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# TRANSFORMATIONAL LEADERSHIP AND INNOVATION MANUFACTURING OBJECTIVE:A FOCUS ON SUPPLY CHAIN ELEMENTS

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## Abstract

Leadership style has been emphasized as one of the most important infrastructural decisions influences on firm innovation. This article examines the effect of transformational leadership on the innovation manufacturing objective in supply chain. We used five dimensions of transformational leadership, Transformational leadership items were adapted from measures produced by House (1998) and Podsakoff et al. (1990), and Five item reported by Miltenburg (1995) were adapted to assess innovation manufacturing objective. Items were chosen on the basis of how well they assessed the theoretical construct under study (firm and supply chain). A linear regression model from relationship between variables developed and then tested. 455 questionnaires were distributed across part manufacturers of automobile, and 370 managers responded. The results indicated that dimension of inspirational communication, supportive leadership and personal recognition have significant positive effect on innovativeness. Vision have not significant effect. Intellectual stimulation has a weakly significant negative effect on the innovation manufacturing objective. Then, discussion and conclusion present, and finally, express limitations and purposes express.

Keywords: Transformational leadership, Innovation manufacturing objective, Supply Chain

## 1 INTRODUCTION

As the number of competitors increased in the universal arena, the organizations had to improve their internal processes in order to continue their activities at competitiveness area. As manufacturing capability was developing in the 1990's decade, managers were noticing the necessity of entered materials & services by the suppliers as well as ability in time and location and way of presenting products to the customers. Organizations have found that good presentation of organizations' outputs is dependent on the ability in handling material, information and money flow in both inside and outside of the organization, integratedly. This flow is known as supply chain management (SCM) (Turban, 2003).

Manufacturing provides six manufacturing outputs/objective-cost, quality, performance, delivery, flexibility, and innovativeness- to its customers. Innovativeness is the ability to quickly introduce new products or make design change to exiting products (Miltenburg, 1995:p.13-15). While an increasing number of firms are interested in supply chains, traditional empirical research on supply chains generally offers a narrow depiction of the chain by providing data from only one chain participant (Hull & etal. 2006). Elements of SC could be consisted several manufactures that supplied the others.

Leadership style has been emphasized as one of the most important individual influences on firms innovation in SC, because leaders can directly decide to introduce new ideas into an organization, set specific goals, and encourage innovation initiatives from subordinates. Specifically, several writers have linked "transformational leadership" to innovation (Correa & et al, 2005).

Burns (1978) was the first author to contrast "transforming" and transactional leadership. Transactional leadership involves an exchange relationship between leaders and followers such that followers receive wages or prestige for complying with a leader's wishes. Transactional leadership encompasses contingent reward and

management-by-exception. In contrast, transformational leaders motivate followers to achieve performance beyond expectations by transforming followers' attitudes, beliefs, and values as opposed to simply gaining compliance. Bass identified a number of dimensions of transformational leadership including vision, charisma (which was later renamed idealized influence), inspirational motivation, intellectual stimulation, and individualized consideration (Rafferty & Griffin, 2004). It has been argued that transformational leaders are more capable of sensing their environment and then forming and disseminating strategic goals that capture the attention and interest of their followers. Followers of transformational leaders have been shown to exhibit higher levels of commitment to their organizational mission, a willingness to work harder, greater levels of trust in their leader, and higher levels of cohesion. All of these effects of transformational leadership would be expected to create better conditions for understanding and disseminating strategic visions, missions, and goals and their acceptance by followers (Vair & Avolio, 2004).

We proposed that transformational leadership related to develop and implement innovation as manufacturing output. In this article, our focus is primarily on research questions that concern firm innovation. We first examine the nature and strength of transformational leadership as antecedents of firm innovation. And finally, using these research findings, we develop a model of direct and indirect relationships to guide future research in this arena and offer managerial implications.

