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The Relationship between Managers' Cognitive Style and Their Leadership Type as Moderated by Organizational Culture

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Abstract

Current research examined the relationship between managers' cognitive style and their leadership type as moderated by organizational culture. The perceptions of subordinates were surveyed to explore the relationships. The population of the current study was English speaking knowledge workers, who were subordinates under a manager at least for three years. The sample consisted of 140 subordinates gathered through snowball sampling method. The Organizational Culture Assessment Instrument (OCAI), Kirton's Adaption-Innovation Inventory (KAI) and Managerial Behavior Instrument (MBI) were used as measurements. Hierarchical multiple regressions were used to test 24 hypotheses of the study. While the adaptive cognitive style could be a predictor of producer, hard-driver, regulator, and monitor leadership types, the innovative cognitive style could not predict any leadership type. The findings of current research contribute to the study of behavioral complexity in leadership by introducing a new paradigm in which the effectiveness of managers originates from the coordination between their adaptive cognitive style and compete and control oriented leadership types.

Keywords: Cognitive style; Leadership type; Organizational culture

The Relationship between Managers' Cognitive Style and Their Leadership Type as Moderated by Organizational Culture

The objective of current study was to discover the extent to which organizational culture could moderate the relationship between managers' cognitive style and their leadership type. To achieve the objective, the perceptions of subordinates were surveyed quantitatively. Researchers have already explored the relationship between managers' personality and their leadership type [1-3], but the extent to which organizational cultural orientation of a unit could moderate the relationship was not clear to the date of current research. Researchers admitted that organizational culture is rooted deeply in personal and organizational values [1,4,5]. They acknowledged that managers follow these values according to their cognitive capacity [6,7], but scholars have been almost silent on the effects of organizational culture on managers' cognitive style in relation to their leadership type. It was also claimed that the leadership types are mirrors of personal values [8-10], but it was not known whether personal values necessarily represent the cognitive style of their holders. At best, Cameron et al. [11] Competing Values Framework (CVF) provides a behavioral basis to determine leadership types by competing values that managers act upon, but it is negligent to the impact of cognitive styles on managers' leadership types. Current study attempted to fill these gaps by examining three variables of cognitive style, leadership type and organizational culture based on three theoretical pillars: Kirton's [12] Adaption-Innovation theory, Hooijberg and Quinn's [13] Behavioral Complexity theory, and Quinn and Cameron's [14] Competing Values Framework.

Current study examined whether managers' cognitive style (independent variable) affects their leadership type (dependent variable), and what role, if any, does the organizational cultural orientation of a unit (moderator variable) plays in that relationship. Figure 1 represents the research model containing continuous variables, with gender, age, tenure, and level of education as control variables.

Earlier studies on the moderating effects of organizational culture and managerial leadership considered a number of control variables. For example, Wu et al. [15] considered tenure as a control variable in their research about managers' behavioral complexity. They found that tenure could affect the behavior and nature of the relationship. Hooijberg [16] applied age, gender, education, and tenure as control variables between behavioral complexity and managerial effectiveness. He found that the control variables of gender and age had a stronger relationship with behavioral integration and subordinate, peer and superior perceptions of effectiveness in a private company than in a public utility. By contrast, the control variable years in current position, had a stronger relationship with peer perceptions of effectiveness in the public utility than in the private company management sample. Gender, age range, and years of work experience appeared in Cenac's [17] research as demographic variables in studying the relationships between learned resourcefulness, cultural intelligence, and behavioral repertoire among organizational leaders. Her study showed the partial implication of gender differences among leaders. It appeared that gender, age, tenure, and level of education had been the prominent control variables in most of previous studies. Current study examined all those four control variables for controlling effects they might have on the proposed relationships.

Research Questions

Current research pursued the path of earlier studies that had investigated the complexity of leadership behavior in relation to organizational culture. However, the specific difference of current study compared to former ones was the inclusion of cognitive style as an independent variable that might affect a managers' leadership type under the moderating effect of cultural orientation of unit. Consequently, two research questions were raised in this manner:

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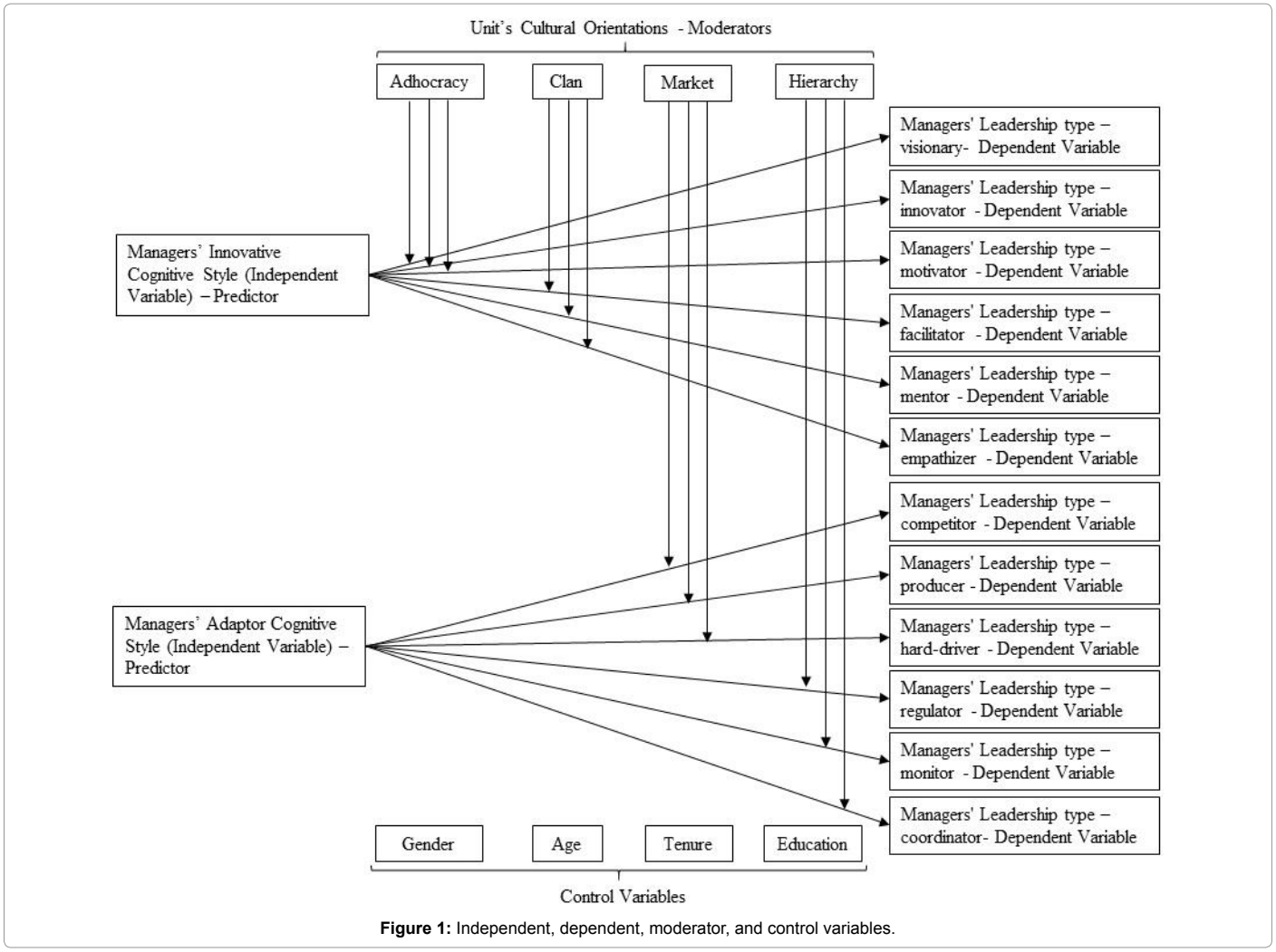

