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A Structural Equation Model of Innovative Organization for Secondary Schools in Thailand

Khwanchanok Theerasan[1]*, Saowanee Sirisooksilp, Nuchwana Luanganggoon, Keow Ngang Tang[2]

Abstract

This study aimed to examine factors and related indicators of innovative organization for secondary schools in Thailand. The researchers conceptualized the factors and indicators by examining related documents and cross-examining with 10 experts to confirm them. A quantitative research design using questionnaire to collect data from 450 respondents consisted of 94 school administrators and 356 teachers. The results indicated that goodness of fit for the identified factors and indicators were compliance with empirical data: $\chi^2 = 149.708$, $df = 47$, $\chi^2/df = 3.19$, RMSEA = 0.05, SRMR = 0.017, CFI = 0.989, TLI = 0.981.

Keywords: *Human resource management, innovative leadership, innovative organization model, innovative organizational culture*

Introduction

Innovation in education is essential for improvements and sustainable development in schools (Nguyen et al., 2021). According to Nicholls (2018), innovative school organizations can contribute to creating a dynamic and forward-thinking educational environment that prepares students for the challenges and opportunities of the 21st century and innovation is a multifaceted term that might attract a wide range of meaning and implications. An innovation organization for secondary schools could involve several key elements, namely having a shared vision, a flexible organizational structure, innovator team, and open communication (Pietsch et al., 2023). School administrators have to align stakeholders, setting goals, and driving meaningful change in order to promote a shared vision for an innovative organization (Cheng 2021). Another key element of innovative organization is a flexible organizational structure. School administrators should reduce rigid hierarchies and promote a more decentralized decision-making process such as empower teachers, administrators, and staff to contribute ideas, make decisions, and take ownership for initiatives (Bigliardi et al., 2020). Bigliardi et al. (2020) further encouraged flexibility in roles and responsibilities to allow teachers to contribute their strengths, skills, and interests across various functions or projects. This promotes versatility, professional growth, and collaboration.

An innovator team of teachers often represents a group dedicated to pushing the boundaries of traditional educational practices within an innovative organization is one of the key elements (Brown, et al.,2021). These teams typically focus on creating and implementing innovative

1 Faculty of Education, Khon Kaen University, 40002 Khon Kaen, Thailand.
2 Postgraduate Program in Education, Faculty of Business, Hospitality and Humanities, Nilai University, 71800 Nilai, Negeri Sembilan, Malaysia.

teaching methods and materials, leveraging technology to enhance learning experiences, engaging in continuous learning and skill development, working together on interdisciplinary projects to foster creativity and critical thinking, and building relationships with stakeholders and involving the community in educational initiatives (Brown, et al.,2021). The final and fundamental element of innovative organization is open communication. According to Wang et al. (2020), school administrators can prioritize transparency, encourage active listening, create channels for feedback and idea sharing, and promote a culture of trust and respect to cultivate open communication in an innovative organization.

The literature review showed that innovative organization for secondary schools could bring benefits to educational administration such as flexible learning spaces, technology integration, community partnership, and sustainability and environmental awareness. A flexible learning spaces refer to designing classrooms and common areas that can be easily reconfigured to accommodate different teaching and learning styles, group work, and technology integration (Bigliardi et al., 2020). School administrators leverage technology tools and resources to enhance teaching and learning experiences, such as interactive whiteboards, digital learning platforms, and virtual reality simulations in innovative organization (Pietsch et al., 2023). Moreover, building strong partnerships with local organizations, businesses, and community resources to provide students with authentic learning experiences, internships, mentorships, and career exploration opportunities (Pietsch et al., 2023). Based on the above discussion, this study aims to develop an innovative organization model for secondary school administrators in Thailand. By creating a structural equation model for innovative organization can provide valuable insights into the complex dynamics that drive innovation, leading to informed decision-making and improved organizational outcomes.

