

Revista Científica General José María Córdova

(Colombian Journal of Military and Strategic Studies)

Bogotá D.C., Colombia

ISSN 1900-6586 (print), 2500-7645 (online)

Journal homepage: <https://www.revistacientificaesmic.com>

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How to cite: Norena-Chavez, D., Céliz Kuong, J. O., & Guevara, R. (2021). Influence of leadership styles on the innovative behavior of Peruvian cadets. *Revista Científica General José María Córdova*, 19(33), 29-50. <http://dx.doi.org/10.21830/19006586.732>

Published online: January 1, 2021

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Miles Doctus

Influence of leadership styles on the innovative behavior of Peruvian cadets

Influencia de los estilos de liderazgo en el comportamiento innovador de cadetes peruanos

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ABSTRACT. This research identified the influence of transactional and transformational leadership styles on innovative behavior. The research followed a cross-sectional quantitative methodological approach, with a correlational explanatory scope and non-experimental design. A sample of 386 cadets from the Chorrillos Military School, Coronel Francisco Bolognesi (Perú), was used. The results were assessed by modeling structural equations using partial least squares (PLS-SEM). It was found that there is an influence of the two leadership styles studied on the innovative behavior of the cadets. According to the variance explained, transactional leadership would explain 22%, and transformational leadership 31% of the variability of innovative behavior. Therefore, this research contributes to understanding the relationship between leadership and innovative behavior in the military.

KEYWORDS: innovation; leadership; military training; transactional leadership; transformational leadership

RESUMEN. Esta investigación busca determinar la influencia de los estilos de liderazgo transaccional y transformacional en el comportamiento innovador. La investigación siguió un enfoque metodológico cuantitativo, de corte transversal, de alcance correlacional explicativo y con diseño no experimental. Se empleó una muestra de 386 cadetes de la Escuela Militar de Chorrillos Coronel Francisco Bolognesi (Perú). Los resultados se evaluaron mediante el modelamiento de ecuaciones estructurales utilizando mínimos cuadrados parciales (PLS-SEM). Se encontró que existe una influencia de los dos estilos de liderazgo estudiados sobre el comportamiento innovador de los cadetes. De acuerdo con la varianza explicada, el liderazgo transaccional explicaría el 22 % y el liderazgo transformacional, el 31 % de la variabilidad del comportamiento innovador. Por lo tanto, esta investigación contribuye a comprender esta relación entre liderazgo y comportamiento innovador en el ámbito militar.

PALABRAS CLAVE: formación militar; innovación; liderazgo; liderazgo transaccional; liderazgo transformacional

Section: EDUCATION AND DOCTRINE • Scientific and technological research article

Received: September 27, 2020 • Accepted: December 17, 2020

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Introduction

Leadership has been examined from different fronts and academic areas for decades (Burns, 1978; Kolb, 1995; Quinn, 1985). In general terms, advances in this field of knowledge have attempted to reach a better understanding of leadership and its interactions with other variables, thus linking a leader's skills to certain qualities and behaviors (Afsar et al., 2016, 2017; Barroso et al., 2008). The emphasis given to the latter is its effect on behaviors of interest to institutions characterized by their hierarchy, like the military. In this particular context, variables such as leadership and innovative behavior are essential for the sustainability of operations (Hee & Young, 2019; Jansen & Delahaij, 2019). In this sense, the study of military leadership complements various academic approaches (Wolford, 2007; Horowitz et al., 2015) that attempt to explain these complex and hierarchical organizations' relationships.

Because there is an extensive proposal of leadership styles, this article seeks to select some particular theories to link them to innovative behavior. For decades, it has been argued that innovative behavior is vital to any institution's performance (Chen et al., 2012; García-Morales et al., 2008; Noruzy et al., 2013). Consequently, academia has tried to identify the factors that can stimulate innovative behavior. In this regard, transformational leadership has received much attention and has been linked to innovation performance (Chen et al., 2012; García-Morales et al., 2008; Gardner & Avolio, 1998; Jung et al., 2008; Noruzy et al., 2013; Senior & Fleming, 2006). There is also evidence that transactional leadership influences innovative behavior (Faraz et al., 2018; Pieterse et al., 2010). However, despite its great importance, military leadership has not received the standing it deserves regarding its effectiveness and efficiency. Military leadership has even been studied at the same level as technology and strategy, among others (Reiter & Wagstaff, 2018).

Given this background, this study analyzes leadership's transformational and transactional effects on innovative behavior in cadets in their second, third, and fourth years of higher education at the *Escuela Militar de Chorrillos Coronel Francisco Bolognesi*, located in Lima, Peru. The aim is to understand why certain leadership styles are related to innovative behavior in this type of population. Thus, this study's objective was to answer which leadership style explains innovative behavior best?

The research followed a theoretical explanation that proposes the link between both transactional and transformational leadership and innovative behavior. For the construction of the theoretical framework, seminal theories in leadership and innovation were used, such as those proposed by Burns (1978), complemented by Bass (1985; 1990b). The methodological design is then presented, explaining the sample analyzed and the measurement scales used. The most important descriptive and explan-

atory findings are described in the results section. Finally, the results are discussed, and conclusions are presented.