Figure 1: Independent, dependent, moderator, and control variables.

RQ_1: To what extent does managers' cognitive style affect their leadership type?

RQ_2: To what extent does the organizational cultural orientation of units moderate the relationship between managers' cognitive style and their leadership type?

The underlying logic of the first question was that the leadership style of managers [11] may arise from their internal cognitive style, whether an adaptive or an innovative one [7]. The rationale of the second question was that the relation between managers' cognitive style and their leadership type might not be persistent because a manager's leadership type within organizational boundaries, maybe constrained by the environment [13].

Research Hypotheses

The emerging theoretical and empirical research in leadership over the past decade reveal that leadership is an amalgam of various behaviors and roles that goes beyond the borders of organizational studies and involves other fields of study, including cognitive science [18]. This complexity is termed as behavioral complexity (BC) in leadership studies. Current study investigated BC in relation to three factors: cognitive style, leadership type, and cultural orientation. The existence of 12 leadership types in the CVF within four orientations of organizational culture provided a logical framework to propose the first set of hypotheses in this manner:

H_1: Managers' cognitive style relates positively to their leadership type.

Originating from this hypothesis, the following 12 sub-hypotheses emerged:

H_1^a: A manager's innovative cognitive style relates positively to the leadership type of visionary.

H_1^b: A manager's innovative cognitive style relates positively to the leadership type of innovator.

H_1^c: A manager's innovative cognitive style relates positively to the leadership type of motivator.

H_1^d: A manager's innovative cognitive style relates positively to the leadership type of facilitator.

H_1^e: A manager's innovative cognitive style relates positively to the leadership type of mentor.

H_1^f: A manager's innovative cognitive style relates positively to the leadership type of empathizer.

H_1^g: A manager's adaptive cognitive style relates positively to the leadership type of competitor.

H_1^h: A manager's adaptive cognitive style relates positively to the leadership type of producer.

H_1^i: A manager's adaptive cognitive style relates positively to the leadership type of hard-driver.

H_1^j: A manager's adaptive cognitive style relates positively to the leadership type of regulator.

H_1^k: A manager's adaptive cognitive style relates positively to the leadership type of monitor.

H_1^l: A manager's adaptive cognitive style relates positively to the leadership type of coordinator.

The idea of studying the moderating effect of organizational culture on the relationship between cognitive style and leadership type within the framework of behavioral complexity came from Hooijberg et al. [19] claim that leaders needed to possess both cognitive complexity and behavioral complexity. In addition, the history of leadership studies in relation to organizations encouraged studying organizational culture as a moderator. Table 1 provides a summary of five remarkable quantitative studies related to the moderating effect of organizational culture [20-24].

By examining the effect of organizational culture, it could be possible to see what consequences it would bring to this relationship. Consequently, I derived the following second set of hypotheses:

H_2: The organizational culture moderates the effect of managers' cognitive style on their leadership type.

The logic of CVF provides 12 combinations of organizational cultural orientations of units, managers' cognitive styles and leadership types that make it possible to propose 12 sub-hypotheses emerging from H_2:

H_2^a: The adhocracy organizational culture moderates the effect of managers' innovative cognitive style on their visionary leadership type.

H_2^b: The adhocracy organizational culture moderates the effect of managers' innovative cognitive style on their innovator leadership type.

H_2^c: The adhocracy organizational culture moderates the effect of managers' innovative cognitive style on their motivator leadership type.

H_2^d: The clan organizational culture moderates the effect of managers' innovative cognitive style on their facilitator leadership type.

H_2^e: The clan organizational culture moderates the effect of managers' innovative cognitive style on their mentor leadership type.

H_2^f: The clan organizational culture moderates the effect of managers' innovative cognitive style on their empathizer leadership type.

H_2^g: The market organizational culture moderates the effect of managers' adaptive cognitive style on their competitor leadership type.

H_2^h: The market organizational culture moderates the effect of managers' adaptive cognitive style on their producer leadership type.

H_2^i: The market organizational culture moderates the effect of managers' adaptive cognitive style on their hard-driver leadership type.

H_2^j: The hierarchy organizational culture moderates the effect of managers' adaptive cognitive style on their regulator leadership type.

H_2^k: The hierarchy organizational culture moderates the effect of managers' adaptive cognitive style on their monitor leadership type.

