pISSN: 1906 - 3296 © 2020 AU-GSB e-Journal.
eISSN: 2773 – 868x © 2021 AU-GSB e-Journal.
http://www.assumptionjournal.au.edu/index.php/AU-GSB/index

Impact of External Technology Exploitation, Acquisition, and Employee Autonomy on Innovation Performance

Isaree Suwannasri [*], Zhang Jin, Lei Wang

Received: August 24, 2022. Revised: November 16, 2022. Accepted: November 17, 2022.

Abstract

Purpose– This study aims to evaluate the impact of external technology exploitation, acquisition, and employee autonomy on innovative performance toward organizational performance and was conducted in Chiang Mai, Thailand. **Research design, data, and methods–** Four organizations were chosen, and 500 questionnaires were distributed, yielding 483 responses. The data was examined using Structural Equation Modeling (SEM). **Results–** The findings revealed that external technology exploitation aims to improve organizational performance, whereas external technology acquisition and employee autonomy aim to enhance innovation performance. As a result, innovation performance is mediated by organizational performance. **Implications–** The modeling results suggest that external technology exploitation, acquisition, and employee autonomy on innovation performance play a vital role in enhancing the Government organization utilizing IT as an innovation model. Empirical evidence and descriptive part reveal that successful and above-average-performing government organizations have higher innovation levels. **Conclusion–** Finally, the study found that innovation performance based on ETE, ETA, and employee autonomy significantly affects organizational performance.

Keywords: External technology exploitation, external technology acquisition, employee autonomy, innovation performance, organization performance

JEL Classification Code: J24, J80, L20, L25, L32, M15

1. Introduction[1]

Regarding the technological revolution, numerous organizations or bureaucratic organizations must be concerned about the disruptive change and must proactively improve their working methods in accordance with technology and innovation. As a consequence, innovation may be characterized as instruments or creative ideas that encourage and develop personal capacity and enhance the organizational proficiency. An innovative organization focuses on establishing operational processes as well as creating and implementing management strategies. On the other hand, innovation may help firms enhance the services that provide to citizens (Walker et al., 2011).

1* Isaree Suwannasri, Human Resource Department, Royal Thai Air Force, Wing 41 Base. Email: patnara@hotmail.com
2 Zhang Jin, Lecturer, Southwest Minzu University, Chengdu, Sichuan Province, China. Email: 20014151@qq.com
3 Lei Wang, Dean, Faculty of Computer Science, Chengdu Neusoft University, Dujiangyan City, Chengdu, Sichuan, 611844, China. Email: 82435538@qq.com

ⓒ Copyright: The Author(s)
This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (http://Creativecommons.org/licenses/by-nc/4.0/) which permits unrestricted noncommercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

AU-GSB E-JOURNAL

Technology and innovation are, of course, always carried out at the same time. Technology and innovation are constantly evolving to make life easier in organizations, but they can also cause internal and external changes. As a result, all businesses should be concerned about the changes and well-prepared to deal with them. Working styles have changed as a result of the use of advanced technology and innovation. Technology advancement necessitates innovation as a means of significantly achieving this goal. Technological advancement and innovative engagement, in this regard, primarily support organizations and, in particular, personnel potential. Organizations strive to adopt innovations in order to improve their performance and respond to environmental demands more effectively (Damanpour & Schneider, 2006).

To be effective, every organization must be concerned with human resources (HR) or employees. HR management can help an organization achieve its goals and objectives (Abdul-Halim et al., 2014). Personnel will be given modern knowledge, training, or higher education, as well as new technology, to help organizations become more innovative and efficient. Furthermore, giving them the flexibility to develop their own work is essentially supporting the performance.

2. Literature Review

This part of this study focused on two areas of literature relevant to the research topic. The first area covered was innovation management, and followed by innovation performance and organizational performance.

2.1 Technology and innovation adoption

Even though innovation is not concentrated in industrial products, there are various instances of development through innovation in the service sector. While public services such as public sectors and bureaucratic organizations do not make revenue, they have a significant effect on the quality of life for all people.

Base on innovation, technology is a practical and directly implicated in organizational performance Technology is defined as a competitive advantage over competitors that focuses on technique, knowledge, services or products, and performance. The public sector has clearly seen a lack of technological knowledge, limited resources, and low skilled workers (Mustafa & Yaakub, 2018). Futhermore, The adoption of technology and innovation are able to influence the developmental process and facilitate technology in organization successfully and usefulness (Straub, 2009). Therefore, technology and Innovation Adoption in organizations is a key to explore organization towards high performance. The perspective of leaders is important to influence personnel or employees to understand and readiness for the changes. Hence, the method to adopt innovation in its process concerning individual knowledge is to expose the productive functions and persuade with preferable or unprofitable opinions for making a decision, then implementation in the process (Rogers et al., 2019). The innovation process presents the step of innovation implementation in an organization which consists of initiation, implementation, literacy, creativity, and performance steps.