Theoretical framework

Transformational and transactional leadership styles

One of the most widely used leadership theories in academia is Tannenbaum and Schmidt's (1958), where leadership is measured according to whether it is focused on the manager or boss, or the subordinate or employee. The authors present a scale of 1 to 7. One end represents the emphasis on the manager's use of authority; the other shows the subordinate's area of freedom to decide and act. Another widely used theory is the Blake and Mouton (1964) *leadership grid*. Here, a ten-level grid is presented on each side. On the y-axis, the grid shows the concern for people (employee relations), and the x-axis presents the concern for the task (achievement of objective). The combination of these two axes' levels results in five leadership styles:

- a. The (x-9, y-1) result yields the authority-obedience leadership style, in which the manager gives instructions, and the employees carry them out.
- b. The (x-1, y-9) result yields the club-style leadership, in which the manager gives priority to creating a pleasant and harmonious work environment, at the expense of achieving the objective.
- c. The (x-1, y-1) result yields a leadership style of poor management, in which minimal attention is paid to achieving harmonious relationships among employees and achieving the objective.
- d. The (x-5, y-5) result yields a leadership style in which there is a balance between relationships and maintaining a good working environment with the achievement of the objective.
- e. The (x-9, y-9) result yields a team leadership style, in which the objective is achieved by engaging the employee and simultaneously maintaining a good working environment with high production.

Hersey and Blanchard's (1969) situational leadership theory shows leadership as a function of relationship and task behavior. That is, high relationship and low task, low relationship and low task, high task and low relationship, and high task and low relationship and follower maturity (high, moderate, low), and leader style (delegate, participate, sell, and tell). Thus, leadership styles in this theory result from the combination of task and relationship behavior and the maturity level of followers. It also takes into account seven bases of the leader's power: a) expert, b) based on information and data, c) referent, d) legitimate, e) reward-based, f) connection-based, and g) coercive.

However, the most widely used theory is the one proposed by Burns (1978), who defined leadership styles as *transformational* and *transactional*. Burns defines transformational leadership as the ability to positively influence the behavior of others and transactional leadership as focusing on the exchange of some incentive to perform a particular job. Subsequently, Bass (1990a, 1990b) added another style to the theory set forth by Burns' *laissez-faire* leadership, that is, leadership that is not present or non-leadership.

In 1978, Burns was the first author to introduce *transformational leadership*, indicating that this leadership occurs when leaders and followers help each other reach the next level of motivation. Bass (1985) determined that transformational leadership contains the following variables:

- a. Idealized influence. Leaders are admired, respected, and trusted; their behavior is highly ethical. This influence occurs in two ways; it is attributed or due to behaviors.
- b. Inspirational motivation. Leaders motivate their followers, give meaning and relevance to their work, and convey a vision of the future based on shared values and ideals, which excite and create optimism.
- c. Intellectual stimulation. Leaders stimulate their followers to be innovative and creative in reformulating problems and finding new ways of thinking.
- d. Individualized consideration. Leaders pay attention to the growth of people and their individual development needs, acting as mentors and providing new opportunities for improvement.

Avolio and Bass (1995) explained the behaviors that a leader must have to guide his followers and transform them. Much research has concluded that transformational leadership has a moderating effect on motivation, commitment, and job satisfaction (Judge & Piccolo, 2004; Lowe et al., 1996).

On the other hand, transactional leadership is based on an exchange relationship in which the leader expresses what he or she expects from his followers (Bass, 1999). This type of leadership involves several factors, the most important of which is the contingent reward. This factor implies that the leader focuses on exchanging resources (compensation, tangible and intangible support) for their efforts and performance. That is, it grants rewards when goals are achieved. It also includes management by passive exception, in which the leader monitors performance and takes corrective action when necessary. It is also based on setting standards for what constitutes effective performance. It involves detecting errors and acting immediately to correct them.

In brief, transactional leadership (Burns, 1978) is a more traditional form of compelling followers through a transactional reward that is often effective in satisfying lower-order needs. On the other hand, transformational leadership (Bass, 1985) seeks to

motivate to satisfy higher-order needs. This process involves cultural and organizational changes.

Non-leadership, *laissez-faire*, is more so an individual's behavior in leadership positions, which usually has an undesirable and even detrimental result for the organization. Bass and Avolio (2000) include two factors in this behavior. The first is management by the passive exception, in which leaders adopt a passive position, distant from followers, and intervene only when serious and critical problems arise. In non-leadership or *laissez-faire*, leaders avoid assuming responsibility, do not intervene, and leave things alone. In certain situations, this behavior can result in significant damage to the organization. Theories have been subsequently proposed that describe leadership from strictly psychological, social, and managerial approaches. However, Burns' (1978) theory of leadership styles, complemented by Bass (1990a, 1990b), is the most widely used.

Innovative behavior

Innovative behavior is important for an institution to be effective (Scott & Bruce, 1994; Shalley, 1995), even more so in environments facing change, contributing to improving competitiveness. It has been shown that workers who practice innovative behaviors gain advantages over those who do not (Islamutdinov, 2017; Kim & Koo, 2017; Scott & Bruce, 1994). That said, it is necessary to identify how leaders or hierarchical positions can encourage these behaviors.

Janssen (2005) defined innovative behavior as the process that includes a) idea generation, b) its promotion, and c) its execution to improve the performance of the organizations. Carmeli et al. (2006) added that innovative behavior is a process that involves the phases of a) problem recognition; b) idea and solution creation; c) work and promotion to improve and promote them; and d) creation of solution prototypes to the companies' benefit. On the other hand, according to Messmann and Mulder (2011), innovative behavior includes the processes of a) observation; b) listening; c) adaptation of ideas; d) action strategy creation; and e) search for allies.

Innovative behavior has been studied with demographic variables in education-related fields. The results have been that innovative behavior a) does not show significant effects when correlated with gender variable (Carmeli et al., 2006; Runhaar, 2008); b) correlates positively with age (Runhaar, 2008); c) is negatively correlated with age (Yang & Huang, 2008); and d) has no significant effect when correlated with the level of education (Yang & Huang, 2008).

Leadership and innovative behavior

While it is clear that leadership is an effective way of influencing innovative behaviors (Basu & Green, 1997), evidence of their importance in producing innovative effects is

limited. Both positive and negative effects have been found. Therefore, some authors have suggested moderating variables to improve the accuracy of these findings. In this sense, it is necessary to continue investigating this relationship, especially to test hypotheses in different contexts.