H_2^l: The hierarchy organizational culture moderates the effect of managers' adaptive cognitive style on their coordinator leadership type.

Method

Sample and procedure

The English speaking knowledge workers who were subordinates of a manager at least for three years shaped the population of current research. The sample consisted of 140 subordinates. They were gathered through a snowball sampling method by means of electronic invitations that were sent to them via LinkedIn social network and the listserv of the Association of Professional Futurists (APF).

Snowball sampling is a judgmental method of choosing subjects for a study. The subjects will be then asked to identify others with desired characteristics to be part of the sample [25]. One major advantage of snowball sampling is that it increases the probability of finding desired, low incidence characteristics in the population, and it lowers sampling variance and costs [26].

Since the study strived to assess the effects of four moderating variables (four cultural orientations) in relation to four control variables (gender, age, tenure, and level of education), hierarchical multiple regression seemed to be the most appropriate method to

Author, year	Key finding	Contribution to current research	Questions raised
Alharbi, 2012 [20]	Organizational culture has a moderating effect on the relationship between leadership styles and quality management practices.	Leaders with transformational style may opt for a quality management approach that is suitable to the existing organizational culture or they may attempt to modify the existing culture.	What effects does organizational culture have on the relationship between leadership styles and quality management practices?
Burton and Peachey, 2012 [21]	Group culture has a positive influence on affective commitment.	There is a relationship between organizational culture and the outcome variable of affective commitment within the intercollegiate setting.	Is the impact of leadership and culture on organizational outcomes different from in other environments?
Chin-Loy, 2003 [22]	Organizational culture relates positively to organizational benefits with high positive intercorrelations.	Organizational culture has no moderating effect on the relationship between knowledge management and organizational benefits.	Does organizational culture affect the relationship between knowledge management and organizational benefits in a moderating manner?
Danish, Munir, and Butt, 2012 [23]	Organizational culture is a significant predictor of organizational effectiveness.	Organizational effectiveness can improve with the improvement in the knowledge management by a supporting organizational culture.	Is organizational culture a significant predictor of organizational effectiveness?
Lee, Kim, and Kang, 2013 [24]	Organizational culture has moderating effects of on the relationship between emotional intelligence and job performance.	Maintaining interpersonal relations and hierarchical culture are essential for internal integration and stability of the organization.	Does organizational culture moderate the relationship between emotional intelligence and job performance?

Table 1: Summary of remarkable studies in relation to the moderating effect of organizational culture.

test the proposed hypotheses [27]. Consequently, seven variables (1 IV + 4 CVs + 1 Mod +1 Mod-interactive) required 140 participants according to Hair et al. [27] recommendation of considering at least 20 respondents for each term.

To obtain the required sample (N=140), 216 "Innovative Leadership Survey" invitations were sent to the members of LinkedIn social network and the APF listserv who met the sampling criteria (being the subordinate under a manager at least for three years). After receiving the initial invitations, the respondents received a reminder email four weeks into the survey period. The initial email contained a letter of introduction, directions to complete the online survey, and the link of survey available on the Internet. After checking data for outliers, any respondent in the sample that left more than 10% of total items blank was removed [27]. The resulting data included 140 cases. Twenty two composite variables were built containing two scores for cognitive style (CS), 12 scores for leadership type (LT), and four scores for organizational culture (OC).

Measurements

Three instruments measured the variables of current study. The Kirton Adaptation Innovation Inventory (KAI) covering 32 items measured the CS; the Managerial Behavior Instrument (MBI) containing 36 items measured the LT; and the Organizational Culture Assessment Instrument (OCAI) containing 24 items measured the OC. The questionnaire contained 92 items and requested the respondents to reflect their attitudes towards their managers within 15-30. Sampled respondents received an invitation sent to them twice by email.

Cognitive style: Kirton [7] defined cognitive style as the strategic, stable characteristic—the preferred way in which people respond to and seek to bring about change. It represents one's characteristic manner of processing information [28]. Kirton's [7] Adaption-Innovation (AI) theory explores and describes human preferred individual differences in the way they solve problems. It differentiates individuals on a continuous scale from highly adaptive to highly innovative. The KAI is a 32-item questionnaire with scores ranging from 32 to 160. There are no pure adaptors or innovators; however, it is possible to classify individuals as more adaptive or less adaptive, and more innovative or less innovative, so scores need observation in relation to the population or other individuals. Based on KAI scoring system, managers scoring 96 and more in the eyes of their subordinates could be innovators and those who scored 95 and less were adaptors.

Using the Kuder-Richardson 20 formula, Kirton [7] reported the internal reliability of the KAI 0.88 for an original sample. He calculated the replication sample one year later that yielded a K-R 20 of 0.88. Many subsequent studies on various populations in countries such as the United States, Canada, Australia, and France yielded Cronbach alphas ranging from 0.79 to 0.91.

Leadership type: Cameron et al. [11] Competing Values Framework (CVF) categorized the leadership type in current study. There are 12 types of leadership in the CVF. The "collaborate" quadrant is composed of facilitator, mentor, and empathizer types. Visionary, innovator, and motivator types represent "create" managerial orientation. "Compete" orientation reflects in competitor, producer, and hard-driver leadership types. In addition, regulator, monitor, and coordinator types of leadership introduce "control" managerial orientation. The Managerial Behavior Instrument (MBI) is a 36-item questionnaire in which the questions structure a 5-point Likert-type scale (strongly disagree, disagree, neither agree/disagree, agree, strongly agree), in which the option "neither agree/disagree" stands for "don't know" [29]. The items are classifiable in four groups: relating to people, leading change, managing processes, producing results. There are three items in each group, each one asks about a manager's behavior in terms of three managerial functions. The MBI produces 12 scores and follows the CVF model of categorizing leadership types in terms of create, compete, collaborate, and control. Lawrence and his colleagues reported the reliability of their scale by Cronbach's alphas within the range of 0.68 to 0.69. The MBI scores generated the input necessary for building the composite variables representing the leadership types in current research.