The innovation process for particularly Thai bureaucratic organizations can be shown in Figure 1 above. The initiation step is to explore and choose appropriate technology and innovation before making a decision that can benefit the long term. Moreover, it is a plan and approval to implement it in an organization. The implementation is input of new knowledge and technology or can be buy-in new technology in an organization, including training employees to use it professionally in order to comprehend and have the ability to use it effectively, which is literacy. After using it professionally, employees are more likely to have new ideas and more creativity. Accordingly, it can significantly affect an organization's performance.

Regard to the process above mentioned, it can applied in order to conform to Thai bureaucratic organization that there are some factors to drive forward becoming an innovative organization in Thai bureaucracy. The first is to work for advancement rather than coordination or working together, but it should be collaboration by organizing a system for planning to achieve common objectives and goals. All kinds of resources are mobilized and taken to be shared for mutual benefit. The second is innovation, which means invention, creation, and searching for methods or new solutions to support the public proactively. The third is digitalization, which means storing and processing data through cloud computing and being able to analyze data and help all public sectors (OPDC, 2020).

To achieve and becoming innovative organization performance, the strategy is crucial for improving an organizaiton goal. The framework in Figure 1 presents that how to pace to innovation toward the performance. Planing is a strategy for organization success. Pipeline is an interconnected between leaders and workers to create innovative ideas. Process is to mange the ideas and work out base on technology implemention. Platform is about web-based software implementation in order to the teams will have best practice. People is the team or workers which is a key of achieve. Performance is a great outcome of innovative organization (Bruce & Birchall, 2012).

AU-GSB E-JOURNAL

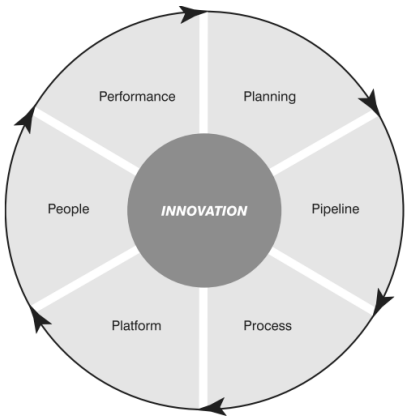

Figure 1: Building an Effective Framework for Innovation (Bruce & Birchall, 2012)

2.2 External technology exploitation

External Technology exploitation is a process to facilitate technology resources from outside a company and enable development skills. Likewise, the workers are a part of exploitation resources for utilization (Lee et al., 2008). According to Tajudeen et al. (2019) mentioned that the external technology exploitation (ETE) is outbound open innovation by bringing the external knowledge and technology into organizations and applies them to improve effectively. To acquire external technologies is a process of the innovative system of an organization which means bring the knowledge of technology from outside and use them to fulfill the business model proficiently (Zanjirchi et al., 2019). Thus, the circumstance of external technology exploitation (ETE) has likely more attractive for any enterprise, education, and public sectors to achieve the goals underlying strategic technology planning (Lichtenthaler, 2008). As Granstrand et al. (1992) stated that the external technology exploitation of a company is an intended action to transfer technology without losing or leak information. Organizations need to accommodate external technology exploitation to their structures to transfer technology proactively (Lichtenthaler, 2010).

2.3 External technology acquisition

The benefits of a company obtaining new technology and focusing on resources and technological capabilities are referred to as external technology acquisition (Kang et al., 2015). To explain why ETA is advantageous for organizations to acquire new technology and knowledge in order to move forward and leverage capabilities, including decreasing time and expense, technology is able to expand capacities in an organization and combine them with process-related research and development activities. As a result, ETA can totally fulfill an organization's creative process capabilities by purchasing them with license or subcontracting for development. Furthermore, training and practice, collecting external technology, joining ventures, purchasing technology, and scanning legal or illegal technology to gain it in an organization are all part of the ETA research and development process (Granstrand et al., 1992). Furthermore, ETA should seek out the most sophisticated technology and information from outside sources, not just licensed technology, in order to develop capabilities in a company (Kim & Kwon, 2011).

2.4 Employee autonomy

Employee autonomy refers to employment independence at any level, where workers may manage their own schedules with the goal of advancement (Burcharth et al., 2016). Aigboje (2019) defines autonomy as "*the freedom of action to offer an idea and make an independent decision to achieve the objectives.*" Employee autonomy is one of the positive ideas linked with creative performance. Employees' performance will increase in the long run if a company offers them a high degree of job autonomy (Zhou, 2020). Nonetheless, autonomy is described as the capacity of workers or employees to construct their own employment in order to demonstrate their potential or abilities. However, rather than working alone, it is feasible to attain teamwork autonomy and, as a consequence, workplace pleasure. Employee autonomy in the context of OI, in particular, refers to activities or tasks for which the employee may make their own decisions for the assignments and so correlates to organizational performance. Lastly, it's clear that autonomy may show the link between being happy at work and doing a good job (Saragih, 2011).