Such is the case of Michaelis et al. (2009), who sampled 198 workers in low and middle management positions. The authors found that transformational leadership was strongly related to followers' innovation implementation behavior. Likewise, they found that this relationship was moderated by the levels of perceived climate for follower initiative. In a similar line, Choi et al. (2016) tested the relationship between transformational leadership and innovative behavior through knowledge sharing and the moderating role of perceived organizational support in a large sample of a manufacturing company's workers (356). They established a significant relationship between leadership and behavior.

In contrast, another study examined the effect of transformational leadership on the creativity of 369 workers in the banking sector. The results indicated that, although this leadership style positively affects some dimensions of employee creativity and perceived organizational support, the mediating effect of perceived organizational support on the relationship between transformational leadership and some dimensions of employee creativity is not significant (Hou et al., 2018; Tayal et al., 2018).

Based on this theoretical review, the following research hypotheses are proposed:

H1: There is an influence of transactional leadership on innovative behavior in the *Escuela Militar de Chorrillos Coronel Francisco Bolognesi* cadets.

H2: There is an influence of transformational leadership on innovative behavior in the *Escuela Militar de Chorrillos Coronel Francisco Bolognesi* cadets.

Methodology

This research followed a cross-sectional cohort. The method was employed based on structural equation modeling (SEM) by the partial least squares (PLS) statistical method. SmartPLS 3.0 software was used to analyze the causal pathways (Ringle & Sarstedt, 2016). Following the data's descriptive analysis, two stages of the model recommended by Anderson and Gerbing (1988) and Hair et al. (2017) were evaluated, namely the evaluations of the measurement model (validity and reliability) and the structural model (predictive power, explanatory power, and testing the strength and significance of hypothesized relationships between latent variables).

This study was based on primary data obtained through two Likert-type surveys. The Janssen (2005) questionnaire was used for innovative behavior, while Bass and Avolio's (2000) *multifactor leadership questionnaire* (MLQ-5X) was used for leadership styles. A random sample of 386 cadets from the *Escuela Militar de Chorrillos* in Lima,

Peru, was used for data collection. According to the literature, the required sample size depends on the number of arrows pointing to the latent variables in the structural model (Hair et al., 2017). In this study, three arrows pointed to the latent variable, suggesting a smaller sample size (Wong, 2013). However, to safeguard the quality of the model and route modeling, it was decided to exceed the literature's minimum.

Data collection followed the informed consent protocols of both the institution and the participants. The cadets participating in this research were selected for their similar characteristics. Statistically, the population's similarity, therefore, the sample's, reduces variability and allows a greater reliability approach of the sample to the population. Also, the data were collected using the convenience sampling technique given the respondents' availability, as they belong to a specific organization.

It should be noted that each participant filled out the survey voluntarily. Respondents were informed in advance about the importance of the research and received an explanation of the questions in the questionnaires. They were also assured of the confidentiality of their personal information. Questionnaires were handed out, and the surveys were collected. Moreover, care was taken to ensure the reliability of the responses. Finally, SmartPLS 3 and Stata 15 were used to analyze the data.

Results

Descriptive statistics

The descriptive results correspond to the sample of cadets surveyed at the *Escuela Militar de Chorrillos Coronel Francisco Bolognesi* in their second, third, and fourth years of higher education. The sample was made up of 94.39% males and 5.61% females. In terms of age, 35.7% of the participants were between 18 and 20 years old; 54.07% were between 21 and 23 years old, and the rest were above 23 years old. Sixty-three percent of the participants were born in departments of the Peruvian coast, and 28.76% were born in the Peruvian highland region. Meanwhile, a smaller group was from the departments of the Amazon jungle region (8.18%). Details are presented in Table 1.

Table 1. Demographic characteristics of the cadets at the *Escuela Militar de Chorrillos*

Variable	Category	Frequency	Proportion (%)
Age	18-20 years	136	35.7
	21-23 years	206	54.07
	24-27 years	39	10.23
Sex	Men	353	94.39
	Women	21	5.61

Source: Created by the authors.

In this first stage, the indicators of the three latent variables and the age variable are presented (Table 2). The arithmetic mean and standard deviation and the minimum and maximum values of each variable are described. Except for the age variable, which shows a low dispersion concerning the mean, the others showed a minimum level of dispersion.

Table 2. Measures of variable central tendency and dispersion

Variable	Indicators	Cases	Mean	SD	Minimum	Maximum
Age		381	21.2	1.7	14	27
	11	383	3.0	1.1	0	4
	12	381	2.9	0.9	0	4
Leadership	13	382	2.0	1.3	0	4
	14	371	3.0	0.9	0	4
	15	383	2.0	1.4	0	4
	16	375	3.2	0.9	0	4
	17	379	1.3	1.4	0	4
	18	377	3.2	0.9	0	4
	19	383	3.2	0.9	0	4
	110	378	3.2	0.9	0	4
	111	371	3.0	1.0	0	4
	112	375	1.4	1.5	0	4

Table continues...

Variable	Indicators	Cases	Mean	SD	Minimum	Maximum
Leadership	l13	379	3.2	0.9	1	4
	l14	380	3.2	0.9	0	4
	l15	378	3.2	0.9	0	5
	l16	376	3.1	1.0	0	4
	l17	373	1.9	1.5	0	5
	l18	376	2.9	1.2	0	4
	l19	372	2.4	1.3	0	5
	l20	377	1.5	1.4	0	4
	l21	374	3.1	1.0	0	4
	l22	372	3.1	1.5	0	4
	l23	374	3.2	1.0	0	4
	l24	375	2.5	1.2	0	4
	l25	377	3.1	1.0	0	4
	l26	374	3.1	1.0	0	4
	l27	373	2.7	1.1	0	4
	l28	368	1.6	1.5	0	4
	l29	372	3.1	1.0	0	4
	l30	376	2.9	1.0	0	4
	l31	375	3.1	0.9	0	4
	l32	372	3.1	0.9	0	4
	l33	367	2.1	1.4	0	4
	l34	373	2.9	1.1	0	4
	l35	372	3.2	0.9	0	4
	l36	363	3.3	0.9	0	4
	l37	370	3.1	0.9	0	4
	l38	369	3.1	1.0	0	4
	l39	366	3.1	1.0	0	4
	l40	372	3.1	1.0	0	4

Table continues...