Organizational culture: Schein [30] defined organizational culture as "a pattern of shared basic assumptions that was learned by a group as it solved its problems of external adaptation and internal integration" (p. 17). The CVF translates this definition by its logic of competing values (create, compete, collaborate, and control). Each quadrant characterizes an organizational cultural orientation in relation to a leadership type. The "create" leadership fits the "adhocracy" cultural orientation. The "compete" leadership corresponds to the "market" cultural orientation. The "collaborate" leadership requires the "clan" organizational culture. Moreover, the "control" type of leadership aligns to the "hierarchy" organizational culture.

The Organizational Culture Assessment Instrument (OCAI) measures organizational culture. The OCAI is a 24-item questionnaire composed of six questions assessing the organizational culture in terms of main characteristics, organizational leadership, management of employees, organization glue, strategic emphases, and criteria of success [11]. Each item has four statements. Following an example in the online questionnaire, the respondents learned to divide 100 points among these four statements depending on the extent to which each statement matched their organization. The OCAI provides four scores by which cultural orientations are identifiable. In current study, the subordinates benchmarked the organizational cultural orientation of their unit by the OCAI.

Quinn and Spreitzer [31] ran a study among 796 managers of 86 organizations offering public services and examined the validity and reliability of the CVF and OCAI as a model to measure organizational effectiveness. The results supported the empirical validity of the OCAI. The factor structure and criterion validity of the OCAI by robust analysis methods on the data gathered from 328 Australian employees. Confirmatory factor analysis supported the four-factor structure of the OCAI for both now and preferred organizational culture perspectives.

Data collection: Current research depended on data collection through the online survey method. I sought permission from related authors to use sections of their published questionnaires only for the purpose of my research. Before data collection, a small convenience sample (n=20) field-tested the survey to ensure the explanation and formatting facilitated ease of use.

The title of survey was "Innovative Leadership Survey," to avoid biasing participants' responses by identifying the specific focus of the study. In accordance with informed consent and assurance of anonymity, the respondents completed the online questionnaire containing 92 items (36 items from the MBI, 24 items from the OCAI, and 32 items from the KAI).

Results

One hundred and fifty-nine participants from six continents participated in the survey. Discarding outliers and any respondent that had left more than 10 percent of total items blank, 140 respondents

met the requirements of sample for current study. Fifty two point one percent of the respondents were male and 47.9 percent were female. Forty four point two percent of them aged between 21 and 35 years old. Forty nine point three percent of them had 3 to 6 years of working experience (tenure) and 38.6 percent of them educated at Master level. Among the respondents, 53.6 percent were residents of North America continent. The demographic information of the sample, including gender, age range, tenure, level of education and continent of residence are presented in Table 2.

Hierarchical multiple regressions

Out of 97 questionnaire items, 22 composite variables were made to be used in the hierarchical multiple regression analyses, including Innovative and Adaptive cognitive styles, the 12 leadership types, four organizational cultural orientations, and four interactions.

Testing hypotheses

H_1^a and H_2^a: Hierarchical multiple regressions was used in order to assess the ability of Innovative style and Adhocracy culture to predict Visionary leadership type. Preliminary analyses were conducted to ensure the assumptions of normality, linearity, multicollinearity, and homoscedasticity were not violated [27]. Control variables (gender, age, tenure, and level of education) were added in the first step, indicating 4.1 percent of the variance in the dependent variable could be explained by the independent variables: R^2=0.04, ΔR^2=0.04, F(4,116)=1.254, p=0.292.

Innovative style and Adhocracy culture were added in the second step explaining 5.9 percent variance in Visionary leadership type after controlling for gender, age, tenure, and level of education: R^2=0.05, F(6, 114)=1.191, p=0.316. The change in R–square from the first step to the second step was not significant and no independent variable found to be significant for predicting the Visionary leadership type. Consequently, neither H_1^a nor H_2^a could be supported. Table 3 represents generated regression models.

Variable	Frequency	%
Gender		
Male	73	52.1
Female	67	47.9
Age		
21-29 years	31	22.1
30-35 years	31	22.1
36-44 years	30	21.4
44-54 years	31	22.1
55 and older	17	12.1
Tenure		
3-6 years	69	49.3
7-10 years	37	26.4
11-15 years	20	14.3
16-24 years	10	7.1
25 and more years	4	2.9
Level of Education		
Secondary Education	17	12.1
Bachelor	49	35.0
Master	54	38.6
Doctorate	19	13.6
Postdoctorate	1	.7
Continent of Residence		
Africa	8	5.7
Asia	24	17.1
Australia	12	8.6
Europe	20	14.3
North America	75	53.6
South America	1	0.7

Table 2: Respondents' demographics.

***H_1^b and H_2^b*:** A hierarchical multiple regression was conducted to predict the Innovator leadership type. The level of education in two steps and Adhocracy culture in the second step appeared as significant predictors. However, to ensure if they could be predictors of the dependent variable, running a follow-up model seemed necessary.

Running the follow-up model with two aforementioned predictors generated an R-square equal to 0.085 in the third step. In other words, the follow-up model could explain only 8.5 percent of the variance in the dependent variable. Such a low R-square indicates while the two predictors were significant, the prediction of the dependent variable of Innovator leadership type could not be useful. Since the independent variable of Innovative style was not significant in the second step (p=0.215 > 0.05), H_1^b could not be supported. No significant independent variable means that there was no relationship to be moderated and the H_2^b hypothesis was rejected necessarily. Table 4 summarizes related regression analyses.

***H_1^c and H_2^c*:** The independent variable of Innovative style was not detected as significant in a hierarchical multiple regression analysis

Predictor	Visionary leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.041	0.041
Gender	0.073	0.428		
Age	0.096	0.389		
Tenure	-0.001	0.993		
Level of Education	0.133	0.183		
Step 2			0.059	
Gender	0.082	0.382		
Age	0.090	0.423		
Tenure	0.020	0.856		
Level of Education	0.158	0.119		
Innovative Style	0.134	0.155		
Adhocracy Culture	-0.030	0.749		

Table 3: Hierarchical regression analysis for predicting visionary leadership type (N=140).