Materials and Methods

Research Design

A mixed mode research design was employed in this study using both quantitative surveys and qualitative interviews as well as document analysis to investigate the factors of an innovative organization model (Creswell & Creswell, 2022). The surveys could provide quantitative data on school administrators and teachers' perceptions on innovative organization while interviews could offer deeper insights to conceptualize factors and their indicators in promoting innovative organization model. The researchers found that mixed mode methods are valuable in this study because they can enhance the validity and reliability of study results by triangulating data from different sources. Besides, they allow researchers to explore complex research questions that may not be fully captured by a single data collection method (Creswell & Creswell, 2022).

In the first stage, the researchers conceptualized factors and indicators of innovative organization. This was followed by conducting a survey to test the structural construction between experimental examination and the hypothetical theory of quantitative relationships concerning experimental data in the final stage. The relationships are epitomized by path coefficients or deterioration between the innovative organization factors and their indicators. Figure 1 demonstrates the research procedure.

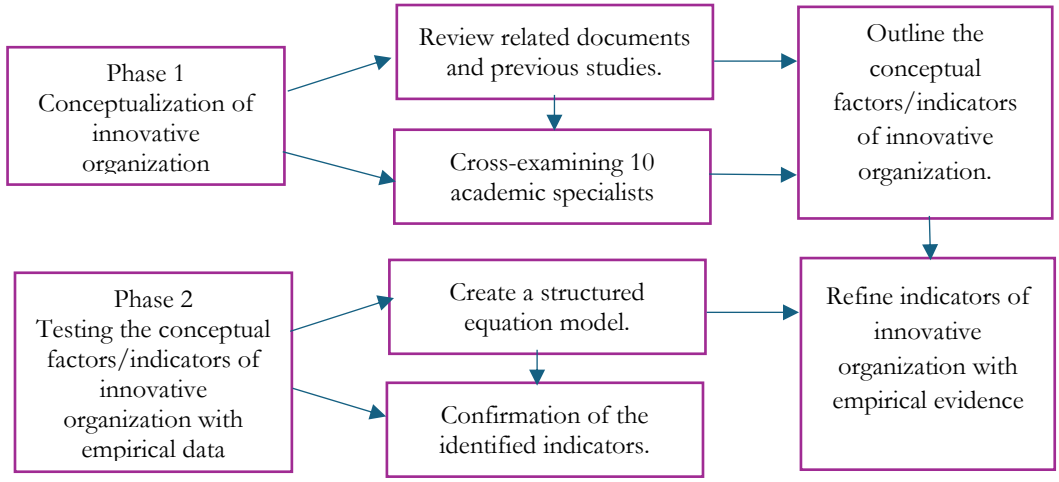

Figure 1: Research Framework.

Population and Sampling

In the first stage, the researchers used a purposive sampling technique to select a total of 10 academic specialists in order to validate the identified factors and indicators derived from reviewing documents and related previous studies. They participated in the face-to-face interview so that researchers could reach a complete interpretation of the fundamental underlying principles, attributes, and achievements behind numerous measures to reflect the factors and indicators of the innovative organization. During the first phase, researchers categorized and verified innovative organization to form a structured equation model.

In. the final stage, a multi-stage sampling was conducted to select a sample from a population that was divided into multiple stages or levels. The researchers employed the rule of thumb proposed by Becker and Ismail (2016) to formulate an adequate sample size (N). The identified sample size is recognized as the presence of classified practice in reaching an adequate probability for the requisite results such as model convergence, statistical precision, and statistical power for particular confirmatory factor analysis (CFA) with empirical data. This was followed by determining the ratio of parameter and samples as 20:1 to fulfill the sample criteria (Hair et al., 2013). A total of 450 respondents consisting of 94 school administrators and 356 teachers. from 117 secondary schools as required sample size.

Research Instrument

The researchers employed two types of instruments, namely interview questions protocol and closed ended questionnaire as two resources of data collection. The 10 experts in the first phase were requested to respond to the six open questions which allowed them to express their opinions regarding the identified factors and indicators. The researchers aimed to accumulate substantial comments from the 10 experts by using open questions which seemed to be worked better in permitting them to intricate their comments in detail.