Variable	Indicators	Cases	Mean	SD	Minimum	Maximum
Innovative behavior	l41	369	3.2	0.9	0	4
	l42	367	3.1	0.9	0	4
	l43	370	3.1	0.9	0	4
	l44	371	3.1	0.9	0	4
	l45	365	3.2	0.9	0	6
	ib1	377	5.4	1.7	1	7
	ib2	371	5.5	1.5	1	7
	ib3	365	5.4	1.6	1	7
	ib4	366	5.3	1.6	1	7
	ib5	368	5.4	1.5	1	7
	ib6	369	5.6	1.4	1	7
	ib7	370	5.5	1.5	1	7
	ib8	370	5.5	1.5	1	7
	ib9	372	5.6	1.5	1	7

SD = Standard deviation.

Source: Created by the authors.

PLS-SEM was used for data analysis. First, for the test of the measurement model, validity and reliability were calculated: a) internal consistency using Cronbach's alpha test and composite reliability; b) convergent validity through indicator reliability and average variance extracted (AVE); and c) discriminant validity, using the heterotrait-monotrait ratio of correlations (HTMT) and the R^2 between variances. Then, the hypotheses were evaluated using the structural model through bootstrapping. Subsequently, the correlations of the model variables were presented for the sample of the *Escuela Militar de Chorrillos* cadets. The correlations are the result of a sample of 386 respondents (Table 3).

Evaluation of the measurement model

In this first stage, the contribution of each item of each latent variable to the measurement scale was evaluated. The factor loadings for the indicators of the transformational leadership, transactional leadership, and innovative behavior variables exceed the values of 0.708 recommended by Carmines and Zeller (1979) (Tables 4 and 5), which indicates that the model presented has high composite reliability. However, some indicators show minimal factor loadings, such as indicator l18 (0.473) and indicators of transformational leadership that show loadings between 0.6 and 0.708.

Table 4. Measurement model evaluation results

Variables	Indicators	Loads
Transactional leadership	l11	0.56
	l16	0.69
	l24	0.5
	l27	0.45
	l35	0.64
	l4	0.6
Innovative behavior	ib1	0.83
	ib2	0.82
	ib3	0.84
	ib4	0.82
	ib5	0.85
	ib6	0.78
	ib7	0.84
	ib8	0.82
	ib9	0.75

Source: Created by the authors.

Table 5. Results of the evaluation of the measurement model

Variables	Indicators	Charges
Transformational leadership	l10	0.65
	l13	0.71
	l14	0.63
	l15	0.63
	l18	0.47
	l19	0.1
	l23	0.58
	l25	0.59
	l26	0.64

Table continues...

Variables	Indicators	Charges
Innovative behavior	l29	0.6
	l30	0.57
	l31	0.72
	l32	0.65
	l34	0.55
	l35	0.6
	ib1	0.83
	ib2	0.82
	ib3	0.84
	ib4	0.82
	ib5	0.85
	ib6	0.79
	ib7	0.85
	ib8	0.82
	ib9	0.75

Source: Created by the authors.

Validity and reliability

Regarding the internal reliability and divergent validity, the expected values for Cronbach's alpha (α) and composite reliability must exceed 0.7. For convergent validity, the AVE values must be greater than 0.5. Table 6 shows the values for the three latent variables.

Table 6. Validity and reliability

	α	Composite reliability	AVE	R2
Innovative behavior	.94	.95	0.67	
Transactional leadership	.60	.75	0.33	
Transformational leadership	.86	.89	0.36	
Transactional L. \rightarrow IB				.22
Transformational L. \rightarrow IB				.31

Source: Created by the authors.

As for discriminant validity, the interrelationships of the extracted constructs were taken into consideration. This analysis demonstrates the extent to which one construct is different from the other. In this study, the Fornell-Larcker criterion was used, in which the square root of the AVE must be greater than the correlations with other variables (Fornell & Larcker, 1981). Table 7 shows these results.

Table 7. Fornell-Larcker criterion for analyzing discriminant validity

	1	2
1. Innovative behavior	.82	
2. Transactional leadership	.47	.58
1. Innovative behavior	.82	
2. Transformational leadership	.56	0.60

Note: The square root of the AVE value (bold diagonal), the other data are correlations of the latent variables.

Source: Created by the authors based on the results obtained in SmartPLS 3.

The Fornell-Larcker criterion is standard and suitable for measuring discriminant validity. It is a robust criterion, part of the various statistical techniques used to detect multicollinearity problems.

Evaluation of the structural model

The PLS-SEM technique aims to maximize the variance explained. Therefore, it is effective for constructs with latent variables (Hair et al., 2017). The structural model analysis using structural equations showed different goodness-of-fit indices between the influence of transformational leadership and transactional leadership with innovative behavior. The purpose of this study was to find the most robust relationship of these two variables with innovative behavior.

Thus, Figure 1 shows the prediction of transactional leadership on innovative behavior, with an explained variance of 0.221, while Figure 2 shows the influence of transformational leadership on innovative behavior, with an explained variance of 0.310. This result means that the first model's explanatory power (R^2) is 22.1%, while the second is 31%. The predictive relevance of the model was also measured (Q^2) to complement its structural evaluation. Acceptable values were found for both models: model 1 (Figure 1) has a value of 0.145, while the predictive significance of model 2 (Figure 2) is 0.206. For both cases, the values are positive and mean values (Chin, 1998), which helps the structural model's predictive relevance.