Predictor	Innovator leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.073	0.073
Gender	0.005	0.954		
Age	0.063	0.569		
Tenure	0.085	0.414		
Level of Education	0.198	0.045*		
Step 2			0.131	0.058
Gender	0.036	0.688		
Age	0.035	0.745		
Tenure	0.108	0.296		
Level of Education	0.185	0.058*		
Innovative Style	-0.112	0.215		
Adhocracy Culture	-0.218	0.016*		
Step 3			0.085	
Level of Education	0.227	0.006*		
Adhocracy Culture	-0.186	0.025*		

*p ≤ 0.05

Table 4: Hierarchical multiple regression analysis for predicting innovator leadership type (N=140).

aimed at predicting Motivator leadership type. Consequently, H_1^c could not be supported. No significant independent variable in the regression analysis indicates that there was no relationship to be moderated and the H_2^c hypothesis was rejected accordingly. However, the level of education was revealed as a significant variable in two steps. To ensure if it could be a predictor of Motivator leadership type, running a follow-up model seemed to be essential.

Running the follow-up model with the level of education alone generated an *R*-square equal to 0.040 in the third step. In other words, the follow-up model could explain only 4 percent of the variance in the Motivator leadership type. The low *R*-square indicated while the level of education might be a significant predictor, the prediction of the dependent variable (Motivator leadership type) could not be helpful. Table 5 summarizes the regression models in three steps.

***H_1^d and H_2^d*:** The independent variable was not significant in the hierarchical multiple regression analysis that was conducted to predict Facilitator leadership type. Thus, the hypothesis H_1^d could not be supported. No significant independent variable in the regression analysis also indicates that there was no relationship to be moderated. Consequently, the H_2^d hypothesis was not supportable. Table 6 summarizes the regression models in two steps.

***H_1^e and H_2^e*:** The independent variable was not significant in a hierarchical multiple regression analysis that was conducted to predict Mentor leadership type. Thus, the hypothesis H_1^e could not be supported. No significant independent variable in the regression analysis means that there was no relationship to be moderated. Consequently, the H_2^e hypothesis was rejected for that reason. However, Clan culture revealed to be a significant variable in the second step. To ensure if it could be a predictor of Mentor leadership type, running a follow-up model seemed as essential. Running the follow-up model with the Clan culture alone did not expose it as a significant variable (p=0.077 > 0.05). Thus, it could not be a predictor of Mentor leadership type. Table 7 summarizes the regression analysis conducted in three steps.

***H_1^f and H_2^f*:** The independent variable of Innovative style was identified to be significant in a hierarchical multiple regression analysis that was conducted to predict Empathizer leadership type (p=0.019 < 0.05). However, the *R*-square value (0.055) indicates that the model could explain only 5.5 percent of the variance in the dependent variable of Empathizer leadership type. To ensure if the Innovative style could be a reliable predictor of the Empathizer leadership type, running a follow-up model seemed to be necessary.

Running the follow-up model with the Innovative style alone exposed it as a significant variable (p=0.014< 0.05). However, the *R*-square value (0.050) indicates once again that the model could explain only 5 percent of the variance in the Empathizer leadership type. Consequently, the H_1^f hypothesis was not supportable. As the independent variable was not reliably significant, the hypothesis H_2^f was rejected, too. Table 8 summarizes the regression analysis in three steps.

***H_1^g and H_2^g*:** The independent variable of Adaptive style was not identified to be significant in a hierarchical multiple regression analysis that was conducted to predict Competitor leadership type (p=0.100 > 0.05). Consequently, the hypothesis H_1^g was not supported. This also made any moderation effect meaningless and rejected the hypothesis H_2^g as a result. However, the level of education appeared significant in two steps. To ensure if it could be a reliable predictor, a follow-up model was run in the third step.

Running the follow-up model with the level of education alone exposed it to be a significant variable (p=0.002 <0.05). However, the *R*-square value (0.067) indicates that the model could explain only 6.7 percent of the variance in the Competitor leadership type. Therefore,

Predictor	Motivator leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.068	0.068
Gender	-0.050	0.581		
Age	0.103	0.349		
Tenure	-0.007	0.947		
Level of Education	0.200	0.043*		
Step 2			0.087	0.019
Gender	-0.030	0.749		
Age	0.085	0.441		
Tenure	0.013	0.901		
Level of Education	0.200	0.045*		
Innovative Style	-0.023	0.806		
Adhocracy Culture	-0.137	0.136		
Step 3			0.040	
Level of Education	0.201	0.017*		

*p ≤ 0.05

Table 5: Hierarchical multiple regression analysis for predicting motivator leadership type (*N*=140).

Predictor	Facilitator leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.046	0.046
Gender	0.049	0.598		
Age	0.082	0.462		
Tenure	0.112	0.290		
Level of Education	0.082	0.411		
Step 2			0.066	
Gender	0.048	0.601		
Age	0.084	0.452		
Tenure	0.132	0.217		
Level of Education	0.082	0.414		
Innovative Style	0.064	0.490		
Clan Culture	-0.132	0.150		

Table 6: Hierarchical multiple regression analysis for predicting facilitator leadership type (*N*=140).

Predictor	Mentor leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.036	0.036
Gender	0.066	0.477		
Age	-0.062	0.582		
Tenure	0.070	0.511		
Level of Education	0.182	0.069		
Step 2			0.074	0.038
Gender	0.065	0.481		
Age	-0.059	0.594		
Tenure	0.094	0.373		
Level of Education	0.179	0.076		
Innovative Style	0.065	0.482		
Clan Culture	-0.186	0.043*		
Step 3			0.022	
Clan Culture	-0.150	0.077		

*p ≤ 0.05

Table 7: Hierarchical multiple regression analysis for predicting mentor leadership type (*N*=140).

Predictor	Empathizer leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.005	0.005
Gender	-0.001	0.990		
Age	-0.010	0.931		
Tenure	-0.056	0.606		
Level of Education	-0.026	0.797		
Step 002			0.055	0.050
Gender	0.004	0.965		
Age	-0.012	0.911		
Tenure	-0.024	0.821		
Level of Education	0.009	0.928		
Innovative Style	0.222	0.019*		
Clan Culture	-0.061	0.505		
Step 2			0.050	
Innovative Style	0.223	0.014*		

*p ≤ 0.05

Table 8: Hierarchical multiple regression analysis for predicting empathizer leadership type (*N*=140).

