

The Impact of Leadership on Individual Creativity and Organizational Innovation

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Abstract

The purpose of this study is to analyze the causal relationship between individual creativity and organizational creativity by focusing on transformational and emotional leadership amid various factors that bring about innovation to organizations. The results of the analysis show that transformational leadership had a significant effect on individual creativity, while individual creativity had a significant effect on organizational innovation. While emotional leadership, which, of late, has been receiving growing attention, did not have a significant positive effect on individual creativity, it did have a significant positive effect on organizational innovation. In particular, the core factor that was responsible for transformational leadership to affect individual creativity was charisma, and the core factor that was responsible for emotional leadership to affect organizational innovation was self-management skills. This may have reflected the leader's personal emotions and affective characteristics as well as robust and thorough self-management principles. It is, therefore necessary to focus more on this fact.

Keywords: Creativity in Organizations, Emotional Leadership, Individual Creativity, Transformational Leadership

1. Introduction

Many scholars describe future societies as volatile, uncertain, complex, and ambiguous, and predict that organizations will become more horizontal, decentralized, and networked. They also predict that virtual characterization of organizations will further intensify owing to technological development¹. Further, in order to survive in a rapidly changing competitive environment, firms are making substantial efforts to produce better business results by efficiently managing their human resources. In the current environment, the significance of organizational innovation is gradually increasing as a precondition and key factor for such organizations to enhance their competitiveness². As an increasing amount of attention is being paid to organizational innovation, there have been many studies stressing on the factors that affect organizational innovation³.

In order to promote change in organizations, it is necessary to induce creativity and organizational innovative behavior from members and reinforce the

competences of the organization in general. Therefore, the leader of an organization must try to solve problems arising from external causes by improving the internal environment, and strive to introduce effectual feelings and emotions within the organization in order to tackle such problems⁴. However, feelings and emotions within the organization are considered far from being intellectual and rational, and thus have not received much attention for a long time⁵. Therefore, the role of leadership is considered extremely important in organizational innovation⁶.

Highly creative individuals tend to be extremely motivated intrinsically to carry out innovative tasks and produce better results⁷. Essentially, they perceive innovative behavior to stem from creativity⁸, indicating that creativity forms the foundation for innovative behavior.

Bass⁹ stated that in order to bring about change and innovation to an organization, the organization's leader must display a new form of leadership that replaces the existing transactional leadership, and suggested the so-

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called transformational leadership. However, recently characteristics of leadership have been focusing on feelings and emotions, rather than on cognitive and technological skills¹⁰. Moreover, there is a focus on the view that it is important for organizations, which will be facing countless challenges in the future, to effectively and efficiently manage the feelings and emotions of organizational members during the process of change and convert these feelings and emotions into positive energy¹¹. Hong et al.¹² referred to leaders with exceptional emotional intelligence as emotional leaders, and such leadership as emotional leadership. Zhou et al.¹³ argued that a leader's emotional intelligence affects the creativity of his or her subordinates, and Nam¹⁴ stated that a leader's emotional leadership has an indirect effect on the creativity of organizational members.

Based on this logic, the independent variable affecting organizational innovation, i.e., the dependent variable, is categorized into transformational leadership and emotional leadership. Subsequently, research was conducted on factors that affect the causal relationship between individual creativity and organizational innovation, keeping the following goals in mind.

First, this study will examine how transformational leadership and emotional leadership affect individual creativity, and whether the results are consistent with prior theories.

Second, it will examine whether individual creativity has a direct effect on organizational innovation by comparing itself with prior theories.

Finally, it will examine whether emotional leadership, which has been gaining growing attention recently, has a direct effect on organizational innovation.

Further, keeping in mind this study's processes and methods, the research model was designed based on prior research and literature, and the surveys were conducted using samples and analyzed with a statistical technique using Structural Equation Modeling (SEM) and SPSS.

2. Theoretical Background

2.1 Leadership

Typically, leadership is defined as "the process by which the leader guides the members of the organization to complete their goals". The process of accomplishing the role and objectives of the leader is reflected in the top-down method enforcing influence over employees such that the leader accomplishes the desired results. This is

traditionally referred to as vertical leadership¹⁵, which took up most of the research on leadership in the past¹⁶. Moreover, leadership involves clarifying an organization's vision, including its values, and creating an environment wherein tasks can be completed and leadership is the process exerting influence over the systemized activities of a team in order to achieve the desired goals, the practice of justice, honesty, and influence over organizational members to align their goals with those of the organization and set high goals. Further, leadership is that individual power is not controlled by changes, but rather leads these changes¹⁷.

