translating the impact of knowledge management processes into knowledge-based innovation: The neglected and mediating role of knowledge-worker productivity. *Journal of Business Research, 94*, 442-450.

Swan, J., Newell, S., & Robertson, M. (2000). *Limits of IT-driven knowledge management initiatives for interactive innovation processes: towards a community-based approach.* A paper presented at the 33rd Annual Hawaii International Conference on System Sciences, Maui, Hawaii.

Taherparvar, N., Esmaeilpour, R., & Dostar, M. (2014). Customer knowledge management, innovation capability and business performance: a case study of the banking industry. *Journal of Knowledge management, 18*(3), 591-610.

Thongsri, S., Niamhom, W., & Srisuantaeng, S. (2019). The Mobilization of Small Scale Fisheries Community with Knowledge Management for Conservation and Restoration of the Marine and Coastal Resources in the Gulf of Thailand, Songkhla Province. *PSAKU International Journal of Interdisciplinary Research, 8*(Special Issue), 57-66.

Tödtling, F., Asheim, B., & Boschma, R. (2013). *Knowledge sourcing, innovation and constructing advantage in regions of Europe*. London: Sage Publications.

Tortoriello, M. (2015). The social underpinnings of absorptive capacity: The moderating effects of structural holes on innovation generation based on external knowledge. *Strategic Management Journal, 36*(4), 586-597.

Wadhawa, S., & Rao, K. (2003). Flexibility and agility for enterprise synchronization: knowledge and innovation management towards flexagility. *Studies in Informatics and Control, 12*(2), 111-128.

Wang, C., & Han, Y. (2011). Linking properties of knowledge with innovation performance: the moderate role of absorptive capacity. *Journal of Knowledge management, 15*(5), 802-819.

Wang, S., Chen, W., Ong, C., Liu, L., & Chuang, Y. (2006). *RFID application in hospitals: a case study on a demonstration RFID project in a Taiwan hospital.* A paper presented at the 39th Annual Hawaii International Conference on System Sciences, Kauai, Hawaii.

Wicks, A., Visich, J., & Li, S. (2006). Radio frequency identification applications in hospital environments. *Hospital topics, 84*(3), 3-9.

Yao, W., Chu, C., & Li, Z. (2011). Leveraging complex event processing for smart hospitals using RFID. *Journal of Network and Computer Applications, 34*(3), 799-810.

Yazici, H. (2014). An exploratory analysis of hospital perspectives on real time information requirements and perceived benefits of RFID technology for future adoption. *International Journal of Information Management, 34*(5), 603-621.

Zhang, H., Shu, C., Jiang, X., & Malter, A. (2010). Managing knowledge for innovation: the role of cooperation, competition, and alliance nationality. *Journal of international marketing, 18*(4), 74-94.

Data Availability Statement: The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Conflicts of Interest: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Publisher's Note: All claims expressed in this article are solely those of the authors and do not necessarily represent those of their affiliated organizations, or those of the publisher, the editors and the reviewers. Any product that may be evaluated in this article, or claim that may be made by its manufacturer, is not guaranteed or endorsed by the publisher.