Predictor	Competitor leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.085	0.085
Gender	-0.028	0.754		
Age	-0.083	0.450		
Tenure	0.069	0.505		
Level of Education	0.293	0.003*		
Step 2			0.110	0.035
Gender	-0.028	0.757		
Age	-0.086	0.431		
Tenure	0.053	0.611		
Level of Education	0.273	0.007*		
Adaptive Style	0.150	0.100		
Market Culture	0.051	0.571		
Step 3			0.067	
Level of Education	0.259	0.002*		

*p ≤ 0.05

Table 9: Hierarchical multiple regression analysis for predicting competitor leadership type (*N*=140).

it could not be a reliable predictor. Table 9 summarizes the regression analysis in three steps.

***H_1^h and H_2^h*:** The independent variable of Adaptive style was identified to be a significant variable in the second step of a hierarchical multiple regression analysis that was conducted to predict Producer leadership type. The *R*-square value (0.124) and the remarkable delta-square indicate that the model could explain more than 12 percent of the variance in the dependent variable of Producer leadership type. Consequently, the H_1^h hypothesis was supported.

The moderating variable and the interaction were not detected as predictors in the model. Thus, the H_2^h hypothesis was rejected. However, the level of education was identified as a significant variable in two steps. To ensure if it could be a reliable predictor, running a follow-up model seemed necessary in the fourth step. Running the follow-up model with the predictor alone exposed it to be an insignificant variables (p=0.123 >0.05). In fact, the level of education could not be a reliable predictor. Table 10 summarizes the regression analysis in four steps.

H_1^i and H_2^i: The independent variable of Adaptive style, the moderating variable of Market culture, and the interaction were identified to be significant variables in the third step of a hierarchical multiple regression analysis that was conducted to predict Hard-driver leadership type. The *R*-square value equal to 0.109 indicates that the model explains more than 10 percent of the variance in the Hard-driver leadership type. In fact, both the Adaptive style and Market culture could be significant predictors of Hard-driver leadership type. Consequently, both the H_1^i and H_2^i hypotheses were supported. Table 11 summarizes the regression analysis in three steps.

Predictor	Producer leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.066	0.066
Gender	0.154	0.093		
Age	0.071	0.522		
Tenure	0.020	0.851		
Level of Education	0.165	0.094		
Step 2			0.124	0.058
Gender	0.166	0.067		
Age	0.061	0.574		
Tenure	0.049	0.633		
Level of Education	0.216	0.029*		
Adaptive Style	-0.244	0.008*		
Market Culture	0.046	0.604		
Step 3			0.125	0.001
Gender	0.166	0.067		
Age	0.062	0.566		
Tenure	0.046	0.656		
Level of Education	0.215	0.030*		
Adaptive Style	-0.197	0.232		
Market Culture	0.078	0.544		
Adaptive Style * Market Culture	-0.065	0.730		
Step 4			0.017	
Level of Education	0.131	0.123		

*p ≤ 0.05

Table 10: Hierarchical multiple regression analysis for predicting producer leadership type (*N*=140).

Predictor	Hard-driver leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.046	0.046
Gender	0.013	0.892		
Age	0.075	0.499		
Tenure	0.012	0.906		
Level of Education	0.170	0.088		
Step 2			0.078	0.032
Gender	0.017	0.857		
Age	0.067	0.548		
Tenure	-0.004	0.972		
Level of Education	0.154	0.127		
Adaptive Style	0.155	0.095		
Market Culture	0.092	0.312		
Step 3			0.109	
Gender	0.019	0.834		
Age	0.076	0.490		
Tenure	-0.020	0.848		
Level of Education	0.153	0.126		
Adaptive Style	0.427	0.011*		
Market Culture	0.276	0.035*		
Adaptive Style * Market Culture	-0.371	0.051*		
Step 4			0.017	
Level of Education	0.131	0.123		

*p ≤ 0.05

Table 11: Hierarchical multiple regression analysis for predicting hard-driver leadership type (*N*=140).

***H_1^j and H_2^j*:** The independent variable of Adaptive style and the moderating variable of Hierarchy culture were identified to be significant variables in a hierarchical multiple regression analysis that was conducted to predict Regulator leadership type. The *R*-square value equal to 0.164 in the second step indicates that the model explains more than 16 percent of the variance in the Regulator leadership type. Consequently, the hypothesis H_1^j was supported. Similarly, the *R*-square value equal to 0.185 in the third step indicates that the model explains more than 18 percent of the variance in the Regulator leadership type. Although the Hierarchy could be a predictor of the Regulator leadership type (p=0.024 < 0.05), the interaction was not significant. Thus, there was no moderating effect and the H_2^j hypothesis could not be supported. Table 12 summarizes the regression analysis in three steps.

***H_1^k and H_2^k*:** The independent variable of Adaptive style and the moderating variable of Hierarchy culture were identified to be significant variables in a hierarchical multiple regression analysis that was conducted to predict Monitor leadership type. The *R*-square value equal to 0.149 in the second step indicates that the model explains more than 14 percent of the variance in the Monitor leadership type. Consequently, the hypothesis H_1^k was supported. Similarly, the *R*-square value equal to 0.169 in the third step indicates that the model explains more than 16 percent of the variance in the Monitor leadership type. Although the Hierarchy culture could be a predictor of the Monitor leadership type (p=0.039 < 0.05), the interaction was not detected to be significant. Thus, there was no moderating effect and the hypothesis H_2^k could not be supported. Table 13 summarizes the regression analysis in three steps.

***H_1^l and H_2^l*:** The independent variable of Adaptive style was found to be a significant variable in a hierarchical multiple regression analysis that was conducted to predict Coordinator leadership type (p=0.002 < 0.05). However, the *R*-square value equal to 0.088 in the second step indicates that the model could explain only 8.8 percent (less than 10 percent) of the variance in the dependent variable of Coordinator leadership type. To ensure if the Adaptive style could be a reliable predictor of Coordinator leadership type, running a follow-up model seemed to be compulsory in the third step.