2.5 Innovation performance

Innovation performance is defined as the capacity to successfully transfer internal innovation to external and approach into work (SÖZBİLİR, 2018). Then it demonstrates the company's development and innovative skills (Birchall et al., 2011). Accordingly, innovation performance is related to training, education, and innovation ability, all of which contribute to the creation of inventive output. As a result, because IP was defined as employees' knowledge and talent to do a great job, innovation capacity is a factor that positively supports innovation performance (Nzeru et al., 2015). In truth, intellectual property (IP) is centered on individual knowledge and performance, which includes creative approach and outcomes (Kamasak, 2015). Organizational learning and innovation performance is an evaluation of organizational learning and innovation that helps employees understand how organizations absorb and utilize external information (Ahuja & Katila, 2013). Similarly, an organization's innovation activity should be

AU-GSB E-JOURNAL

aligned to its performance in terms of innovation (Birchall et al., 2011). Finally, innovation performance entails a degree of knowledge, training, and adopting technology to conduct performance evaluations based on innovation strategy. It is understandable that IP may be improved by innovative processes and strategies.

2.6 Organization performance

Organizational performance is concerned with the system and resources, which include the employees in a company seeking to function successfully (Jenatabadi, 2015). According to Taouab and Issor (2019) organization performance is defined as an organization's success, which reflects an organization's ability to fulfill its goals. As a result, the concept of organizational performance refers to the organizational competency and resource availability required to meet the company's goals (Ariyapperuma & Abeysekera, 2020). Organizational performance may be improved by implementing methods such as technology and innovation adoption, as well as internal procedures and systems that are connected to organizational capacities such as training and human resource development, as well as an innovation system. However, initiatives for improving organizational performance should include innovation adoption and technology management. Because of the worldwide movement to support citizens (Damanpour et al., 2009) numerous organizations and public organizations have attempted to build creative capacities for attaining organizational performance in this decade.

2.7 Research model and hypotheses

Figure 2 illustrates the conceptual model of this study, which included the relationship between external technology exploitation and acquisition, employee autonomy, innovation performance, and organizational performance. Therefore, the research hypotheses have been formulated as shown below:

H1; External technology exploitation has significantly affected on organization performance.

H2; External technology exploitation has significantly affected on innovation performance.

H3; External technology acquisition has significantly affected on innovation performance.

H4; Employee autonomy has significantly affected on innovation performance.

H5; Innovation performance has significantly affected on organization performance.

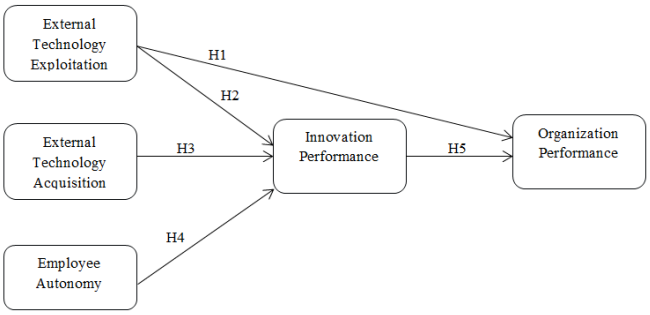

Figure 2: The research proposed model
Source: Authors

3. Research methodology

3.1 Methodology

The online survey was distributed to 485 respondents using a quantitative technique. Two sections comprise the questionnaire. The first component has four demographic questions. The second part is used to measure the items for all variables, which are as follows: ETE includes three questions and ETA includes four questions that were extracted and developed specifically for this study from a previous study by Tajudeen et al. (2019) employee autonomy includes three questions that were extracted and developed specifically for this study by Pee (2011) innovation performance includes four questions that were extracted and developed specifically for this study by Phakdiburut (2018) and Tajudeen et al. (2019). The Likert scale was used to quantify each item.

Prior to data collection, three experts' index of item objective congruence (IOC) was used to ensure content validity, and pilot research of 71 samples was authorized using Cronbach's Alpha. Each structure's acceptable alpha coefficient must be larger than or equal to 0.60 (Ursachi et al., 2015), with the result that all elements are reserved. Following that, the questionnaire was disseminated to the intended audience. Cluster sampling, and simple random sampling were all used. Cluster sampling; the total population in this study is 1,824 participants, which is a large population. The target respondents of the two bureaucratic organizations are as follows: 1) Royal Thai Air Force, Wing 41 Base has 824 officers, and 2) Chiang Mai Provincial Administrative Organization has 1,000 personnel. As a result, the characteristics of this population are similar, necessitating a simplified division of the population into subgroups. Then, the survey distribution by using simple random sampling for each subgroup. Following data collection, descriptive statistics, confirmatory factor analysis

AU-GSB E-JOURNAL

(CFA), and structural equation modeling were used to evaluate the data in SPSS (SEM).