Recent leadership theories include 5 step's leadership, fusion leadership, emotional leadership that upgraded emotional intelligence to the concept of leadership, authentic leadership, super leadership, and servant leadership¹⁰.

These definitions of leadership share the following common factors. First, they all state that leadership is a community phenomenon. Second, leadership is goal-oriented and plays an active role within a group and an organization. Third, a leader exerts influence over individuals and groups within an organization, determines their goals, and drives them to work effectively in order to achieve these goals^{18,19}.

2.2 Transformational Leadership

Transformational leadership is the process of seeking general objects for change through mutual communion between the leader and followers, the capability that affects values, attitudes, beliefs, and behaviors of others to accomplish the mission and objectives of an organization and it motivates followers to fulfill great desires of self-realization and accomplish ideal objectives beyond the interaction with the followers²⁰.

Transformational leadership indicates how the leader provides the direction for the organization, sets conditions for organizational members to be involved in accomplishing the goals, systemizes changes, and manages processes²¹. According to Burns²², who first conceptualized the term, transformational leadership is contradictory to transactional leadership. While the former appeals to ideal values that are high dimensional and motivates followers, the latter induces followers' agreement by mobilizing the means that are related to their interests such as wages or promotions. Tichy et al.²³ argued that transformational leaders make organizational members perceive the need for change, create new visions,

and systemize the changes to achieve transformation of the organization.

Bass et al.²⁴ classified transformational leadership into four components: first, the idealized influence (or charisma) of leaders serves to bring about trust and affective assimilation of the members toward the leader; second, inspirational motivation provides the symbolism and affective appeal for goal achievement; third, individualized consideration refers to the humane treatment of subordinates and the provision of learning opportunities for growth; and fourth, intellectual stimulation raises questions about conventional mindsets and customs and recommends doing away with them. These four components are used as measurement items of the surveys in this study.

2.3 Emotional Leadership

The definitions of emotional leadership that are, of late, been receiving much attention are as follows: Salovey et al.²⁵ defined emotional leadership as the ability to effectively express how one assesses one's emotions or those of others, effectively suppress and control one's emotions or those of others, and utilize these emotions to plan and accomplish one's life goals. Wong et al.²⁶ defined the term as the ability to precisely understand one's emotions and perceive the emotions of others, using their emotional information in individual performance and constructive activities, and representing individual emotions as suitable behaviors according to given situations. Goleman et al.²⁷ defined emotional leadership as the ability to clearly understand and the ability to effectively manage one's emotions at the individual level, to clearly understand the emotions of others, and to effectively manage others' emotions at the social level. Moreover, Lee et al.²⁸ defined the term as the ability of a leader to understand one's own inner side, and consider and understand the emotions and needs of his or her subordinates, while also providing common visions and instinctively leading the members of the organization. Han et al.²⁹ stated that it is the ability of the leader to perceive, understand, and control one's own emotions as well as the emotions of others in the organization. As mentioned above, Goleman et al.²⁷ classified emotional leadership into the following four components: first, the ability to understand one's emotions using self-awareness skills and the influence of one's emotions over others; second, the ability to manage one's emotions with self-management skills and change negative emotions by controlling them; third, the ability to understand the

emotions of others with social-awareness skills and deal with them; and fourth, the ability to build and manage human relationships with relationship-management skills. These four components are used as measurement items of the surveys in this study.

2.4 Individual Creativity and Organizational Innovation

Table 1. Prior research on individual creativity

Construct	Factor	Measurement Details	Researcher and Literature
Individual creativity	Knowledge and experience	Level of knowledge, technique, and talent through experience in the relevant field, securement of expertise, etc.	[7, 39, 40]
	Creative thinking skills	Constant initiative to seek new problems or possibilities with perspectives and ideas different from those given without giving up	
	Job motivation	Fundamental enthusiasm created from work itself, interest in work, and positive attitude in enjoyably performing tasks	

Staw³⁰ defined creativity as the starting point of innovation, rather than separating it from innovation. Scott et al.³¹ perceived creativity as a concept related to producing new and useful ideas, and innovation as a concept that includes not only producing but also adopting and implementing useful ideas. Moreover, Damanpour³² argued that creativity may affect the outcome of innovation and help resolve the issues that occur through the process of innovation; however, this is only a single factor that produces the outcome of innovation and a sub-process of the innovation process. Table 1 summarizes prior research on individual creativity, which is one of the constructs of this study.