In the final phase, the researchers utilized an online survey questionnaire consisting of 49 closed questions as a method to collect quantitative data. The closed question structure was employed by limiting responses that fit into pre-determined sets of factors and indicators from the results of the first phase. A continuous five-point Likert scale was used to evaluate the strength of perception. This questionnaire was comprised of five sections and intended to

collect information pertaining to respondents' perceptions of innovative organization. Section A collects respondents' demographic backgrounds, namely gender, age, working experience, highest academic degree, and position. Section B to E was specifically designed to gauge data about innovative organization (16 items) consisted of three factors, namely innovative organizational culture (12 items), human resource management (six items), and innovative leadership (10 items) with a total of 44 items.

Data Analysis

Qualitative data either from document analysis or experts' interviews were analyzed using content analysis (Gay et al., 2011). On the other hand, Structural Equation Modelling (SEM) was utilized to analyze quantitative data. The SEM is an appropriate method to analyze the structural relationship between measured variables and latent constructs because it syndicates factor loading examination and path analysis or multiple regression examination (Gay et al., 2011). On top of that, SEM could estimate the multiple and interrelated dependence in a single analysis, namely endogenous and exogenous variables. In this study, the endogenous variable refers to the innovative organization and exogenous variables were the conceptualized factors and indicators from the first phase. As a result, the researchers utilized SEM to assess how meticulously a hypothetical model fits empirical data to examine the structural equation model. The structural equation model signifies the hypothesis that denotes how identified factors and indicators combine together in corresponding to the hypothesis. Hence, the researchers utilized a CFA to test the structural equation model for its goodness of fit.

Goodness of fit used to test how well a statistical model or hypothesis fits the observed data. It is a measure used in this study to assess the adequacy of a model in explaining the data it was designed to analyze (McDonald & Ho, 2002). Therefore, goodness of fit tests includes χ^2 (Chi-Square), df (Degrees of Freedom), χ^2 /df, CFI (Comparative Fit Index), TLI (Tucker Lewis Index), RMSEA (Root Mean Square Error of Approximation), and SRMR (Standardized Root Mean Square Residual). The goodness of fit tests is used to determine if a sample of data fits a particular distribution. χ^2 is a measure of how well the observed data fit the model. A lower χ^2 value indicates better fit but it is influenced by sample size, so it is often interpreted alongside other fit indices. While df indicates the number of free parameters estimated in the model, it is used in calculating the χ^2 /df ratio, which helps to assess model fit. In other word, the χ^2 /df ratio provides a normalized measure of model fit, where a value closer to 1 indicates a better fit. Both CFI and TLI tests are used to compare the fit of the hypothesized model with that of a baseline model (usually a null model) hence values closer to 1 (ideally above 0.95) indicate a good fit. On the other hand, RMSEA measures the discrepancy between the model implied covariance matrix and the observed covariance matrix thus values below 0.08 (sometimes 0.05) suggest a good fit. Finally, SRMR assesses the average discrepancy between the observed and predicted correlations. This means that lower values (ideally below 0.08) indicate better fit.

Findings and Discussion

The findings of this study are presented in accordance with the study aim indicated above. The preliminary findings are the essential factors and indicators based on the conceptualization of innovative organization for secondary school administrators. Then, the researchers continued to assess the validity of the observable variables using factor loading to examine the goodness of fit of the innovative organization factors and indicators with the empirical data.

Identification of Factors and Indicators for Innovative Organization

The findings from documental examination of previous studies, theories, and concepts compiling with 10 experts' interviews revealed that there are three essential factors of innovative organization: (i) Innovative organizational culture; (ii) human resource management, and (iii) innovative leadership. Moreover, the 10 experts recommended nine indicators, and 28 behavioral elements which derived from the four essential factors with regards to fit the Thai context. The findings of the first stage are displayed in Table 1 below.

Table 1: Identification of Factors, Indicators, and their Behavioural Elements of Innovative Organization for Secondary Schools.