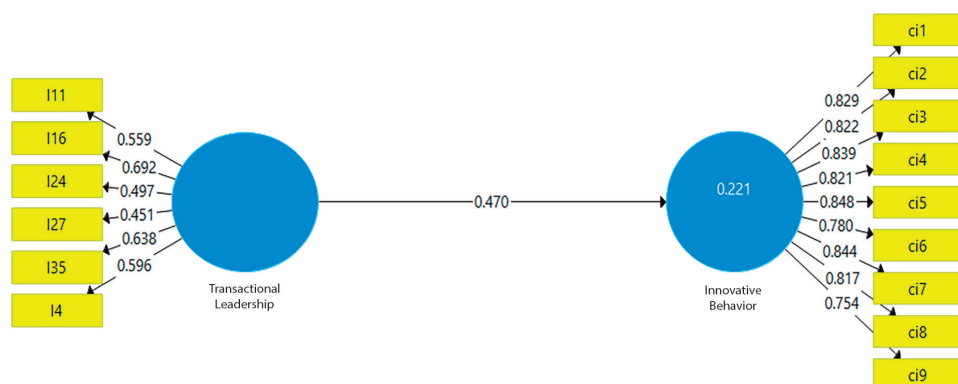


Figure 1. Conceptual model of the influence of transactional leadership on the innovative behavior of the *Escuela Militar de Chorrillos* cadets.

Source: Created by the authors based on the results obtained in SmartPLS 3.

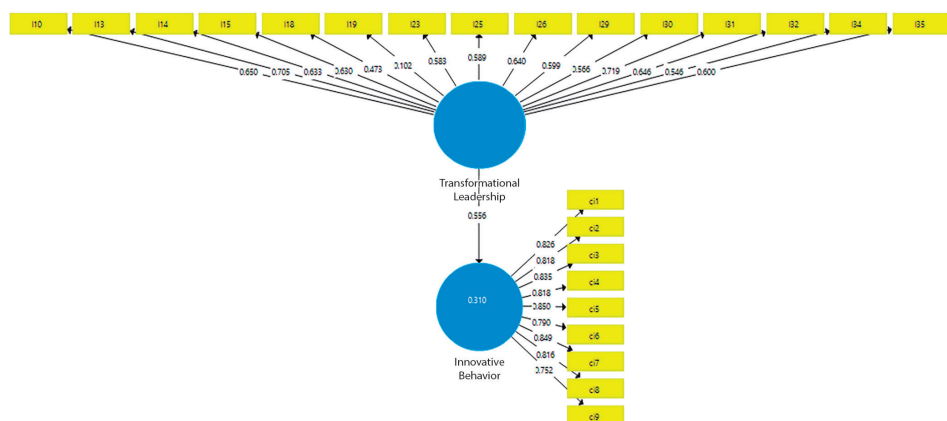


Figure 2. Conceptual model of the influence of transformational leadership on the innovative behavior of the *Escuela Militar de Chorrillos* cadets.

Source: Created by the authors based on the results obtained in SmartPLS 3.

As for the causal pathways or patterns, that is, the relationships between the three constructs of the structural model, significant values were found for both leadership styles. The path coefficient of transactional leadership toward innovative behavior is 0.271, while transformational leadership toward innovative behavior is 0.441. Furthermore, both relationships are statistically significant, thus accepting the two hypotheses of the study. Therefore, there is an influence of transactional leadership on innovative behavior, as well as an influence of transformational leadership on this behavior, in the *Escuela Militar de Chorrillos Coronel Francisco Bolognesi* cadets (Table 8).

Table 8. Route coefficients and results of bootstrapping

Causal pathways	Route coefficients	Bootstrapping		
		Sample mean	SD	<i>p</i>
Transactional L. → IB	.271	.27	.05	<.001
Transformational L. → IB	.441	.45	.04	<.001

SD = standard deviation; *p* = level of significance.

Source: Created by the authors based on the results obtained in SmartPLS 3.

Discussion

The main objective of this study was to examine the influence of the leadership styles proposed by Burns (1978) —the most studied and accepted in the literature— on the innovative behavior of a group of 386 second, third, and fourth-year cadets of the *Escuela Militar de Chorrillos Coronel Francisco Bolognesi*. The two proposed research hypotheses were accepted, leading to the conclusion that both transactional and transformational leadership positively and significantly influence innovative behavior. According to the explained variance (R^2), both leadership styles, transactional and transformational, would explain 22.1% and 31% of the model’s variability, respectively.

The empirical evidence suggests similar results in terms of the importance of each latent variable included in the model and the associations between them. Regarding leadership as a predictor variable of innovation, Darawong (2020) points out that transformational leadership positively impacts the generation of new products for high innovation. Pieterse et al. (2010) argue that transformational leadership, in contrast to transactional leadership, results in innovative behavior. However, empirical evidence for this relationship is scarce and inconsistent. This argument supports the exploratory nature of this study and encourages addressing these issues in future research.

Knezović and Drkić (2020) investigated the determinants of innovative work behavior in 371 employees and the role of the moderating role of transformational leadership in the context of small and medium-sized enterprises. They found that transformational leadership affects organizational justice and innovative work behavior in its moderating role. Although this study has a linear relationship, it can be seen that similar results are observed even in more advanced analyses.

On the other hand, Bednall et al. (2018) note that studies on the effects of transformational leadership on innovative behavior yield mixed results. The authors argue that for transformational leadership to have positive effects on innovative behavior, it must occur in contexts of both low and high levels of transformational leadership.