Definitions of organizational innovation by prior researchers are as follows: Calantone et al.³³ defines that organizational innovation is the ability of an

organization to adapt more quickly to new things than do its competitors. Damanpour³² defines it as the ability to create and implement new ideas, processes, products, and services, and as the spontaneity of firms to innovate. Individuals are the foundation for innovation³⁴, as creative employees seek new opportunities and find new methods or devices that are different from the existing ones related to their given tasks², and there are many factors that affect organizational innovation, which depend on the connection among individuals, groups and organizations. Therefore, organizational innovation implies a broader and more comprehensive concept than the existing definition of innovation³⁵. As indicated by such arguments, this study will discuss whether individual creativity affects organizational innovation, and use the 5's measurement items by³³ for the measurement of constructs.

3. Research Model and Survey Design

3.1 Research Model and Research Hypothesis

To analyze the effects of Transformational leadership and Emotional leadership on Individual Creativity and Organizational Innovation based on previous research and literature, this study presented the following research model (Figure 1.) and research hypotheses.

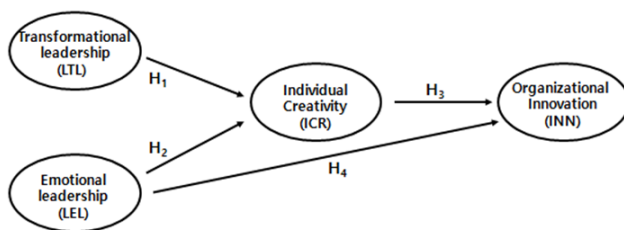


Figure 1. Research model.

3.1.1 Research Hypothesis

- H₁: Transformational leadership will be positively associated with Individual Creativity.
- H₁₋₁: Transformational leadership's Charisma will be positively associated with Individual Creativity.
- H₁₋₂: Transformational leadership's Intellectual stimulation will be positively associated with Individual Creativity.
- H₁₋₃: Transformational leadership's Motivation will be positively associated with Individual Creativity.
- H₁₋₄: Transformational leadership's Individualized

consideration will be positively associated with Individual Creativity.

- H₂: Emotional leadership will be positively associated with Individual Creativity.
- H₂₋₁: Emotional leadership's Self-awareness skills will be positively associated with Individual Creativity.
- H₂₋₂: Emotional leadership's Self-management skills will be positively associated with Individual Creativity.
- H₂₋₃: Emotional leadership's Social-awareness skills will be positively associated with Individual Creativity.
- H₂₋₄: Emotional leadership's Relationship-management skills will be positively associated with Individual Creativity.
- H₃: Individual Creativity will be positively associated with Organizational Innovation.
- H₃₋₁: Individual Creativity's Knowledge and experience will be positively associated with Organizational Innovation.
- H₃₋₂: Individual Creativity's Creative thinking skills will be positively associated with Organizational Innovation.
- H₃₋₃: Individual Creativity's Job motivation will be positively associated with Organizational Innovation.
- H₄: Emotional leadership will be positively associated with Organizational Innovation.
- H₄₋₁: Emotional leadership's Self-awareness skills will be positively associated with Organizational Innovation.
- H₄₋₂: Emotional leadership's Self-management skills will be positively associated with Organizational Innovation.
- H₄₋₃: Emotional leadership's Social-awareness skills will be positively associated with Organizational Innovation.
- H₄₋₄: Emotional leadership's Relationship-management skills will be positively associated with Organizational Innovation.

3.2 Data and Analysis Methods

This study conducted surveys, targeting executives and employees working at small and medium manufacturers with less than 300 people, in the capital area. The surveys took place for 22 days from January 26 to February 16, 2015, using the convenience sampling method and self-administered method. A total of 280 questionnaires were

distributed, with 225 (80.4%) used in the final analysis after excluding inappropriate data. To test the hypotheses, this study applied Structural Equation Modeling (SEM). To verify the validity and consistency of the measurement items, Exploratory Factor Analysis (EFA) and reliability analysis were conducted using SPSS 19.0. Confirmatory Factor Analysis (CFA) was conducted to verify the scale's validity using AMOS 19.0.

3.3 Sample Characteristics and Configuration of Variables

The sample characteristics of this study are shown in Table 2, with males accounting for 78.2% and females 21.8%. In terms of age, people in their 30s (51.1%) and 20s (24.9%) represented at least 75% of the total, while in terms of company position, vice-chief/section management or below represented approximately 90% of the total. This reflects the character of this study, which was to have more respondents in lower positions since such positions evaluate the leadership of those in higher positions. As for educational background, most respondents graduated from a four-year college (41.8%), while for tenure, 85.8% had been at the company less than 10 years. For type of work, office (45.3%) and R&D (31.1%) accounted for a large portion of all respondents.