Factors	Indicators	Behavioural Elements
Innovative organizational culture (IOC)	Innovative behaviour (IOC1)	Teachers seek knowledge to create innovation.
		Teachers apply innovation in their work.
		Teachers exchange knowledge.
		Teachers accept innovation.
		Teachers support the use of innovation.
	Innovative atmosphere (IOC2)	Teachers have freedom to think creatively.
		Teachers have freedom to learn.
		School administrators promote teamwork.
	Organizational commitment (IOC3)	Teachers are dedicated to working to their fullest potential for the school.
		Teachers have a feeling of acceptance and confidence in the goals.
		Teachers follow the values.
		Teachers comply with the organization's rules.
Human resource management (HRM)	Recruitment (HRM1)	School administrators recruit knowledgeable teachers to create innovation.
		School administrators place teachers in appropriate job positions according to their knowledge and ability to create innovations.
	Personnel training and development (HRM2)	School administrators organize training for teachers to gain knowledge in order to understand innovation.
		School administrators organize activities to develop and create creativity.
	Performance evaluation (HRM3)	School administrators measure the success of innovations or find reasons of failure as well.
		School administrators find ways to correct the deficiencies that have occurred.
Innovative leadership (IL)	Having an innovative vision (IL1)	School administrators and teachers create an innovative vision for the school.
		School administrators disseminate the school's innovative vision.
		School administrators and teachers follow the school's innovative vision.
	Innovative participation (IL2)	School administrators and teachers set innovative goals, define roles, and assign work
		School administrators encourage cooperation among teachers.
		School administrators provide opportunities for teacher to exchange knowledge and innovation.
	Creative thinking (IL3)	School administrators have new initiatives.
		School administrators have agility in thinking.
		School administrators have flexibility in thinking.
		School administrators have thorough thinking.
Innovative organizations (IO)	Having a shared vision (IO1)	School administrators and teachers set vision, goals, and strategies together.
		School administrators and teachers plan the operations to create and develop innovations.
		School administrators and teachers to have clear goals toward innovative organization.
	Having a flexible organizational structure (IO2)	School administrators change organizational structure to define operational plan accordingly.
		School administrators determine roles, duties, responsibilities, and assign authority to teachers.
		School administrators work as independent teams to create and develop innovations
		Teachers feel important and being valued in schools.
	Innovator team (IO3)	Teachers have a common goal to create and develop innovations.
		Teachers listen and exchange opinions of the work team.
		Teachers carry out assigned tasks with enthusiasm.
		Teachers are ready to learn and develop themselves continuously.
		Teachers dare to think, act, and make decisions.
	Open communication (IO4)	School administrators are open in various forms of communication.
		School administrators and teachers allow to communicate in every direction.
		School administrators provide opportunities to listen and exchange opinions of others.
		School administrators create understanding in carrying out educational plans.

Demographic Data of Respondents

A total of 450 distributed questionnaires were successfully collected from 117 secondary schools, giving a response rate of 100 percent. The majority of respondents are females (67.11%). The demographic data showed that researchers obtained a comprehensive and representative sample in terms of their age and work experience as a good practice when conducting surveys to gather quantitative data. An equal distribution of respondents in terms of their age, namely 84 (18.70%), 186 (41.30%), 103 (22.90%), and 77 (17.1%) of respondents' age between 21 to 30 years old, 31 to 40 years old, 41 to 50 years old and 51 to 60 years old respectively. Likewise, findings indicated an equal distribution of respondents in terms of respondents in terms of respondents' work experience too such as 87 (19.30%) of respondents' work experience was less than six years; 142 (31.60%) of respondents' work experience was between six to 10 years; 80 (17.80%) of respondents' work experience was between 11 to 15 years; 50 (11.10%) of respondents' work experience was between 16 to 20 years; 31 (6.9%) of respondents' work experience was between 21 to 25 years, and 60 (13.30%) of respondents' work experience was more than 26 years.

Furthermore, a total of 450 respondents consisted of 94 (20.89%) school administrators and 356 (79.11%) teachers with a majority of them possessing a master's degree as the highest academic level (256, 56.90%). This was followed by 178 (39.60%) of respondents have bachelor's degree. Only 16 (3.5%) of respondents were awarded a doctoral degree as the highest academic level. This demographic data of respondents helps the researchers to capture diverse perspectives and insights across different demographic groups. Table 2 demonstrates the demographic data of respondents.