There are a few reasons to explain these findings. First, the direct effect of both cadets' leadership styles on innovative behavior was neither mediated nor moderated by intervening variables. This situation could explain the coefficients of R^2 and correlations below the minimum expected values. Second, under the limitation of a cross-sectional study, time may affect the estimation of the influence of the direct effect of both leadership styles on innovative behavior.

Likewise, an essential argument in the relationship between leadership and innovation lies in analyzing transactional leadership and innovative work behavior. The authors, applying the same statistical technique (PLS-SEM) as this research, found that transactional leadership had a direct positive relationship with innovative work behavior (Faraz et al., 2018). Similarly, evidence was found that transactional leadership is positively related to creativity and specific behaviors (Ma & Jiang, 2018).

In research close to this study, Prasad and Junni (2016) analyzed the influence of a CEO's transformational and transactional leadership on organizational innovation as mediated by entrepreneurial dynamism. The researchers found that transformational and transactional leadership positively influenced organizational innovation. However, a more significant influence of transformational leadership was found in dynamic environments. Similarly, Aryee et al. (2012) found relationships between transformational leadership and work engagement and between the latter and innovative behavior. In this regard, some studies argue that leadership is an important contextual factor that influences the creativity and innovation of workers (Anderson et al., 2014; Shalley & Gilson, 2004).

This research is one of the first at the national level to empirically measure variables such as leadership and innovative behavior in a particular military context. It is worth mentioning that previous research with similar findings on the importance of leadership was based on historical data and particular events (Reiter & Wagstaff, 2018; Ricks, 2009). Consequently, the presentation of this theoretical model is exploratory and needs studies to validate its findings. Future research should also consider military leadership at different hierarchical levels.

In general terms, it is not yet defined which leadership styles are the strongest predictors for certain variables, particularly for innovative behavior. In this regard, several authors have highlighted the inadequate leadership approach, which has only further exacerbated the problem (Hughes et al., 2018; Lee et al., 2015). Therefore, future studies should approach leadership theory with an eye to styles or approaches. In this way, the leader's influence on other variables would be measured more accurately.

Conclusion

This study found that transactional leadership has a positive and significant effect on innovative behavior, with an explained variance of 0.221. Transformational leadership also has a positive and significant effect on this behavior, with an explained variance of 0.310. Likewise, the ratios between the constructs of both relationships were 0.271 and 0.441, respectively. The path coefficient is considered a measure of relationship when the structural model includes only one independent variable, as in this case.

Research has also shown that leadership and innovative behavior are growing areas of study and are primarily exploratory. Theoretical and empirical evidence shows that leadership is a variable that can drive or hinder innovation. Therefore, empirical research is needed to better understand the dynamics of these variables and identify the influence of leadership on innovation.

The findings of this study contribute to both theory and practice. They evidenced that several leadership and innovation issues have not been explicitly studied. A framework has been provided that explains the mechanism of influence of transformational and transactional leadership on innovative behavior. In addition to its theoretical contributions, this study has significant business implications. As can be seen from the results, leadership plays a vital role in driving innovative behavior in institutions, promoting a culture of innovation and leadership within them.

In military training, leadership has not received due attention despite the evidence in this field that has demonstrated its importance for military performance and effectiveness. This study's findings expose the need to focus efforts on this variable, which is as much a priority as the adoption of new technologies and strategies. Military organizations are complex, so they require tools for better understanding and performance.

Now, while this study's findings provide theoretical and practical contributions, they also have limitations. Because it is a cross-sectional study applied only to a particular group of cadets, its results cannot be generalized. Therefore, longitudinal research is suggested. Another limitation is that other variables that could contribute to the specification of the proposed model were not included. In this regard, future research may incorporate mediating or moderating variables. Also, future studies could analyze new relationships under the current context of the COVID-19 pandemic. Finally, researchers undertaking future studies should pose new questions, new approaches to addressing problems so that the field can examine different theoretical proposals to generate recommendations for stakeholders.

Acknowledgments

The authors wish to thank the Army of Peru for its support in the production of this article.

Disclaimer

The authors declare that there is no potential conflict of interest related to the article.

Funding

The authors declare no source of funding for this article.

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References

- Afsar, B., Badir, Y., & Kiani, U. S. (2016). Linking spiritual leadership and employee proenvironmental behavior: The influence of workplace spirituality, intrinsic motivation, and environmental passion. *Journal of Environmental Psychology*, 45, 79-88. <https://doi.org/10.1016/j.jenvp.2015.11.011>
- Afsar, B., Badir, Y., Saeed, B., & Hafeez, S. (2017). Transformational and transactional leadership and employee's entrepreneurial behavior in knowledge-intensive industries. *The International Journal of Human Resource Management*, 28(2), 307-332. <https://doi.org/10.1080/09585192.2016.1244893>
- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411-423. <http://dx.doi.org/10.1037/0033-2909.103.3.411>
- Anderson, N., Potočník, K., & Zhou, J. (2014). Innovation and creativity in organizations: A state-of-the-science review and prospective commentary. *Journal of Management*, 40(5), 1297-1333. <https://doi.org/10.1177/0149206314527128>