Table 3 shows the setting of variables, such as the constructs and measurement items, used in this study. Measurement items for transformational leadership are adopted from previous research by^{36,37}, measurement items for emotional leadership were adopted from previous research by²⁷, measurement items for individual creativity were adopted from previous research by^{7,38-42},

and measurement items for organizational innovation were adopted from previous research by^{33,35}, revised according to the purpose of this study.

4. Analysis and Results

4.1 Exploratory Factor Analysis and Reliability Analysis

Tables 4 through 7 show the results of the EFA and reliability analysis using SPSS on the constructs presented in this study: transformational leadership, emotional leadership, individual creativity, and organizational innovation.

The results of the analysis indicate that the sub-factors of transformational leadership were consistent with previous research^{36,37}; the four factors, Charisma, Intellectual stimulation, Motivation and Individualized consideration, and no measurement items were eliminated (Table 4). Sub-factors of emotional leadership were classified into four factors, self-awareness skills, self-management skills, social-awareness skills, relationship-management skills. However, among the four measurement items of the self-management skills factor, Lel23 (new opportunities efforts), Lel24 (truths and honesty about facing reality), among the four measurement items of the social-awareness skills factor, Lel32 (grasp relationship to the flow and structure of organization), Lel34 into the same factor and were thus eliminated (Table 6). Finally, for organizational innovation, all measurement items were properly loaded (Table 7).

Furthermore, as a result of measuring Cronbach α coefficients to test reliability, all constructs turned out

Table 2. Demographic characteristics of the sample

	Division	Respondents	Rate(%)		Division	Respondents	Rate(%)
Gender	male	176	78.2	position	10 years excess	32	14.2
	female	49	21.8		employee grade	92	40.9
Age	20s	55	24.9		agent grade.	46	20.4
	30s	115	51.1		vice-chief/section-mgt.	65	28.9
	40s	48	21.3		director, grade	15	6.7
	More than 50s	6	2.7		Officer grade	7	3.1
Educational background	High school or less	42	18.7	size	100 or less people	150	66.7
	2~3 year college	66	29.3		100~300 people	75	33.3
	4-year college	94	41.8	work	office	102	45.3
	master and doctor	23	10.2		production	30	13.3
Tenure	Less than 1 year	35	15.5		sales	18	8.0
	1~5 years	114	50.7		R and D	70	31.1
	5~10 years	44	19.6		others	5	2.2

Table 3. Variable's construct and measurement items

Construct	Factor	Measurement Items	Previous Research
Transformational Leadership (LTL)	Charisma	Ltl 11 Telling the values and beliefs of managers.	[36, 37]
		Ltl 12 Behavior which can be admired.	
		Ltl 13 Confidence and ability retention.	
		Ltl 14 Given responsibility for the performance achievement.	
	Intellectual stimulation	Ltl 21 Troubleshooting induction of a variety of perspectives.	
		Ltl 22 Presents a new method for solving the task.	
		Ltl 23 Review validity of existing mindsets.	
		Ltl 24 Solving encouraged by the new method.	
	Motivation	Ltl 31 Vision of the organization's future.	
		Ltl 32 Inspire confidence in the long-term goal achievement.	
		Ltl 33 Positive attitude towards the future organization.	
		Ltl 34 Long-term enthusiasm for future goals	
Emotional Leadership (LEL)	Self-awareness skills	Lel 41 Caring concern for subordinates.	[27]
		Lel 42 Treatment for a person subordinates.	
		Lel 43 Development assistance to subordinates's advantage.	
		Lel 44 Spend hours of training for subordinates.	
	Self-management skills	Lel 11 Manager understands his feelings.	
		Lel 12 Manager understands his strengths and weaknesses.	
		Lel 13 Cognition for their own worth and abilities.	
		Lel 14 Their positions and limit recognition.	
	Social-awareness skills	Lel 21 Responsibility for their own work.	
		Lel 22 Flexible cope to the new challenges and changes.	
		Lel 23 New Opportunities efforts.	
		Lel 24 Truths and honesty about facing reality.	
Individual Creativity (ICR)	Relationship management skills	Lel 31 Understanding of others' feelings and perspectives.	[7, 38, 39, 40, 41, 42]
		Lel 32 Grasp relationship to the flow and structure of organization.	
		Lel 33 Response to needs of the organizational members.	
		Lel 34 Understand of customer needs and satisfaction effort	
	Knowledge and experience	Lel 41 Vision and motivation for members.	
		Lel 42 Persuasive communication skills retention.	
		Lel 43 The organization's ability to solve internal conflicts.	
		Lel 44 Led a collaborative effort and teamwork.	
	Creative thinking skills	Icr 11 Constant effort.	
		Icr 12 Intellectual curiosity.	
		Icr 13 Knowledge and experience in the business.	
		Icr 14 Acknowledgement of expertise in their fields.	
Organizational Innovation (INN)	Job motivation	Icr 21 Eloquent expression.	[33, 35]
		Icr 22 Ability to flexibly combine thoughts.	
		Icr 23 Flexible thinking.	
		Icr 24 Original thinking.	
	Knowledge and experience	Icr 31 Job satisfaction.	
		Icr 32 Interest.	
		Icr 33 Enthusiastic performance.	
		Icr 34 Enjoyment in performance of duties.	
	Creative thinking skills	Inn 1 Adoption and attempt at new ideas.	
		Inn 2 Pursuit of new task performance methods.	
		Inn 3 Creativity in task performance methods and operation.	
		Inn 4 Atmosphere to accept risks and encourage innovation.	
	Job motivation	Inn 5 Release of new products and services in the last five years.	