Table 2: Profile of Respondents.

Background	Frequency (N= 480)	Percentage (%)
Gender: -Male-FemaleTotal	148302450	32.8967.11100
Age-21 to 30 years old-31 to 40 years old-41 to 50 years old-51 to 60 years oldTotal	8418610377450	18.7041.3022.9017.10100
Work experience-<6 years-6 to 10 years-11 to 15 years-16 to 20 years-21 to 25 years->26 yearsTotal	8714280503160450	19.3031.6017.8011.106.9013.30100
Position-School administrators-TeachersTotal	94356450	20.8979.11100
Academic qualification-Bachelor's degree-Master's degree-Doctoral degree	17825616450	39.6056.903.50100

Intercorrelation between Innovative Organization Indicators

An innovative organization model was then developed by the researchers which representing the identified three factors and 13 indicators through arranging them in a logical manner to reflect their interrelationships. Hence, this model would provide a comprehensive and structured overview of the ethical considerations relevant to innovative organization within the researchers' selected scope. The results of Pearson correlation coefficients were used to assess the linear relationships between pairs of 13 indicators.

Table 3 elucidates the results of intercorrelation between the 13 indicators of innovative organization indicating that there were positive correlations for all relationships between pairs of 13 indicators. This implies that as one indicator increases, the other tends to increase too.

In addition, the magnitude of the correlation coefficients ranged from 0.604 to 0.791 revealing the strengths of the relationships from moderate to strong, with values closer to 1 representing a stronger correlation and all the relationships are statistically significant at 0.01 level. Consequently, findings also showed that the relationship between recruitment (HRM1) and innovative behaviour findings (IOC1) ($r = .791$; $r<.01$) was the highest magnitude of the correlation coefficient. However, the lowest magnitude of the correlation coefficient was creative thinking (IL3) and having a shared vision (IO1) ($r = .604$; $p<0.01$), as illustrated in Table 3.

Table 3: Intercorrelations Results of Identifying Indicators of Innovative Organization Model.

	IOC1	IOC2	IOC3	HRM1	HRM2	HRM3	IL1	IL2	IL3	IO1	IO2	IO3	IO4
IOC1	1.00												
IOC2	.758**	1.00											
IOC3	.732**	.742**	1.00										
HRM1	.718**	.785**	.791**	1.00									
HRM2	.737**	.730**	.756**	.681**	1.00								
HRM3	.780**	.735**	.706**	.677**	.683**	1.00							
IL1	.748**	.698**	.736**	.767**	.722**	.736**	1.00						
IL2	.736**	.725**	.715**	.770**	.739**	.770**	.729**	1.00					
IL3	.790**	.736**	.636**	.621**	.620**	.652**	.760**	.695**	1.00				
IO1	.753**	.762**	.768**	.764**	.749**	.778**	.719**	.717**	.604**	1.00			
IO2	.771**	.740**	.607**	.641**	.714**	.645**	.719**	.726**	.631**	.657**	1.00		
IO3	.783**	.628**	.720**	.675**	.645**	.756**	.775**	.775**	.725**	.734**	.692**	1.00	
IO4	.690**	.602**	.715**	.641**	.622**	.650**	.703**	.698**	.720**	.722**	.674**	.710**	1.00

**Correlation Coefficient is Significant at the 0.01 Level (2-Tailed).

The Goodness of Fit of the Innovative Organization Factors and Indicators with the Empirical Data

In final stage, the Kaiser-Meyer-Olkin (KMO) measure is a statistic used in factor analysis and structural equation modeling (SEM) to assess the suitability of data for these analytical techniques. The researchers started to examine the suitability of data for factor analysis before obtaining estimates of the parameters of the growth mindset model. Two key concerns that must take into account to decide whether the obtained data is suitable for CFA, namely the strength of the association between factors or indicators and sample size (Pallant, 2013). The strength of the association between factors or indicators is measured using Bartlett's Test of Sphericity (Barlett !954) while researchers used KMO to verify whether the sample size is sufficient or not. According to Jöreskog & Sörbom (1993), large samples are useful because it is almost impossible for us to reject the null hypothesis even though the chi-square (χ^2) is recognized as a standard statistic to evaluate the general fit of the measurement model with the empirical data.