## 1.1 Hypotheses Development

### 1.1.1 *Manufacturing Strategy and Innovativeness Manufacturing Objectives*

The competitive position of manufacturing firms is based on the ability to create strategic alignment between market opportunities and manufacturing capabilities. This is the foundation for manufacturing Strategy. Platts et al. (1998) develop a working definition: a pattern of decisions, both structural and infrastructural, which determine the capability of a manufacturing system and specify how it will operate, in order to meet a set of manufacturing objectives/outputs which are consistent with the overall business objectives. Decisions in manufacturing –related issue are often grouped into areas also known as decision categories. The categories are divided into structural and infrastructural categories (Hallgren & Olhager, 2006). The key structural issues involve process technology, capacity, etc. and infrastructural issues include quality management, human resource, management and organization culture and leadership style etc. Resolution of infrastructural issues is very important for an organization to achieve sustainable competitive advantage. Competing on infrastructural issues is vital, since they are difficult to imitate (Dangayach & deshmkh,2001). Using data collected in 1987 from US manufacturing companies, Miller & Roth(1994) identified three strategic types of manufacturers: Caretakers, Innovators and Marketers (Zhao & etal, 2006). No manufacturer in the world is able to provide all six outputs/objectives (cost, quality, performance, delivery, flexibility, and innovativeness) at the highest possible levels (Miltenburg, 1995: p.16). Like any other output, organizational innovation depends on the presence of capabilities by which firms synthesize and acquire knowledge resources and generate new applications from those resources (e.g., Calantone, Cavusgil, & Zhao, 2002; Celuch, Kasouf, & Peruvemba, 2002).

In the following sections, we present a model consisting of five hypotheses about how transformational as infrastructural decision provide condition firm innovation. We recognized that other variables might be considered in such a model; however, it was necessary to limit our model to be able to offer empirical evidence for our arguments.

### 1.1.2 *The Relationship of Transformational Leadership with Innovation's Objective*

Transformational leadership theory in management and psychology research is primarily based on the work of Bass (1985). In this approach, transformational leadership is generally defined in terms of the leader's behaviors and effect on followers. Different from transactional leadership, transformational leadership involves an underlying influence process that motivates followers by encouraging them to transcend their self-interests for the sake of the organization and goal accomplishment. Followers, through transformational leadership, are motivated to do more than originally expected and feel trust, loyalty, respect, and admiration toward the leader.

Transformational leaders raise followers' levels of awareness and consciousness about the value and importance of key outcomes and their accomplishments. They alter followers' portfolios of needs and wants, expanding and raising these in terms of the need hierarchy. Moreover, transformational leaders encourage and

help followers transcend their self-interests for the enhancement of the group, team, organization, or larger society interests (Yammarino & et al., 2005).

Bass (1985) and Burns (1978) described the transformational leader as one who empowers the followers and motivates them to work on transcendental goals instead of focusing solely on immediate interests. Transformational leadership elevates the followers' level of maturity and ideals, and also promotes the importance they attribute to achievement, their investment in self-actualization, and their concern for the well being of others, the organization, and society. In sum, the impact of transformational leadership is reflected in motivation, empowerment, and morality.

Burns (1978) addressed the motivational aspect by employing Maslow's (1970) theory of the hierarchy of needs. According to Maslow, only upon satisfaction of the needs at the lower level does the motivation to satisfy a need at a higher level arise, while self-actualization needs are deemed infinite. Burns suggested that transformational leaders motivate followers to achieve the highest possible level of need satisfaction, namely self-actualization.

Unlike some destructive charismatic leaders (e.g., Mumford, Gessner, Connelly, & O'Connor, 1993; Popper, 2001), transformational leaders do not derive their strength from the weakness or dependence of the followers. Rather, they (1) increase the followers' autonomy and encourage them to think independently and critically; (2) raise their level of self-efficacy, self-confidence, competence, self-worth, and self-management; and (3) augment their creativity and risk-taking. These outcomes frequently emerge in studies of transformational leadership. Transformational leaders, according to Burns, motivate their followers toward and through end values such as justice and equality, and are therefore highly pro-social (popper & mayseless, 2003).

Transformational leadership, which has been contrasted with traditional or transactional leadership, includes a wide strategic vision about the advantages of change and adaptation (Dess & Picken, 2000), significant interest in a communicative culture (Hult, Ferrell, Hurley, & Giunipero, 2000), attention to the development of people (Barczak & Wilemon, 1992), and acceptance of mistakes (Snell, 2001). It is important to highlight that managers' perceptions about their own roles in their organizations strongly influence their capability to promote this kind of leadership in an organization.

Several features of transformational leadership are relevant for firm innovation. Transformational leaders have an interactive vision, paying maximum attention to effective communication and sharing values and encouraging an appropriate environment for innovative teams (Tushman & Nadler, 1986). They support collective processes of organizational learning (Manz, Barstein, Hostager, & Shapiro, 1989), reciprocal trust between organization members and leaders (Scott & Bruce, 1994), and favorable attitudes toward proactivity and risk (Lefebvre & Lefebvre, 1992). Transformational leaders perceive their role more as coordination than as command and control (Barczak & Wilemon, 1992).