Table 4. Transformational leadership's EFA and reliability analysis

Measurement	Factor Analysis					Reliability	
Item	Charisma	Intellectual stimulation	Motivation	Individualized consideration	Comm-unity	Alpha if Item deleted	Cronbach's
Ltl13	.730	.334	.098	.143	.675	.816	.836
Ltl12	.717	.295	.143	.372	.760	.763	
Ltl11	.885	.162	.367	.140	.650	.815	
Ltl14	.665	.210	.391	.266	.711	.773	
Ltl21	.243	.764	.171	.304	.765	.832	.880
Ltl24	.218	.759	.226	.236	.731	.849	
Ltl23	.311	.746	.228	.093	.714	.855	
Ltl22	.212	.721	.318	.238	.722	.847	
Ltl34	.153	.174	.824	.228	.785	.833	.877
Ltl33	.276	.166	.781	.151	.737	.845	
Ltl32	.208	.272	.772	.188	.749	.829	
Ltl31	.169	.392	.662	.224	.671	.860	
Ltl42	.218	.212	.075	.801	.740	.782	.834
Ltl41	.224	.107	.278	.774	.738	.791	
Ltl43	.166	.269	.251	.721	.682	.776	
Ltl44	.145	.459	.280	.555	.619	.811	
Eigen-value	2.525	3.131	3.099	2.692			
Variance description (%)	15.78	19.57	19.37	16.82			

Table 5. Emotional leadership's EFA and reliability analysis

Measurement	Factor Analysis					Reliability	
Item	Self-awareness skills	Self-management skills	Social-awareness skills	Relationship-management skills	Comm-unity	Alpha if Item deleted	Cronbach's
Lel12	.833	.170	.318	.019	.824	.792	.858
Lel11	.768	.199	.320	.135	.749	.807	
Lel14	.726	.211	.077	.397	.736	.824	
Lel13	.642	.141	.241	.380	.634	.848	
Lel22	.408	.687	.316	.090	.746	--	.787
Lel21	.385	.575	.485	.024	.716		
Lel33	.320	.271	.749	.147	.758	--	
Lel31	.251	.269	.714	.184	.679		
Lel41	.260	.330	.252	.661	.678	--	.762
Lel42	.242	.123	.520	.606	.711		
Eigen-value	3.036	2.233	3.586	1.895			
Variance description (%)	20.24	14.89	23.91	12.64			

Table 6. Individual Creativity's EFA and reliability analysis

Measurement Item	Factor Analysis			Reliability	
	Know. and exp.	Creative thinking skills	Job motivation	Communality	Alpha if Item deleted Cronbach α
Icr13	.872	.119	.172	.804	.844
Icr14	.835	.179	.227	.780	
Icr24	.011	.744	.316	.654	.637
Icr22	.383	.727	.149	.698	.602
Icr23	-.013	.693	.391	.619	.653
Icr21	.327	.615	-.109	.496	.746
Icr32	.006	.220	.764	.632	.757
Icr31	.220	.058	.758	.626	.752
Icr33	.151	.184	.744	.610	.764
Icr34	.137	.095	.729	.559	.759
Eigen-value	2.217	2.164	3.136		
Variance de- scription (%)	17.73	18.04	26.13		

Table 7. Organizational Innovation's EFA and reliability analysis

Measurement Item	Factor Analysis		Reliability	
	Organizational Innovation	Communality	Alpha if Item deleted	Cronbach α
Inn2	.833	.694	.794	.842
Inn3	.808	.654	.802	
Inn1	.790	.624	.809	
Inn5	.766	.586	.816	
Inn4	.722	.521	.828	
Eigen-value	3.078			
Variance description (%)	61.56			

to be 0.7 or higher, indicating that there was suitable reliability.