3.2 Population and sample size

The target population of this study was Government officers who principally use technology or MIS systems and work in 4 bureaucratic organizations in Chiang Mai, Thailand. After inputting all necessary information into the statistical software of Soper, (2022), the expected effect size (0.2), the expected level of statistical power (0.8), the number of latent variables (5), the number of observed variables (17), and the probability scale (0.05), the recommended minimum sample size for the model structure showed 148, and recommend minimum sample size was 376. However, the researchers consider sample size of this study to be 485 participants.

4. Results and discussion

4.1 Demographic information

After data collection, two respondents were removed; therefore, the total number of respondents in this study was 483, despite the researcher's expectation of 485. Table 1 illustrates the descriptive statistics of respondents. In terms of gender, 58.8% of the respondents were male, whereas the remaining 41.2% were female. In terms of age, 42.0% of respondents are between the ages of 30 and 40, 22.2% are between the ages of 41 and 50, and 35.8% are over the age of 51. The majority of the respondents (48.2%) had bachelor's degrees, followed by college with 32.5%, master's degrees at 15.9%, and PhD at 3.3%. The status of the respondent is followed by executive managers (25.5%), and senior managers (45.3%). operational managers are at 20.5% and research and development managers are at 8.7%.

Table 1: Description of the respondents

Item	Description	Frequency	Percentage
Gender	Male	284	58.8%
	Female	199	41.2%
Age	Below 30 – 40	203	42.0%
	41-50	107	22.2%
	Above 51	173	35.8%
Education	college	157	32.5%
	Bachelor	233	48.2%
	Master	77	15.9%
	PhD	16	3.3%
Organizational Status	Executive managers	123	25.5%
	Senior managers	219	45.3%
	Operational managers	99	20.5%
	Research & Development managers	42	8.7%

Dimensions of conceptual model of research	Mean	Std. Deviation
External Technology Exploitation		
ETE1: Officers are proactive in managing outward knowledge flow.	3.863	0.716
ETE2: Officers welcome others to exchange (or purchase) and use our technological knowledge or intellectual property.	3.745	0.859
ETE3: Officers have always kept implementing and maintaining a strong tendency to align technology system procedures with other organizational perspectives.	3.832	0.759
External Technology Acquisition		
ETA1: Officers often acquire technological knowledge from outside for our use.	3.936	0.725
ETA2: Officers regularly search for external ideas that may create value for us.	3.913	0.632
ETA3: Officers have a sound system to search for and acquire external technology and intellectual property.	3.836	0.717
ETA4: Officers proactively reach out to external parties for better technological knowledge or products.	3.787	0.704
Employee Autonomy		
EA1: Your job has autonomy (Having autonomy means that you are allowed to decide on your own how to go about doing the work).	3.795	0.771
EA2: Your job gives you an opportunity for independence and freedom to create.	3.863	0.616
EA3: Your job gives you chances to use your initiative and judgment in carrying out the work.	3.923	0.663
Innovation Performance		
IP1: Your organization tries to develop innovative capability.	3.826	0.675
IP2: Your organization focuses on using innovative techniques.	3.834	0.609
IP3: The effort invested in the development of new products/services, taking into consideration the number of hours, people, teams and trainings.	3.839	0.610
Organization Performance		
OP1: Your organization is always developing its quality.	3.791	0.745
OP2: Your organization has modern technologies to facilitate the working process	3.789	0.697
OP3: Your organization has an improvement in competing for the position or support training.	3.820	0.696

Source: Authors

AU-GSB E-JOURNAL

From external technology exploitation (ETE) in table 1, the lowest mean is "Officers welcome others to exchange (or purchase) and use our technological knowledge or intellectual property." equal to 3.745 by the highest mean is "Officers are proactive in managing outward knowledge flow." equal to 3.863. Furthermore, for standard deviation, the lowest is "Officers are proactive in managing outward knowledge flow." equal to .716, following by the highest is "Officers welcome others to exchange (or purchase) and use our technological knowledge or intellectual property." equal to .859. Next, from external technology acquisition (ETA) in table 1, the lowest mean is "Officers have a sound system to search for and acquire external technology and intellectual property." equal to 3.836 by the highest mean is "Officers often acquire technological knowledge from outside for our use." equal to 3.936. Furthermore, for standard deviation, the lowest is "Officers regularly search for external ideas that may create value for us." equal to .632, following by the highest is "Officers often acquire technological knowledge from outside for our use." equal to .725. Then, from employee autonomy (EA) in table 1, the lowest mean is "Your job has autonomy (Having autonomy means that you are allowed to decide on your own how to go about doing the work)." equal to 3.795 by the highest mean is "Your job gives you chances to use your initiative and judgment in carrying out the work." equal to 3.923. Furthermore, for standard deviation, the lowest is "Your job gives you an opportunity for independence and freedom to create" equal to .616, following by the highest is "Your job has autonomy (Having autonomy means that you are allowed to decide on your own how to go about doing the work)." equal to .771. In terms of innovation performance (IP) in table 1, the lowest mean is "Your organization tries to develop innovative capability." equal to 3.826 by the highest mean is "The effort invested in the development of new products/services, taking into consideration the number of hours, people, teams and trainings." equal to 3.839. Furthermore, for standard deviation, the lowest is "Your organization focuses on using innovative techniques." equal to .609, following by the highest is "Your organization tries to develop innovative capability." equal to .675. Then, from organization performance (OP) in table 1, the lowest mean is "Your organization is always developing its quality." equal to 3.791 by the highest mean is "Your organization has an improvement in competing for the position or support training." equal to 3.820. Furthermore, for standard deviation, the lowest is "Your organization has an improvement in competing