A Bartlett Test of Sphericity is an evaluation of multivariate normality according to data distribution. This means that it is used to verify whether the unique correlation matrix is an identity matrix or not in conformity with the null hypothesis. In other words, if the significant values are more than 0.05 for both factors and indicators imply an identity matrix is produced by the obtained data. It is worth remarking that the factors or indicators have to evaluate at the interval level. On the other hand, several specialists have recommended different rules of thumb to decide the acceptable KMO value as the measurement to confirm the adequacy of

sampling. For example, Kaiser (1974) and Field (2000) determined the acceptable value as more than 0.5 while Pallant (2013) confirmed KMO value must be more than 0.6. The researchers decided to use Hutcheson and Sofroniou's (1999) rule of thumb to decide the acceptable KMO value as shown in Table 4.

Table 4: KMO Value and Its Interpretation.

KMO Value	Interpretation
<0.5	Unacceptable sample size
0.5 to 0.7	Average sample size
0.7 to 0.8	Good sample size
0.8 to 0.9	Great sample size
>0.9	Excellent sample size

The findings of the KMO value in Table 5 shows that the sampling size was sufficient and excellent because all the KMO values of factors and indicators were above 0.9 (Hutcheson & Sofroniou, 1999; Pallant, 2013). Besides, Table 5 also shows that collected data were nearly multivariate normal according to the result of Bartlett Test of Sphericity, and excellent sample size was obtained as reflected in KMO value (Hutcheson and Sofroniou, 1999). Therefore. The obtained data could proceed for further examination.

Table 5: Results of KMO and Barlett's Test of Sphericity Analysis of Observed Variables.

KMO	**0.941**
Barlett's Test	9161.800
df	78
p	0.000

This was followed by seeking to attain estimates of the parameters of the innovative organization model, the validity of the identified factors, and their factor loading of the innovative organization. In short, factor loading means the 'relative importance' of the identified indicators that collectively form a specifically identified factor in the innovative organization model of high school administrators that had been considered. As illustrated in the following Table 6, the factor loading of all the innovative organization factors were ranged from 0.089 to 0.555 and was statistically significant at 0.01. The factor with the highest factor loading value was human resource management. This was followed by innovative organizational culture. The factor that had the lowest factor loading value was the innovative leadership. In conclusion, all the essential factors were found to be essential constructs of innovative organization for school administrators in secondary schools. Furthermore, the co-variance with the innovative organization indicators was in the range of 67.90 to 96.70 percent. As demonstrated in the following Table 6, the factor loading of all the indicators were ranged from 0.824 to 0.983 and was statistically significant at 0.01. In this line of reasoning, all the identified indicators were considered important constructs for the innovative organization model.

The indicator with the highest factor loading value was innovative participation. This was followed by personnel training and development, organizational commitment, having an innovative vision, performance evaluation, creative thinking, innovative atmosphere, and innovative behaviour. The factor that has the least capacity factor loading value was recruitment. Consequently, the researchers concluded that all the identified indicators were found to be important constructs of innovative organization for secondary school administrators in Thailand.

Table 6: The Results of CFA for Key Factors and Indicators of Innovative Organization for Secondary Schools.