4.2 Convergent Validity and Discriminant Validity

This study conducted a CFA to determine the validity of the data to see whether the constructs were well explained with regard to the measurement items of transformational leadership consisting of four sub-factors, emotional leadership consisting of four sub-factors, individual creativity consisting of three sub-factors, and a single organizational innovation factor, and to validate the previous theories once again. The results of the analysis are summarized in Tables 8 and 9. In general, CFA verified the validity of the constructs in the two following steps.

First, convergent validity is an agreement between the construct and the item measuring it, and represents how well the construct is measured by the item. In other words, P-value must be 0.05 or below, standardized factor loading (β) 0.5 or above, Average Variance Extracted (AVE) 0.5 or above, and Construct Reliability (CCR) 0.7 or above.

Second, discriminant validity shows that there must be an indication of difference between two constructs. It is assumed that there is discriminant validity when AVE of each construct and the square root of the correlation coefficient between the two constructs is compared, and AVE turns out to be greater than the square root of the correlation coefficient.

The analysis results, in Table 8, show that the measurement items of all factors were significant at $P < 0.05$, and β (standardized factor loading) 0.5 or above, AVE 0.5 or above, and Construct Reliability (CCR) 0.7 or above in all cases, verifying the convergent validity. Moreover, as shown in Table 9, the greatest value out of the correlation coefficients among the constructs is 0.702, which is the square root of the correlation coefficient 0.838 between transformational leadership and emotional leadership, and therefore, not greater than the AVE of the two factors at 0.765 and 0.842. Thus, this verified the discriminant validity as well.

Table 8. Convergent validity analysis

Factors	Measurement Items	Unstandardized estimates	S.E	C.R	P	Standardized estimates (β)	AVE	CCR
Transformational leadership (LTL)	Charisma	.900	.064	14.059	.000	.799	.765	.929
	Intel.stimul.	.983	.072	13.718	.000	.785		
	Motivation	.937	.075-	12.539-	.000	.737		
	Indiv.consider.	1.000			-	.829		
Emotional leadership (LEL)	Self-awareness Self-mgt	.870	.065	13.335	.000	.749	.842	.955
		1.035	.059	17.588	.000	.886		
	Social-aware.	.979	.055	17.719	.000	.889		
	Relation. mgt.	1.000	-	-	-	.851		
Individual Creativity (ICR)	Know. and exp.	1.000	.101	-7.625	-.000	.731	.691	.870
	Cr. Think. skills	.769	.125	8.527	.000	.613		
	Job motivation	1.069				.766		
Organizational Innovation (INN)	Inn1	1.000	.103	10.937	.000	.727	.591	.878
	Inn2	1.129	.108	10.330	.000	.791		
	Inn3	1.115	.103	8.962	.000	.744		
	Inn4	.923	.114	9.812	.000	.643		
	Inn5	1.118				.705		

Table 9. Discriminant validity analysis

Division	LTL	LEL	ICR	INN	AVE	Remarks
LTL	1				.765	$(.838)^2 = .702$
LEL	.838***	1			.842	
ICR	.408***	.318***	1		.691	
INN	.614***	.606***	.388***	1	.591	

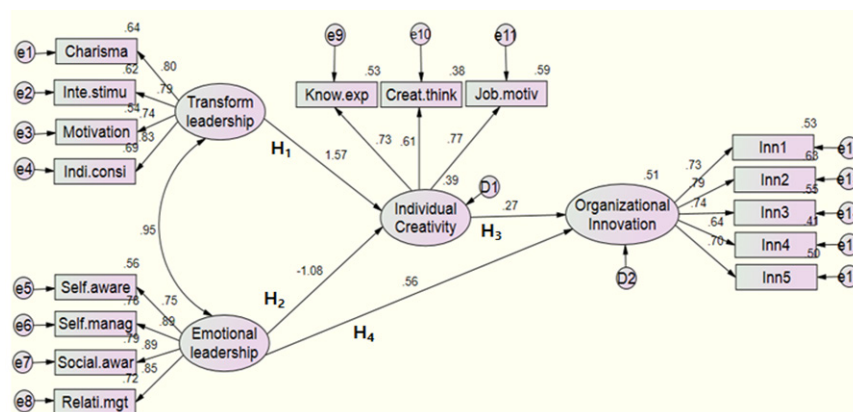
*** P<0.01

4.3 Model Fitness and Research Hypothesis Validation

This study conducted an analysis using SEM in order to validate the hypothesis of the causal relationship of transformational leadership, emotional leadership, and individual creativity that affects organizational innovation, as perceived by executives and employees

at small and medium manufacturers with less than 300 people. The validation procedure for the fitness of the measured model must include verification as to whether it satisfies the following standard regarding the actual data. In other words, it must satisfy the requirements of χ^2 . Df. $p>0.05$, $\chi^2/df<2$, GFI, AGFI, CFI, NFI, IFI>0.9, RMR, RMSEA <0.05.