for the position or support training." equal to 0.696, following by the highest is "Your organization is always developing its quality." equal to 0.745

4.2 Confirmatory Factor Analysis (CFA)

CFA was used to analyze a measurement model. Hair et al. (2006) explained the significance of each item's factor loading and acceptable values for indicating goodness of fit. Factor loadings exceeded 0.50 and the p-value was less than 0.05. Additionally, when the Average Variance Extracted (AVE) was less than 0.5 but the Composite Reliability (CR) was greater than 0.6, the construct's convergent validity remained adequate (Fornell & Larcker, 2016), as demonstrated in Table 2. The square root of the average variance is calculated to ensure that all correlations are greater than the corresponding correlation values in Table 2

Table 2: Confirmatory Factor Analysis Result, Composite Reliability (CR) and Average Variance Extracted (AVE)

Variables	No. of Item	Factors Loading	Cronbach Alpha (α) > 0.6	CR	AVE
External Technology Exploitation (ETE)	3	.620 - .751	.827	.737	.484
External Technology Acquisition (ETA)	4	.657 - .686	.833	.752	.431
Employee Autonomy (EA)	3	.650 - .739	.832	.730	.475
Innovation Performance (IP)	3	.697 - .842	.903	.800	.573
Organization Performance (OP)	3	.611 - .715	.832	.711	.452

Note: CR = Composite Reliability, AVE = Average Variance Extracted
Source: Authors

4.3 Structural Model Fitness Indices

Measurement model was tested using the fit model including CMIN/DF = 3.512, GFI = 0.924, AGFI = 0.891, NFI = 0.906, CFI = 0.930, TLI = 0.911, and RMSEA = 0.072. All estimates were acceptable with no model adjustment required. Therefore, the convergence validity and discriminant validity were ensured. All results are shown in Table 3.

AU-GSB E-JOURNAL

Table 3: The structural model fitness indices

Index	Acceptable Value	Recommendations	Sources	Result Value
CMIN/DF	CMIN/DF < 5	Value should be lower than 5	Qaiser Danish et al., (2015)	3.512
RMSEA	RMSEA < 0.08	Range 0.05–0.1 was acceptable good fit	Hu and Bentler, (1998)	0.072
GFI	GFI ≥ 0.80	Value greater or equal than 0.80 suggests a good fit	Schermelleh-Engel et al. (2003)	0.924
AGFI	AGFI ≥ 0.80	Value greater or equal than 0.80 suggests a good fit	Schermelleh-Engel et al. (2003)	0.891
CFI	CFI > 0.90	Value greater than 0.90 suggests an acceptable fit	Hu and Bentler (1999)	0.930
TLI	TLI > 0.90	Value greater than 0.90 suggests a good fit	Hu and Bentler, (1999)	0.911
NFI	NFI >0.90	Value greater than 0.90 suggests a good fit	Bentler and Bonett, (1980)	0.906
RMR	RMR<0.05	Value should be less than 0.05 suggests a good fit	Schermelleh-Engel et al., (2003)	0.031

Source: Authors

Table 4 summarizes the discriminant validity results that were used to determine the discriminant validity of all constructs in this study, as well as the correlation between all variables. As a result, the Fornell-Larcker criterion indicated that the scales were less than 1.0 (Fornell & Larcker, 2016). Correlations between the indicator variable and other latent variables are higher, indicating that discriminant validity has been established.

Table 4: Discriminant Validity

	ETE	ETA	EA	IP	OP
External Technology Exploitation (ETE)	***0.696***				
External Technology Acquisition (ETA)	0.683	***0.657***			
Employee Autonomy (EA)	0.669	0.348	***0.689***		
Innovation Performance (IP)	0.460	0.402	0.369	***0.757***	
Organization Performance (OP)	0.403	0.656	0.341	0.405	***0.672***

Note: The diagonally listed value is the AVE square roots of the variables
Source: Authors

4.4 Research Hypothesis Testing Result

The result of testing hypotheses with AMOS software reveals the path coefficient, in total 3 out of 5 hypotheses were supported with the significant loading of H1 with β = 0.064, t-statistic = 11.663***, H2 with β = 0.243, t-statistic = 3.136**, and H3 with β = 0.475, t-statistic = 2.002** (** p < 0.01) being supported by t-statistic, however H4 with β = 0.561, t-statistic = 1.267 and H5 with β = 0.043, t-statistic = -1.851 (***p < 0.001) are not. As shown in Table 5, H1, H2, and H3 are significant levels, whereas H4 and H5 are non-significances.