All these features together allow a better understanding of the strong relationships between collaborative, innovative transformational leadership and factors positively influencing organizational innovation. Transformational leadership is more often linked to successful innovation than is transactional leadership (Dess & Picken, 2000; Manz et al., 1989).

Bass (1985) identify five dimensions of transformational leadership (vision, Inspirational communication, Supportive leadership, Intellectual stimulation and Personal recognition) (Rafferty & Griffin, 2004) that is base for our next hypothesizes:

### *1.1.3 The Relationship of Vision with Innovativeness Output*

House (1977) defined vision as a transcendent ideal that represents shared values, and which is ideological in nature. McClelland (1975) suggested that vision results in the internalization of organizational values and goals, which encourages individuals to adopt behaviors because of the attractiveness of the behavior itself as opposed to the attractiveness of a given leader. Rafferty & Griffin (2004) defined vision as expression of an idealized picture of the future based around organizational values. Therefore, the following hypothesis is tested:

**H1.** Vision has a unique positive effect on innovativeness output

#### *1.1.4 The Relationship of Inspirational Communication with Innovativeness Output*

Downton (1973) defined inspiration as the action or power of moving the intellect or emotions. In contrast, Bass (1985) restricted the use of the term inspirational leadership to instances when a leader employs or adds nonintellectual, emotional qualities to the influence process. He stated that inspirational leaders add affective qualities to the influence process through the use of inspirational talks and emotional appeals. Similarly, Yukl (1981) suggested that inspiration refers to the extent to which a leader stimulates enthusiasm among subordinates for the work of the group and says things to build subordinate confidence in their ability to perform assignments successfully and attain group objectives.

A recurring element within existing definitions of inspirational leadership is the use of oral communication to motivate and arouse followers' emotions. As a result, we focus on inspirational communication, or the use of appeals and emotion-laden statements to arouse followers' emotions and motivation, as opposed to the broader construct of inspirational motivation proposed by Bass and his colleagues. Rafferty & Griffin (2004) defined this as expression of positive and encouraging messages about the organization, and statements that build motivation and confidence. Therefore, the next hypothesis is tested:

**H2.** Inspirational communication has a unique positive effect on innovativeness output

#### *1.1.5 The Relationship of Supportive Leadership with Innovativeness Output*

One factor that distinguishes transformational leadership from other New Leadership theories is the inclusion of individualized consideration. Bass (1985) initially stated that individualized consideration occurs when a leader has a developmental orientation towards staff and displays individualized attention to followers and responds appropriately to their personal needs.

More recently, discussions of individualized consideration have focused on one component of this construct, supportive leadership. For example, Avolio and Bass (1995) stated "the leader displays more frequent individualized consideration by showing general support for the efforts of followers." Other authors in the transformational leadership field have also focused on supportive leadership as opposed to the broader construct of individualized attention. Podsakoff et al. (1990) examined individualized support, which was defined as behavior on the part of a leader that indicates that he or she respects his or her followers and is concerned with followers' feelings and needs.

We focus on supportive leadership here, and use the extensive research that has been conducted on this topic to guide our discussion. Supportive leadership is a key aspect of effective leadership in path-goal theory (House, 1971 & House, 1996) defined supportive leader behavior as behavior directed toward the satisfaction of subordinates' needs and preferences, such as displaying concern for subordinates' welfare and creating a friendly and psychologically supportive work environment. Rafferty & Griffin (2004) defined supportive leadership as expressing concern for followers and taking account of their individual needs. Therefore, the next hypothesis is tested:

**H3.** Supportive leadership has a unique positive effect on innovativeness output

#### *1.1.6 The relationship of Intellectual stimulation with innovativeness's output*

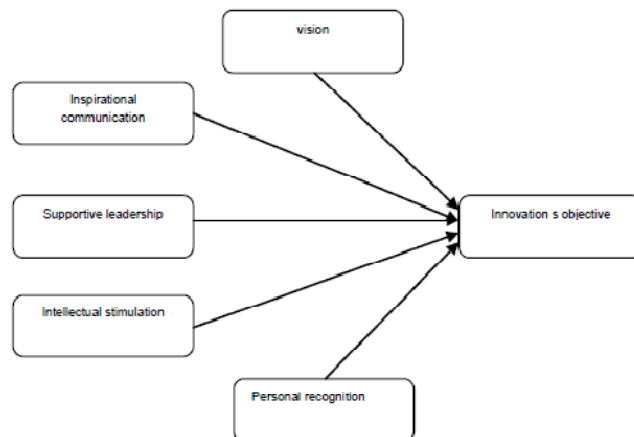
The most underdeveloped component of transformational leadership is intellectual stimulation (Lowe et al., 1996). This leadership factor encompasses behaviors that increase followers' interest in and awareness of problems, and that develop their ability and propensity to think about problems in new ways (Bass, 1985). The effects of intellectual stimulation are seen in increases in followers' abilities to conceptualize, comprehend, and analyze problems and in the improved quality of solutions that they generate (Bass & Avolio, 1990). While this leadership factor has not been the subject of extensive research, this construct encompasses a more focused, and internally consistent set of behaviors than the other dimensions of transformational leadership. As a result, the definition of intellectual stimulation adopted by Bass and his colleagues is retained in this study. Based on the work of Bass (1985), Rafferty & Griffin (2004) defined intellectual stimulation as enhancing employees' interest in, and awareness of problems, and increasing their ability to think about problems in new ways. Therefore, the following hypothesis is tested:

**H4.** Intellectual stimulation has a unique positive effect on innovativeness output

#### *1.1.6 The relationship of Personal Recognition with Innovativeness Output*

Goodwin et al. (2001) distinguish between reward as a control mechanism and reward as a component of a system designed to increase employee commitment. Rafferty & Griffin (2004) use the term "personal

recognition” to capture that aspect of contingent reward that is conceptually related to transformational leadership. Personal recognition occurs when a leader indicates that he or she values individuals’ efforts and rewards the achievement of outcomes consistent with the vision through praise and acknowledgment of followers’ efforts. Those defined personal recognition as the provision of rewards such as praise and acknowledgement of effort for achievement of specified goals. Therefore, the following hypothesis is tested:  
**H5.** Personal recognition has a unique positive effect on innovativeness output



**Figure1. Transformational Leadership and Innovations Objective**

## 2 METHOD

### 2.1 Sample and Procedures

The sample of firms was randomly selected from the parts manufacturers of automobile in Iran, selected manufacturers are as a element from supply chain that produce request parts for produce automobile, directly. There are supply chains including 1520 manufacturers. Choosing a sample of firms located in relatively homogeneous geographic, culture, legal, and political space enabled us to minimize the impact of variable that could not be controlled. 455 survey were distributed across manufacturers, and 370 manager responded (response rate .81). The questionnaires were delivered to the manager, randomly selected firms along with a its understood letter. The sample of the study focused on examining leadership behavior and innovativeness's output in the its firm and supply chain.

We used method of questionnaire rather than interviews because it enabled us to put less pressure for an immediate response on the potential informants, and gave respondents a greater feeling of autonomy. To reduce possible desirability bias, we promised that we would keep all individual responses completely confidential and confirmed that our analyses would be restricted to an aggregated level that would prevent the identification of any organization.

Prior to collecting the data, two measures were taken to assure the quality of the research design. Initially, a pretest involving eight academics and seven supply chain executives was conducted to assess the face validity of the scale items. Next, a pilot study including 74 firm managers was conducted to assess the general quality of the research design. As a part of the pilot study, the managers were also asked to provide qualitative comments regarding their supply chain practices. Following the pretest and pilot study, the full survey was administered to manufacturers involved in the supply chains of the part makers.



## 2.2 Measure

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### 2.2.1 Transformational leadership

Transformational leadership items were adapted from measures produced by House (1998) and Podsakoff et al. (1990). Items were chosen on the basis of how well they assessed the theoretical construct under study (firm and supply chain). leadership items are displayed in Table 1. A 5-point Likert scale where 1 represented strongly disagree and 5 represented strongly agree was used for all the leadership items. Managers were asked to respond to the leadership items keeping in mind the leader or manager of their firm and supply chain, which was defined as that group of people that individuals interact with on a day-to-day basis.

#### 2.2.1.1 Vision

Three items developed by House (1998) were adapted to assess this construct. One item was reverse scored. An example item was "has a clear understanding of where he/she wants our unit to be in 5 years." This scale had a Cronbach's alpha of 0.71.

#### 2.2.1.2 Intellectual stimulation(IS)

Three items developed by Podsakoff et al. (1990) were adapted to assess this construct. An example of an item used to assess this construct was "challenges me to think about old problems in new ways." This scale had a Cronbach's alpha of 0.69.