As a result of the aforementioned EFA to validate the fitness of the measured model, this study calculated the average of items in each sub-factor after eliminating the measurement items that could not be combined together as a single factor, and formed new variables to complete the SEM as shown in Figure 2. After that, Amos was used for validation of the model fitness and Hypothesis 1~Hypothesis 4 ($H_1 \sim H_4$), and the analysis results are shown

**Figure 2.** Structural Equation Modeling (SEM) analysis results.

in Table 10. Furthermore, SPSS was used for validation of hypotheses ($H_{11} \sim H_{44}$) regarding whether each of the sub-factors would affect the constructs. These analysis results are shown in Table 11.

First, the research model fitness is analyzed as shown in Table 10: $\chi^2(186.8267df=99, p<0.001)$, $\chi^2/df=1.887$, GFI=0.903, AGFI=0.866, CFI=0.959, NFI=0.917, IFI=0.959, RMR=0.033, RMSEA=0.063. This is generally acceptable compared to the baseline fitness, and thus can be considered fit for explaining the causal relationship among the constructs in this study.

The validation results of Hypothesis 1 (H_1) show that transformational leadership had a significant positive effect on individual creativity, and thus Hypothesis 1 (H_1) was accepted. However, charisma among the sub-factors turned out to have the only significant positive effect on individual creativity, the remaining three factors, intellectual stimulation, motivation and individualized consideration did not have the significant positive effects.

For Hypothesis 2 (H_2), emotional leadership did not have a significant positive effect on individual creativity, and thus Hypothesis 2 (H_2) was dismissed. All of the sub-factors turned out to do not have a significant effect.

For Hypothesis 3 (H_3), individual creativity had a significant positive effect on organizational innovation, and thus Hypothesis 3 (H_3) was accepted. However, creative thinking skills among the sub-factors turned out not to have a significant effect.

Finally, for Hypothesis 4 (H_4), emotional leadership had a significant positive effect on organizational innovation, and thus Hypothesis 4 (H_4) was accepted. However, self-management skills among the sub-factors turned out to have the only significant positive effect on organizational innovation, the remaining three factors, self-awareness skills, social-awareness skills and relationship-management skills did not have the significant positive effects.

Table 10. AMOS'S analysis results

Hypothesis	Paths	R.W. (Estimates)	S.R.W. (Estimate)	S.E.	C.R.	P-value	Dismissal/ adoption
H1	LTL \rightarrow ICR	1.351	1.568	.497	2.719	.007	adoption
H2	LEL \rightarrow ICR	-.912	-1.080	.474	-1.921	.055	dismissal
H3	ICR \rightarrow INN	.314	.265	.092	3.408	***	adoption
H4	LEL \rightarrow INN	.563	.563	.079	7.152	***	adoption
Research model fitness	CMIN(χ^2)=186.827, df=99, P=.000, CMIN/df=1.887, GFI=.903, AGFI=.866, CFI=.959, NFI=.917, IFI=.959, RMR=.033, RMSEA=.063						