Table 5: Hypothesis Result and Direct, Indirect, and Total Effects of Relationships

Hypotheses	Paths	Standardized Path Coefficients (β)	t-value > 1.96	Tests Result
H_1	ETE → OP	0.064	11.663***	Supported
H_2	ETE → IP	0.243	3.136**	Supported
H_3	ETA → IP	0.475	2.002**	Supported
H_4	EA → IP	0.561	1.267	Not Supported
H_5	IP → OP	0.043	-1.851	Not Supported

Variables	Organization Performance (OP)			R^2
	Direct Effect	Indirect Effect	Total Effect	
External Technology Exploitation (ETE)	1.079***	-1.015***	0.064***	0.546
Innovation Performance (IP)	0.043	-	0.043	
Variables	**Innovation Performance (IP)**			**R^2**
	Direct Effect	**Indirect Effect**	**Total Effect**	
External Technology Exploitation (ETE)	0.243**	-	0.243**	0.226
External Technology Acquisition (ETA)	0.475**	-	0.475**	
Employee Autonomy (EA)	0.561	-	0.561	

Note: *p <0.05; ** p < 0.01; *** p < 0.001 (Schmidt & Osebold, 2017)
Source: Authors

AU-GSB E-JOURNAL

4.5 Direct, Indirect, and Total Effects of Relationships

Table 5 shows total effects of the relationship by testing regression analysis. First direct effect of ETE on OP (1.079), IP was indirect effect on OP (-1.015) the findings in Table 5 indicate that ETE has a direct effect on OP while IP has an indirect effect on OP with R^2 = 0.546. However, ETE has a direct effect on IP (0.243) and ETA has a direct effect on IP (0.475) whereas EA has an indirect effect on IP (0.561) with R^2 = 0.226. Also, the results of structural model were presented in Figure 3.

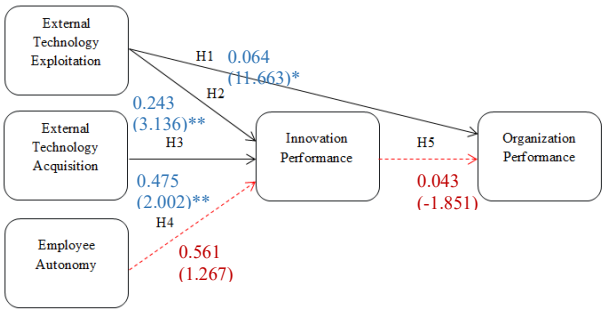

Figure 3: The Results of Structural Model
Source: Authors

5. Discussion

The purpose of this study is to investigate the relationships between external technology exploitation, acquisition of external technology, employee autonomy, innovation performance, and organizational performance for bureaucratic personnel development. Previous research analyzed the relationship between technology, open innovation, and organizational performance, but it did not consider innovation performance in terms of open innovation. The purpose of this study is to investigate how technology and employees might have a significant impact on innovation performance in relation to organizational performance.

H1 confirms that external technology exploitation is one of the strongest factors of organization performance, with a standardized path coefficient value of 0.064 in the structural pathway. The assumption is that government officers at Royal Thai Air Force, Wing 41 Base, and Chiang Mai Provincial Administrative Organization are more likely to seek external technology exploitation to increase their efficiency of job and organization performance. This finding is consistent with the results of the study titled "A systematic approach to developing national technology policy and strategy for emerging technologies" by Gerdsri (2009).

H2; H3 clarify that the relationship between external technology exploitation (H2), external technology acquisition (H3), and innovation performance are supported, with a standardized coefficient value of 0.475 for H2 and 0.243 for H3. External technology exploitation and external technology acquisition findings in this study revealed that the government officers at Royal Thai Air Force, Wing 41 Base, and Chiang Mai Provincial Administrative Organization seek and use IT for their job enhancement, engagement, and performance with the government's innovation performance (Suwannasri & Nuangjamnong, 2022; Tsai & Wang, 2009)

H4; H5 reveal that employee autonomy (H4) has a non-significant impact on innovation performance. Simultaneously, innovation performance (H5) has a non-significant impact on organization performance.

6. Conclusion

This research project, technology has the potential to boost innovation performance, particularly through the exploitation of external technology, which can help both innovation and organizational performance. Acquiring technology from outside sources, on the other hand, enhances innovation performance in a direct manner, which in turn is designed to improve work capacity and capability. Because bureaucratic businesses continue to function under a policy that prevents employees from working independently, employee autonomy may not encourage innovation or organizational performance. This is because bureaucratic organizations continue to bar employees from working independently. In addition, innovation performance cannot be the cause of organizational performance because there may be other variables besides innovation performance that are able to support organizational performance. These variables, along with innovation performance, need to be investigated further so that further study can be conducted.