- Aryee, S., Walumbwa, F. O., Zhou, Q., & Hartnell, C. A. (2012). Transformational leadership, innovative behavior, and task performance: Test of mediation and moderation processes. *Human Performance*, 25(1), 1-25. <https://doi.org/10.1080/08959285.2011.631648>
- Avolio, B. J., & Bass, B. M. (1995). Individual consideration viewed at multiple levels of analysis: A multi-level framework for examining the diffusion of transformational leadership. *The Leadership Quarterly*, 6(2), 199-218. [https://doi.org/10.1016/1048-9843\(95\)90035-7](https://doi.org/10.1016/1048-9843(95)90035-7)
- Barroso C., C., Villegas P., M., & Casillas B., J. (2008). Transformational leadership and followers' attitudes: The mediating role of psychological empowerment. *The International Journal of Human Resource Management*, 19, 1842-1863. <https://doi.org/10.1080/09585190802324601>
- Bass, B. M. (1985). *Leadership and performance beyond expectations*. Free Press.
- Bass, B. M. (1990a). From transactional to transformational leadership: Learning to share the vision. *Organizational Dynamics*, 18(3), 19-31.
- Bass, B. M. (1990b). *Handbook of leadership: Theory, research and managerial implications*. The Free Press.
- Bass, B. M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology*, 8(1), 9-32. <https://doi.org/10.1080/135943299398410>
- Bass B. M., & Avolio, B. J. (2000). *MLQ Multifactor Leadership Questionnaire*. Sampler set: technical report, leader form, rater form, and scoring key for MLQ Form 5XShort (2nd ed.). Mindgarden.
- Basu, R., & Green, S. G. (1997). Leader-member exchange and transformational leadership: An empirical examination of innovative behaviors in leader-member dyads. *Journal of Applied Social Psychology*, 27(6), 477-499. <https://doi.org/10.1111/j.1559-1816.1997.tb00643.x>
- Bednall, T. C., Rafferty, A., Shipton, H., Sanders, K., & Jackson, C. (2018). Innovative behaviour: How much transformational leadership do you need? *British Journal of Management*, 29(4), 796-816.
- Blake, R., & Mouton, J. (1964). *The managerial grid: The key to leadership excellence*. Gulf Publishing Company.
- Burns, J. M. (1978). *Leadership*. Harper & Row.
- Carmeli, A., Meitar, R., & Weisberg, J. (2006). Self-leadership skills and innovative behavior at work. *International Journal of Manpower*, 27, 75-90. <https://bit.ly/3rlmnlq>
- Carmines, E. G., & Zeller, R. A. (1979). *Reliability and validity assessment*. Sage.
- Chen, M. Y., Lin, C. Y., Lin, H. E., & McDonough, E. F. (2012). Does transformational leadership facilitate technological innovation? The moderating roles of innovative culture and incentive compensation. *Asia Pacific Journal of Management*, 29(2), 239-264. <https://doi.org/10.1007/s10490-012-9285-9>
- Chin, W. (1998). The partial least square approach to structural equation modelling. En G. Marcoulides (Ed.), *Modern methods for business research* (pp. 295-369). Lawrence Erlbaum.
- Choi, S. B., Kim, K., Ullah, S. E., & Kang, S. W. (2016). How transformational leadership facilitates innovative behavior of Korean workers. *Personnel Review*, 45(3), 459-479. <https://doi.org/10.1108/PR-03-2014-0058>
- Darawong, C. (2020). The influence of leadership styles on new product development performance: The moderating effect of product innovativeness. *Asia Pacific Journal of Marketing and Logistics* (pre-prensa). <https://doi.org/10.1108/APJML-05-2019-0290>.
- Faraz, N. A., Yanxia, C., Ahmed, F., Estifo, Z. G., & Raza, A. (2018). The influence of transactional leadership on innovative work behavior—a mediation model. *European Journal of Business and Social Sciences*, 7(1), 51-62.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.

- García-Morales, V. J., Lloréns-Montes, F. J., & Verdú-Jover, A. J. (2008). The effects of transformational leadership on organizational performance through knowledge and innovation. *British Journal of Management*, 19(4), 299-319. <https://doi.org/10.1111/j.1467-8551.2007.00547.x>
- Gardner, W. L., & Avolio, B. J. (1998). The charismatic relationship: A dramaturgical perspective. *Academy of Management Review*, 23(1), 32-58. <https://doi.org/10.5465/amr.1998.192958>
- Hair, J. F., Hult, G. T., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage.
- Hee, C., & Young, J. (2019). Effects of psychological ownership, self-leadership, and social exchange relationships on innovative behavior of military hospital personnel. *Korean Journal of Occupational Health Nursing*, 28(3), 166-175.
- Hersey, P., & Blanchard, K. H. (1969). Life cycle theory of leadership. *Training & Development Journal*, 23(5), 26-34.
- Horowitz, M. C., Stam, A. C., & Ellis, C. M. (2015). *Why leaders fight*. Cambridge University Press.
- Hou, X., Li, W., & Yuan, Q. (2018). Frontline disruptive leadership and new generation employees' innovative behaviour in China: The moderating role of emotional intelligence. *Asia Pacific Business Review*, 24(4), 459-471.
- Hughes, D. J., Lee, A., Tian, A. W., Newman, A., & Legood, A. (2018). Leadership, creativity, and innovation: A critical review and practical recommendations. *The Leadership Quarterly*, 29(5), 549-569.
- Islamutdinov, V. F. (2017). Efficiency assessment and development forecast of the institutions stimulating the innovative behavior of economic entities in a resource-extraction region. *Journal of Applied Economic Sciences (JAES)*, 12(49), 808-819. <https://bit.ly/37Hy3qY>
- Jansen, M. M., & Delahaij, R. (2019). Leadership acceptance through the lens of social identity theory: A case study of military leadership in Afghanistan. *Armed Forces & Society*, 46(4), 657-676. <https://doi.org/10.1177%2F0095327X19845027>
- Janssen, O. (2001). Fairness perceptions as a moderator in the curvilinear relationships between job demands, and job performance and job satisfaction. *Academy of Management Journal*, 44, 1039-1050. <https://doi.org/10.5465/3069447>
- Janssen, O. (2005). The joint impact of perceived influence and supervisor supportiveness on employee innovative behaviour. *Journal of Occupational and Organizational Psychology*, 78(4), 573-579. <https://doi.org/10.1348/096317905X25823>
- Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology*, 89(5), 755-768.
- Jung, D. D., Wu, A., & Chow, C. W. (2008). Towards understanding the direct and indirect effects of CEOs' transformational leadership on firm innovation. *The Leadership Quarterly*, 19(5), 582-594. <https://doi.org/10.1016/j.leaqua.2008.07.007>
- Kim, M. S., & Koo, D. W. (2017). Linking LMX, engagement, innovative behavior, and job performance in hotel employees. *International Journal of Contemporary Hospitality Management*, 29(12), 3044-3062. <https://doi.org/10.1108/IJCHM-06-2016-0319>
- Knezović, E., & Drkić, A. (2020). Innovative work behavior in SMEs: The role of transformational leadership. *Employee Relations: The International Journal* (pre-prensa). <https://doi.org/10.1108/ER-03-2020-0124>
- Kolb, J. A. (1995). Leader behaviors affecting team performance: Similarities and differences between leader/member assessments. *The Journal of Business Communication*, 32(3), 233-248. <https://doi.org/10.1177/002194369503200302>
- Lee, A., Martin, R., Thomas, G., Guillaume, Y., & Maio, G. R. (2015). Conceptualizing leadership perceptions as attitudes: Using attitude theory to further understand the leadership process. *The Leadership Quarterly*, 26(6), 910-934. <https://doi.org/10.1016/j.leaqua.2015.10.003>