Factors and their indicators	Factor Loading			R^2
	β	S.E.	t	
Innovative organizational culture (IOC) β = 0.344**				
Innovative behaviour (IOC1)	0.878**	0.013	67.226	0.770
Innovative atmosphere (IOC2)	0.900**	0.012	77.424	0.811
Organizational commitment (IOC3)	0.953**	0.009	105.792	0.908
Human resource management (HRM) β = 0.555**				
Recruitment (HRM1)	0.824**	0.017	48.955	0.679
Personnel training and development (HRM2)	0.960**	0.009	102.471	0.921
Performance evaluation (HRM3)	0.918**	0.011	82.895	0.843
Innovative leadership (IL) β = 0.089**				
Having an innovative vision (IL1)	0.944**	0.007	142.456	0.892
Innovative participation (IL2)	0.983**	0.005	209.819	0.967
Creative thinking (IL3)	0.911**	0.009	100.776	0.829
Innovative organizations (IO)				
Having a shared vision (IO1)	0.899**	0.011	85.395	0.808
Having a flexible organizational structure (IO2)	0.873**	0.013	65.793	0.762
Innovator team (IO3)	0.938**	0.008	114.361	0.879
Open communication (IO4)	0.952**	0.007	132.602	0.906
χ^2 = 149.708, df = 47, χ^2 /df =3.19, CFI = 0.989, TLI = 0.981, RMSEA = 0.05, and SRMR = 0.017				

According to Ullman (2001), the overall model whether is acceptable or not in SEM depending on the fit indices. The goodness-of-fit result exposed that the innovative organization model fits between the attained values of collected data and the expected values under the innovative organization model as follow, χ^2 = 149.708, df = 47, χ^2/df = 3.19, CFI = 0.989, TLI = 0.981, RMSEA = 0.05, and SRMR = 0.017. These tests were employed to determine how associated real values were fitting to the expected values in the innovative organization model. The researchers referred to the following specialists' rules of thumb and their recommended cut-off values for evaluating fit indices in SEM as elucidated in Table 7.

Table 7: Interpretation of Goodness of Fit for Innovative Organization Model

Goodness of Fit Index	Real Values	Rules of Thumb or Cut-off Values	Specialist	Interpretation
χ^2/df	3.19	<5	Schumacker and Lomax (2004)	Pass
CFI	0.989	≥ 0.95	Hu and Bentler (1999)	Pass
TLI	0.981	≥ 0.95	Hu and Bentler (1999)	Pass
RMSEA	0.05	<0.06<0.07	Hu and Bentler (1999) Steiger (2007)	Pass
SRMR	0.017	<0.05	Byrne (1998)	Pass

Direct, Indirect, and Overall Effect of Causal Factors on Innovative Organization

The impact of causal factors on innovative organization model, SEM can be a powerful tool. The findings showed that the immediate influence of human resource management (β=.555), innovative organizational culture (β=.344), and innovative leadership (β=.089) has on innovative organization, in that order. Findings also found that human resource management was directly influenced by innovative organizational culture (β=.540) and innovative leadership (β=.404). However, innovative organizational culture (β=.048), followed by innovative leadership (β = .036) has indirect effect toward innovative organization. The indirect effect would be the impact of innovative organizational culture affects innovative leadership, which in turn influences innovative organization. In SEM, indirect effects were often assessed through mediation analysis. The overall effect encompasses both the direct and indirect effects of a variable on an outcome. In the context of innovative organizations, the overall effect could capture the combined impact of various factors, namely innovative organizational culture and innovative leadership on innovative organization (refer Table 8).

Table 8: Direct Effect, Indirect Effect, and Overall Effect of Causal Factors Affecting Innovative Organization

Causal Factors	**Effect Factors (Innovative Organization IO)**								
	DE	IE	TE	DE	IE	TE	DE	IE	TE
Innovative organizational culture (IOC)	.540	-	0.540	-	-	-	.344	.048	.392
Human resource management (HRM)	-	-	-	-	-	-	.555	-	.555
Innovative leadership (IL)	.404	-	.404	-	-	-	.089	.036	.125

Conclusion

The findings of this study indicated that secondary school administrators can administer an innovative organization effectively by incorporating the three factors and their indicators in order to understand complex relationships. Innovative organizations often involve complex interrelationships among various factors such as innovative organizational culture, human resource management, and innovative leadership. The findings are found in parallel with the past research findings such as Cheng (2021), and Pietsch et al. (2023). SEM allows researchers to model these relationships comprehensively, providing a clearer understanding of how different variables interact and influence each other.

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