Running the follow-up model with the Adaptive style alone exposed it to be a significant variable (p=0.011 < 0.05). However, the *R*-square value equal to 0.086 indicates that the model could explain only 8.6 percent (less than 10 percent) of the variance in the Coordinator leadership type. In fact, it could not be a reliable predictor. Consequently, both the H_1^l and H_2^l hypotheses were rejected. Table 14 summarizes the regression analysis in three steps.

Discussion

The hierarchical multiple regression analyses mentioned in previous section supported the verification of following hypotheses:

Predictor	Regulator leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.016	0.016
Gender	0.047	0.616		
Age	-0.061	0.591		
Tenure	0.054	0.614		
Level of Education	-0.091	0.367		
Step 2			0.164	0.148
Gender	0.056	0.523		
Age	-0.049	0.642		
Tenure	0.086	0.393		
Level of Education	-0.030	0.756		
Adaptive Style	-0.384	0.000*		
Hierarchy Culture	0.133	0.126		
Step 3			0.185	
Gender	0.043	0.619		
Age	-0.061	0.562		
Tenure	0.111	0.271		
Level of Education	-0.026	0.780		
Adaptive Style	-0.164	0.302		
Hierarchy Culture	0.289	0.024*		
Adaptive Style * Hierarchy Culture	-0.320	0.096		

*p ≤ 0.05

Table 12: Hierarchical multiple regression analysis for predicting regulator leadership type (*N*=140).

Predictor	Monitor leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.034	0.034
Gender	0.133	0.153		
Age	0.089	0.430		
Tenure	0.045	0.670		
Level of Education	0.022	0.824		
Step 2			0.149	0.115
Gender	0.141	0.111		
Age	0.098	0.361		
Tenure	0.074	0.466		
Level of Education	0.077	0.423		
Adaptive Style	-0.339	0.000*		
Hierarchy Culture	0.110	0.210		
Step 3			0.169	
Gender	0.128	0.144		
Age	0.086	0.420		
Tenure	0.100	0.329		
Level of Education	0.080	0.400		
Adaptive Style	-0.118	0.460		
Hierarchy Culture	0.267	0.039*		
Adaptive Style * Hierarchy Culture	-0.321	0.098		

*p ≤ 0.05

Table 13: Hierarchical multiple regression analysis for predicting monitor leadership type (*N*=140).

Predictor	Coordinator leadership type			
	β	*p*	R^2	ΔR^2
Step 1			0.005	0.005
Gender	0.019	0.841		
Age	-0.017	0.878		
Tenure	-0.017	0.871		
Level of Education	-0.052	0.606		
Step 2			0.088	0.883
Gender	0.027	0.768		
Age	-0.019	0.866		
Tenure	0.014	0.892		
Level of Education	0.000	0.997		
Adaptive Style	-0.296	0.002*		
Hierarchy Culture	0.028	0.754		
Step 3			0.086	
Adaptive Style	-0.293	0.001*		

*p ≤ 0.05

Table 14: Hierarchical multiple regression analysis for predicting coordinator leadership type (*N*=140).

H_1^h: A manager's adaptive cognitive style relates positively to the leadership type of producer.

H_1^i: A manager's adaptive cognitive style relates positively to the leadership type of hard-driver.

H_2^i: The market organizational culture moderates the effect of managers' adaptive cognitive style on their hard-driver leadership type.

H_1^j: A manager's adaptive cognitive style relates positively to the leadership type of regulator.

H_1^k: A manager's adaptive cognitive style relates positively to the leadership type of monitor.

Out of 24 hypotheses, only five hypotheses were supported by the significance of effects found in the regression models. It can be an indication that the current research is error-free in terms of inflation of Type I error. Conventionally, the less effects found in the regression results, the less likely it would be to turn up effects that seemed bigger than they really were.

The supported hypotheses suggest that the adaptive cognitive style could predict the leadership types more than the innovative cognitive style. In other words, it appeared that the innovative cognitive style has no effect on leadership type. Among various organizational cultures, only the market organizational culture could moderate the effect of managers' adaptive cognitive style on their hard-driver leadership type. This research confirms that against the general assumption, the level of education does not have a controlling effect in predicting leadership type in the light of organizational culture.

The findings of current study contributed to the study of behavioral complexity in leadership in three ways. First, the rejection of the hypotheses that were proposed to investigate the effect of innovative cognitive style reminds that the subordinates who were mostly academic experts commonly did not consider their managers to be advocators of visionary, innovator, motivator, facilitaor, mentor, and empathizer leadership types.

Earlier studies had identified cognitive complexity not only as a component of the theory, but also as an element of effective management [16]. In that paradigm, managers' cognitive complexity had to match the environmental complexity in order to appear effective at any given organizational level. In the new paradigm generated by the findings of current study, the effectiveness of managers comes from the coordination between their cognitive style and their leadership type. Table 15 summarizes the evolution of effective leadership models from the CVF era to the current research date.

Second, subordinates who viewed their managers' cognitive style as adaptive normally served organizational units with market culture. Although adhocracy, clan, and hierarchy organizational cultures did not appear as moderators of relationship between cognitive style and leadership types in current study, the rationale of considering organizational culture as a moderator proved to be viable by the supported hypothesis H_2^i.

Third, the positive effect of adaptive cognitive style on producer, hard-driver, regulator, and monitor types of leadership highlighted the fact that managers' adaptiveness is not a sign of passivity or inefficiency. Instead, it can be a point of strength if managers practice compete and control oriented leadership types toward their subordinates in the context of market cultural values. The findings of current research suggest that more revisions of behavioral complexity studies in leadership are appealing.

Future Research

A number of recommendations for future research seem advisable. First, seeking other theoretical frameworks is demandable as far as they could advance effective leadership research to newer horizons. The Competing Values Framework (CVF) served current study in which leadership type and organizational culture shaped variables for investigation in relation to cognitive style. The proposed relationships between all these variables followed the logic of CVF. The CVF is not the only theoretical framework, but one of the most comprehensive ones by which this enquiry became feasible. However, other frameworks such as Behavioral Complexity theory might introduce wider areas of research. Second, 54 percent of the subordinates considered their managers' cognitive style as adaptive rather than innovative in current study. Trott [32] admitted that innovation is rare and not all the managers in organizations are innovative. Given the rare nature of being innovative as a cognitive style, it is logical to accept that most of managers in contemporary organizations would be likely subscribed to adaptive cognitive style rather than an innovative one in the replications of current study. Nevertheless, an attractive venue for further research is to check the possibility of reversing this tendency and to find reliable means of encouraging innovative cognitive style among organizational managers.