- Lowe, K. B., Kroeck, K. G., & Sivasubramaniam, N. (1996). Effectiveness correlates of transformational and transactional leadership: A meta-analytic review of the MLQ literature. *The Leadership Quarterly*, 7(3), 385-425.
- Ma, X., & Jiang, W. (2018). Transformational leadership, transactional leadership, and employee creativity in entrepreneurial firms. *The Journal of Applied Behavioral Science*, 54(3), 302-324. <https://doi.org/10.1177/0021886>
- Messmann, G., & Mulder, R. H. (2011). Innovative work behaviour in vocational colleges: Understanding how and why innovations are developed. *Vocations and Learning*, 4, 63-84. <https://doi.org/10.1007/s12186-010-9049-y>
- Michaelis, B., Stegmaier, R., & Sonntag, K. (2009). Shedding light on followers' innovation implementation behavior. *Journal of Managerial Psychology*, 25(4), 408-429. <https://doi.org/10.1108/02683941011035304>
- Noruzi, A., Dalfard, V. M., Azhdari, B., Nazari-Shirkouhi, S., & Rezazadeh, A. (2013). Relations between transformational leadership, organizational learning, knowledge management, organizational innovation, and organizational performance: An empirical investigation of manufacturing firms. *The International Journal of Advanced Manufacturing Technology*, 64(5-8), 1073-1085. <https://doi.org/10.1007/s00170-012-4038-y>
- Pieterse, A. N., Van Knippenberg, D., Schippers, M., & Stam, D. (2010). Transformational and transactional leadership and innovative behavior: The moderating role of psychological empowerment. *Journal of Organizational Behavior*, 31(4), 609-623. <https://doi.org/10.1002/job.650>
- Prasad, B., & Junni, P. (2016). CEO transformational and transactional leadership and organizational innovation. *Management Decision*, 54(7), 1542-1568. <https://doi.org/10.1108/MD-11-2014-0651>
- Quinn, J. B. (1985). Managing innovation: controlled chaos. *Harvard Business Review*, 63(3), 73-84.
- Reiter, D., & Wagstaff, W. A. (2018). Liderazgo y eficacia militar. *Análisis de Política Exterior*, 14(4), 490-511.
- Ricks, T. E. (2009). *The gamble: General Petraeus and the American military adventure in Iraq*. Penguin.
- Ringle, C.M., & Sarstedt, M. (2016). Gain more insight from your PLS-SEM results: The importance-performance map analysis. *Industrial Management & Data Systems*, 116(9), 1865-1886. <http://dx.doi.org/10.1108/IMDS-10-2015-0449>
- Runhaar, P. (2008). Promoting teachers' professional development [unpublished doctoral dissertation, Universiteit Twente, Enschede, Netherlands].
- Scott, S. G., & Bruce, R. A. (1994). Determinants of innovative behavior: A path model of individual innovation in the workplace. *Academy of Management Journal*, 37, 580-607. <https://doi.org/10.5465/256701>
- Senior, B., & Fleming, J. (2006). *Organizational change*. Prentice Hall.
- Shalley, C. E. (1995). Effects of coercion, expected evaluation, and goal setting on creativity and productivity. *Academy of Management Journal*, 38(2), 483-503. <https://doi.org/10.5465/256689>
- Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *The Leadership Quarterly*, 15(1), 33-53. <https://doi.org/10.1016/j.leaqua.2003.12.004>
- Tannenbaum, R., & Schmidt, W. (1973). How to choose leadership pattern. *Harvard Business Review*, 36(2), 95-101.
- Tayal, R., Upadhyay, R., Yadav, M., Rangnekar, S., & Singh, R. (2018). The impact of transformational leadership on employees' acceptance to change: Mediating effects of innovative behaviour and moderating effect of the use of information technology. *VINE. Journal of Information and Knowledge Management Systems*, 48(4), 559-578. <https://doi.org/10.1108/VJIKMS-05-2018-0039>
- Wolford, S. (2007). The turnover trap: New leaders, reputation, and international conflict. *American Journal of Political Science*, 51(4), 772-788.

- Wong, K. K. (2013). Partial least squares structural equation modeling (PLS-SEM) techniques using SmartPLS. *Marketing Bulletin*, 24(1), 1-32.
- Yang, S. C., & Huang, Y.-F. (2008). A study of high school English teachers' behavior, concerns and beliefs in integrating information technology into English instruction. *Computers in Human Behavior*, 24(3), 1085-1103. <https://doi.org/10.1016/j.chb.2007.03.009>