Table 11. SPSS'S analysis results

Hypothesis	Paths	b	S.E	β	t	P	VIF	Dismissal/adoption
H_{1-1}	Charisma \rightarrow ICR	.284	.075	.340	3.796	.000	2.201	adoption
H_{1-2}	Intellectual stimulation \rightarrow ICR	.109	.068	.145	1.610	.109	2.237	dismissal
H_{1-3}	Motivation \rightarrow ICR	.043	.063	-.058	-.685	.494	1.962	dismissal
H_{1-4}	Individual. Consider. \rightarrow ICR	.040	.067	.051	.597	.551	2.011	dismissal
fitness	$R^2=.200$, $R^2_{adj}=.186$, Durbin Watson=1.803, F=13.773, P-value=.000							
H_{2-1}	Self-awareness skills \rightarrow ICR	.018	.073	.023	.246	.806	2.075	dismissal
H_{2-2}	Self-management skills \rightarrow ICR	.045	.090	.057	.507	.613	3.152	dismissal
H_{2-3}	Social- awareness skills \rightarrow ICR	.124	.102	.148	1.212	.227	3.660	dismissal
H_{2-4}	Relationship mgt. skills \rightarrow ICR	.100	.087	.127	1.143	.254	3.042	dismissal
fitness	$R^2=.105$, $R^2_{adj}=.089$, Durbin Watson=1.826, F=6.469, P-value=.000							
H_{3-1}	Know. and experience \rightarrow INN	.156	.078	.157	2.011	.046	1.620	adoption
H_{3-2}	Creative think. skills \rightarrow INN	.028	.080	.026	.353	.724	1.427	dismissal
H_{3-3}	Job motivation \rightarrow INN	.278	.073	.285	3.786	.000	1.506	adoption
fitness	$R^2=.166$, $R^2_{adj}=.155$, Durbin Watson=1.787, F=14.705, P-value=.000							
H_{4-1}	Self-awareness skills \rightarrow INN	.137	.076	.139	1.796	.074	2.075	dismissal
H_{4-2}	Self-management skills \rightarrow INN	.240	.093	.244	2.568	.011	3.152	adoption
H_{4-3}	Social-awareness skills \rightarrow INN	.132	.107	.127	1.239	.217	3.660	dismissal
H_{4-4}	Relationship mgt. skills \rightarrow INN	.169	.091	.173	1.853	.065	3.042	dismissal
fitness	$R^2=.369$, $R^2_{adj}=.358$, Durbin Watson=1.841, F=32.197, P-value=.000							

5. Conclusion

5.1 Results Discussed

This study analyzed the effects of transformational leadership and emotional leadership on individual creativity and organizational innovation.

This study conducted an Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) on each of the constructs and eliminated the measurement items that are not combined into factors. Next, it calculated the average of the measurement items of each of the sub-factors that are newly constructed, designed a new SEM, and validated the hypotheses using Amos and SPSS. The following observations can be discussed based on the results of the analysis.

First, transformational leadership was accepted as it had a significant positive effect on individual creativity. This is in line with existing prior research². Essentially, behaviors of transformational leaders are closely related to the creativity of the working site, and the result proved that individual creativity can be enhanced by displaying support, empowerment, encouragement, and acknowledgement of the proposed visions or innovation. However, aside from charisma, none of the sub-factors had a significant effect on individual creativity.

Second, emotional leadership was dismissed as it did not have a significant positive effect on individual creativity. It was analyzed that none of the four sub-factors had a significant effect on individual creativity. Of late, much attention has been paid to emotional leadership, and the results of prior research show that creative performance occurs when emotional leadership, which serves to comfort discouraged employees and understand their emotions, is displayed in an organization^{27,43}.

Third, individual creativity was accepted as it had a significant positive effect on organizational innovation, suggesting that aside from individual creativity, the other sub-factors such as knowledge, experience, and intrinsic job motivation had a significant effect on organizational innovation.

Fourth, emotional leadership was accepted as it had a significant positive effect on organizational innovation and was the only sub-factor proving that self-management skills are the core factors. This is not irrelevant to the argument of existing research. Essentially, Goleman et al.²⁷ argued that creativity is displayed when self-management skills is a significant aspect of the emotional leadership

of leaders that break away from the current state and support and promote change.

5.2 Implications and Future Directions

First, this study showed different results from the arguments of prior researchers stating that emotional leadership is an influencing factor of individual creativity. This may be because there is a close relationship between a leader's individual emotional characteristics and an organization's emotional atmosphere in measuring the sub-factors of emotional leadership. In particular, there is a positive effect on creative behavior and individual performance when the leader displays positive encouragement and support. This is a phenomenon that can occur during an economic recession when the organization's negative factors are highlighted.

Second, idealized influence is the only sub-factor of transformational leadership that has a significant effect on individual creativity. This is not irrelevant to the fact that none of the four sub-factors of emotional leadership has a significant effect on individual creativity. Therefore, this phenomenon may be owing to the fact that the factors of transformational leadership such as intellectual stimulation, motivation, and individualized consideration, and the measurement details of emotional leadership such as self-awareness skills, self-management skills, social-awareness skills, and relationship-management skills mostly consist of the leader's individual emotional and sentimental attributes.

Third, the self-management skills factor is the only sub-factor of emotional leadership that has a significant effect on organizational innovation. This supports the fact that robust and thorough self-management of the leader is the core factor of organizational change and innovation as indicated by the aforementioned argument.

This study may have contributed to the research and analysis of the causal relationship between transformational leadership, emotional leadership, individual creativity, and organizational innovation. However, there are limitations in that it failed to consider the sample's area and size constraints as well as various elements of the range of measurement in organizational innovation. It is necessary to overcome these limitations and expand the appraised range of creativity and innovation to the individual, group, and organizational level, thus completing the framework of management consulting on organizational innovation.

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7. References

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