Therefore, cutting-edge technology is absolutely necessary for improving innovative performance, and certain aspects that might be able to assist organizational performance in achieving its goals need to be taken into consideration and handled.

AU-GSB E-JOURNAL

References

Pedroso, R., Zanetello, L., Guimaraes, L., Pettenon, M., Goncalves, V., Scherer, J., Kessler, F., & Pechansky, F. (2016). Confirmatory factor analysis (CFA) of the crack use relapse scale (CURS). *Archives of Clinical Psychiatry, 43*(3), 37-40.

Abdul-Halim, H., Ee, E., Ramayah, T., & Ahmad, N. H. (2014). Human resource outsourcing success: Leveraging on partnership and service quality. *SAGE Open, 4*(3), 1-14 . https://doi.org/10.1177/2158244014545475

Ahuja, G., & Katila, R. (2013). Technological Acquisitions And The Innovation Performance Of Acquiring Firms: A Longitudinal Study. *L'Antiquité Classique*, *82*(1), 422-424.

Ariyapperuma, A. R. M. I., & Abeysekera, N. (2020). Influence of Information Strategies on Organizational Performance for Sustainable Competitive Advantage. TIIKM Publishing *1*(1), 1-6. https://doi.org/10.17501/27141888.2020.1101

Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, *88*(3), 588-606. https://doi.org/10.1037/0033-2909.88.3.588

Birchall, D., Chanaron, J. J., Tovstiga, G., & Hillenbrand, C. (2011). Innovation performance measurement: Current practices, issues and management challenges. *International Journal of Technology Management*, *56*(1), 1-20. https://doi.org/10.1504/IJTM.2011.042492

Bruce, A., & Birchall, D. (2012). *Fast Track To Success Innovation*. Pearson Education.

Damanpour, F., & Schneider, M. (2006). Phases of the adoption of innovation in organizations: Effects of environment, organization and top managers. *British Journal of Management*, *17*(3), 215-236. https://doi.org/10.1111/j.1467-8551.2006.00498.x

Damanpour, F., Walker, R. M., & Avellaneda, C. N. (2009). Combinative effects of innovation types and organizational Performance: A longitudinal study of service organizations. *Journal of Management Studies*, *46*(4), 650-675. https://doi.org/10.1111/j.1467-6486.2008.00814.x

Fornell, C., & Larcker, D. F. (2016). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research This, 18*(1), 39-50.

Gerdsri, P. (2009). *A systematic approach to developing national technology policy and strategy for emerging technologies*. Portland State University.

Granstrand, O., Bohlin, E., Oskarson, C., & Sjoberg, N. (1992). External technology acquisition in large multi-technology companies. *R&D Management, 22*(2), 111-133.

Hair, E., Halle, T., Terry-Humen, E., Lavelle, B., & Calkins, J. (2006). Children's school readiness in the ECLS-K: Predictions to academic, health, and social outcomes in first grade. *Early Childhood Research Quarterly, 21*(4), 431-454. https://doi.org/10.1016/j.ecresq.2006.09.005

Hu, L., & Bentler, P. M. (1998). Fit indices in covariance structure modeling: Sensitivity to underparameterized model misspecification. *Psychological Methods, 3*(4), 424-453. https://doi.org/10.1037//1082-989x.3.4.424

Hu, L. T., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*(1), 1-55. https://doi.org/10.1080/10705519909540118

Jenatabadi, H. S. (2015). An Overview of Organizational Performance Index: Definitions and Measurements. *SSRN Electronic Journal,* 1-10. https://doi.org/10.2139/ssrn.2599439

Kamasak, R. (2015). Determinants of innovation Performance: A Resource-based Study. *Procedia - Social and Behavioral Sciences, 195*, 1330-1337. https://doi.org/10.1016/j.sbspro.2015.06.311

Kang, K. H., Jo, G. S., & Kang, J. (2015). External technology acquisition: a double-edged sword. *Asian Journal of Technology Innovation, 23*(1), 35-52. https://doi.org/10.1080/19761597.2015.1010265.

Kim, H., & Kwon, Y. S. (2011). Determinants of external technology acquisition: Comparison across sectors of manufacturing industry in Korea. *IMECS 2011 - International Multi Conference of Engineers and Computer Scientists, 2*, 1281-1284.

Mustafa, H. K., & Yaakub, S. (2018). Innovation and Technology Adoption Challanges: Impact on SMEs' Company Performance. *International Journal of Accounting, Finance and Business, 3*(15), 57-65. www.ijafb.com.

Nzeru, W., Nzimakwe, I., Mutambara, E., & Munapo, E. (2015). Impact of Training and Development on Employees' Performance. *The Indian Economic Journal, 63*(3), 448-472. https://doi.org/10.1177/0019466220150308

Pee, G. (2011). The effects of job design on employees' knowledge contribution to electronic repositories. *International Conference on Information Systems 2011, ICIS 2011, 4*, 2899-2918.