Current study detected a positive relationship between manager's adaptive cognitive style and producer, hard-driver, regulator, and monitor leadership types. The replication of current study with a different sample within the borders of a certain organization can be proposed as the third recommendation. By changing the respondents and narrowing down the scope of study to a specific organization, it may be possible to detect proposed relationships differently and to find new roles of control variables in this regard.

Conclusion

In conclusion, this area of research and potential relationships among its variables are receptive to deeper studies and periodical revisions as nations, societies, and organizations grow. A clearly defined combination of theoretical foundations such as the CVF, Adaption-Innovation theory, and Behavioral Complexity theory undergirded current study. More significant studies and outcomes are conceivable by integrating other theoretical foundations of leadership research. The author welcomes readers' proposals in this line of inquiry.

Model	Theoretical focus	Practical implication	Developers
Competing values framework (CVF)	Competing values	Value creation	Quinn and Cameron, 1983
Leaderplex	Cognitive and social differentiations	Assessing cognitive capacity and social complexity	Hooijberg, Hunt and Dodge, 1997
Circumplex	High and low managerial abilities	Predicting managerial effectiveness	Lawrence, Lenk and Quinn, 2009
Adaptive cognitive leadership	Adaptive cognitive styles	Predicting leadership type	Hejazi, 2016

Table 15: The evolution of effective leadership models.

References

1. Daft RL (2011) The leadership experience.
2. Fiedler FE (1967) A theory of leadership effectiveness. Administrative Science Quarterly 13: 344-348.
3. Yukl GA (2013) Leadership in organizations. Upper Saddle River, New Jersey: Prentice-Hall.
4. Carter L, Ulrich D, Goldsmith M (2005) Best practices in leadership development and organization change: How the best companies ensure meaningful change and sustainable leadership.
5. Judge TA, Cable DM (1997) Applicant personality, organizational culture, and organizational attraction. Personnel Psychology 50: 359-394.
6. Armstrong SJ, Cools E, Sadler-Smith E (2012) Role of cognitive styles in business and management: Reviewing 40 years of research. International Journal of Management Reviews 14: 238-262.
7. Kirton MJ (2003) Adaption-Innovation: In the context of diversity and change. London: Routledge.
8. Delbecq A, House RJ, de Luque MS, Quigley NR (2013) Implicit motives, leadership, and follower outcomes: An empirical test of CEOs. Journal of Leadership and Organizational Studies 20: 7-24.
9. Russell RF (2001) The role of values in servant leadership. Leadership & Organization Development Journal 22: 76-84.
10. Topping PA (2002) Managerial leadership. New York: McGraw-Hill.
11. Cameron KS, Quinn RE, DeGraff J, Thakor AV (2014) Competing values leadership.
12. Kirton MJ (1976) Adaptors and innovators: A description and measure. Journal of Applied Psychology 61: 622-629.
13. Hooijberg R (1992) Behavioral complexity and managerial effectiveness: A new perspective on managerial leadership.
14. Quinn RE, Cameron KS (1983) Organizational life cycles and shifting criteria of effectiveness: Some preliminary evidence. Management Science 29: 33-51.
15. Wu Z, Steward MD, Hartley JL (2010) Wearing many hats: Supply managers' behavioral complexity and its impact on supplier relationships. Journal of Business Research 63: 817-823.
16. Hooijberg R, Quinn RE (1992) Behavioral complexity and the development of effective managers.
17. Cenac JR (2014) The relationship between learned resourcefulness, cultural intelligence, and behavioral repertoire among organizational leaders.
18. Nooteboom B (2009) A cognitive theory of the firm: Learning, governance and dynamic capabilities.
19. Hooijberg R, Hunt JG, Dodge GE (1997) Leadership complexity and the development of the Leaderplex model. Journal of Management 23: 375-408.
20. Alharbi MF (2012) The moderating effect of organizational culture on the relationship between leadership styles and quality management practices in public hospitals in Saudi Arabia.
21. Burton L, Peachey JW (2012) The moderating effect of organizational culture on the relationship between transformational leadership and affective commitment, turnover intentions and job search behaviors.
22. Chin-Loy C (2003) Assessing the influence of organizational culture on knowledge management success.
23. Danish RQ, Munir Y, Butt SSD (2012) Moderating role of organizational culture between knowledge management and organizational effectiveness in service sector. World Applied Sciences Journal 20: 45-53.
24. Lee S, Kim D, Kang E (2013) The moderating effect of organizational culture on the relationship between emotional intelligence and job performance. International Journal of Digital Content Technology and its Applications 7: 517-525.
25. Tustin DH, Ligthelm A, Martins JH, Van Wyk, H De J (2005) Marketing research in practice. South Africa: ABC Press.
26. Smith SM, Albaum GS (2012) Basic marketing research.
27. Hair JF, Rolph EA, Ronald LT, Black WC (2005) Multivariate data analysis. Upper Saddle River, NJ: Prentice Hall.
28. Bobic M, Davis E, Cunningham R (1999) The Kirton adaption-innovation inventory: Validity issues, practical questions. Review of Public Personnel Administration 19: 18-31.
29. Lawrence KA, Lenk P, Quinn RE (2009) Behavioral complexity in leadership: The psychometric properties of a new instrument to measure behavioral repertoire. Leadership Quarterly 20: 87-102.
30. Schein EH (2004) Organizational culture and leadership. San Francisco, CA: Jossey-Bass.
31. Quinn RE, Spreitzer GM (1991) The psychometrics of the competing values culture instrument and an analysis of the impact of organizational culture on quality of life. Research in Organizational Change and Development 5: 115-142.
32. Trott P (2005) Innovation management and new product development. Essex: Pearson Education Limited.

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