Phakdiburut, W. (2018). *An Analytical Study of Factors Affecting Innovative capability and adaption Strategies of Thai Newspaper Organizations in the digital age*. National Institute of Development Administration (NIDA). https:// repository.nida.ac.th.

Qaiser Danish, R., Khalid Khan, M., Usman Shahid, A., Raza, I., & Afzal Humayon, A. (2015). Effect of intrinsic rewards on task performance of employees: Mediating role of motivation. *International Journal of Organizational Leadership, 4*(1), 33-46. https://doi.org/10.33844/ijol.2015.60415

Rogers, M., Singhal, A., & Quinlan, M. (2019). *Diffusion of innovations* (3rd Ed.). A Division of Macmillan Publishing. https://doi.org/10.4324/9780203710753-35

Saragih, S. (2011). The Effects of Job Autonomy on Work Outcomes: Self Efficacy as an Intervening Variable. *International Research Journal of Business Studies, 4*(3), 203-215. https://doi.org/10.21632/irjbs.4.3.203-215

Schermelleh-Engel, K., Moosbrugger, H., & Müller, H. (2003). Evaluating the fit of structural equation models: Tests of significance and descriptive goodness-of-fit measures. *MPR-Online, 8*, 23-74.

AU-GSB E-JOURNAL

Schmidt, J. S., & Osebold, R. (2017). Environmental management systems as a driver for sustainability: state of implementation, benefits and barriers in German construction companies. *Journal of Civil Engineering and Management, 23*(1), 150-162. https://doi.org/10.3846/13923730.2014.946441

SÖZBİLİR, F. (2018). Innovation Capacity and Innovation Performance in Terms of Educational Level of Managers. *Journal of Business Research - Turk, 10*(2), 1-12. https://doi.org/10.20491/isarder.2018.415

Straub, E. T. (2009). Understanding technology adoption: Theory and future directions for informal learning. *Review of Educational Research, 79*(2), 625-649. https://doi.org/10.3102/0034654308325896

Suwannasri, I., & Nuangjamnong, C. (2022). Determinants for Open Innovation and Innovation, K., Sambamurthy, V., & Wei, K. (2008). Information technology exploitation and exploration in a fast growing economy. *PACIS 2008 - 12th Pacific Asia Conference on Information Systems: Leveraging ICT for Resilient Organizations and Sustainable Growth in the Asia Pacific Region*, 160. http://aisel.aisnet.org/pacis2008/160

Lichtenthaler, U. (2008). INTEGRATED ROADMAPS Strategic planning plays a critical role. *Industrial Research, 6*, 45-49.

Lichtenthaler, U. (2010). Organizing for external technology exploitation in diversified firms. *Journal of Business Research, 63*(11), 1245-1253. https://doi.org/10.1016/j.jbusres.2009.11.005

Performance towards Value Creation and Organization Performance for Bureaucratic Personnel Development. *ABAC ODI JOURNAL Vision. Action. Outcome, 10*(1), 153-170. https://doi.org/10.14456/abacodijournal.2022.22

Tajudeen, F. P., Jaafar, N. I., & Sulaiman, A. (2019). External technology acquisition and external technology exploitation: The difference of open innovation effects. *Journal of Open Innovation: Technology, Market, and Complexity, 5*(4), 5-7. https://doi.org/10.3390/joitmc5040097

Taouab, O., & Issor, Z. (2019). Firm Performance: Definition and Measurement Models. *European Scientific Journal ESJ, 15*(1), 93-106. https://doi.org/10.19044/esj.2019.v15n1p93

Tsai, K. H., & Wang, J. C. (2009). External technology sourcing and innovation performance in LMT sectors: An analysis based on the Taiwanese Technological Innovation Survey. *Research Policy, 38*(3), 518-526.

Ursachi, G., Horodnic, I. A., & Zait, A. (2015). How Reliable are Measurement Scales? External Factors with Indirect Influence on Reliability Estimators. *Procedia Economics and Finance, 20*(15), 679-686. https://doi.org/10.1016/s2212-5671(15)00123-9

Walker, R. M., Damanpour, F., & Devece, C. A. (2011). Management innovation and organizational performance: The mediating effect of performance management. *Journal of Public Administration Research and Theory, 21*(2), 367-386. https://doi.org/10.1093/jopart/muq043

Zanjirchi, S. M., Jalilian, N., & Shahmohamadi Mehrjardi, M. (2019). Open innovation: from technology exploitation to creation of superior performance. *Asia Pacific Journal of Innovation and Entrepreneurship, 13*(3), 326-340. https://doi.org/10.1108/apjie-02-2019-00

AU-GSB E-JOURNAL

AU-GSB E-JOURNAL

AU-GSB E-JOURNAL

AU-GSB E-JOURNAL