#### 2.2.1.3 Inspirational communication(IC)

Three items developed by House (1998) were adapted to assess inspirational communication. An example of an item was "says things that make employees proud to be part of this organization." This scale had a Cronbach's alpha of 0.73.

#### 2.2.1.4 Supportive leadership(SL)

Three items developed by House (1998) were adapted to assess supportive leadership. An example of an item used in the current study was "sees that the interests of employees are given due consideration." This scale had a Cronbach's alpha of 0.75.

### 2.2.1.5 Personal recognition(PR)

Three items reported by Podsakoff et al. (1990) were adapted to assess this construct. An example of an item was "commends me when I do a better than average job." This scale had a Cronbach's alpha of 0.81. Used items of transformational leadership dimensions are provided in table 1.

**Table 1:**  
Items used to assess the transformational leadership dimensions

Dimension	Transformational leadership items
Vision	<ol style="list-style-type: none"> <li>1. There are a clear understanding of where our sc* are going</li> <li>2. There are a clear understanding of where sc wants our firm to be in 5 years</li> <li>3. There are no idea where the sc is going (R)**</li> </ol>
Inspirational communication	<ol style="list-style-type: none"> <li>1. Managers of sc Say things that make me proud to be a part of this sc</li> <li>2. Managers of sc Say positive things about the work firm</li> <li>3. Encourages people of sc to see changing environments as situations full of opportunities</li> </ol>
Intellectual stimulation	<ol style="list-style-type: none"> <li>1. Challenges me to think about old problems of sc in new ways</li> <li>2. There are ideas that have forced me to rethink some things of sc that I have never questioned before</li> <li>3. There are challenges in sc that have forced me to rethink some of my basic assumptions about my work</li> </ol>
Supportive leadership	<ol style="list-style-type: none"> <li>1. Considers my personal feelings before acting in sc</li> <li>2. Behaves in a manner which is thoughtful of my personal needs in sc</li> <li>3. Sees that the interests of employees are given due consideration in sc</li> </ol>
Personal recognition	<ol style="list-style-type: none"> <li>1. Sc commends me when I do a better than average job</li> <li>2. Sc acknowledges improvement in my quality of work</li> <li>3. Sc personally compliments me when I do outstanding work</li> </ol>

\*supply chain

\*\* (R) indicates that the item was reverse-scored.

### 2.2.2 Innovation's objective(INN.)

Five item reported by miltenburg (1995) were adapted to assess this construct (miltenburg, 1995: p.25). Innovativeness's output focused on two elements: (1) overall innovativeness of the supply chain and (2) innovativeness's output of the firm relative to the other chain organizations. This scale had a Cronbach's alpha of 0.75. Used items of innovativeness's output are provided in table2.

**Table 2:**  
Items used to assess the Innovativeness's output

1. Receive numerous engineering change order from upstream sc per year
2. Introduce numerous new product(part) to upstream sc per year
3. Introduce numerous new product by overall sc to customer per year
4. There are short leadtime to design product(part) in our firm
5. There are short leadtime to design product in our overall sc
6. There are high level of R&D investment in our firm
7. There are high level of R&D investment in our overall sc

### 3 ANALYSIS AND RESULTS

#### 3.1 Description of System

The mean level of Innovativeness was 2.68( SD = .58) on a five-point likert scale. The innovativeness scale exhibited considerable range, running from 1 to 5 with mode of 2.57 and a median of 2.71(skewness = -.199 & kurtosis = .202). table 3 includes the statistics for each scale variable.

**Table 3**  
Summary statistic of the measurement analysis

Variable	Mean	Median	Mode	SD	Skewness	Kurtosis	Lower bound	Upper bound
Vision	3.19	3.33	3.33	.64	.102	.016	3.133	3.263
IC	3.09	3	2.67	.75	-.191	.156	3.016	3.169
IS	3.47	3.33	3.33	.73	-.386	-.373	3.397	3.548
SL	2.69	2.67	2.67	.78	.217	.002	2.61	2.77
PR	2.89	2.67	2.67	.80	.256	.358	2.81	2.973
INN.	2.68	2.71	2.57	.58	-.199	.202	2.628	2.746

Table 4 reports correlations of study's variables. Correlations suggest that dimension of transformational leadership excide vision have significant positive relationship with innovativeness (P< .01).

**Table4**  
Correlation between variables

	Vision	IC	IS	SL	PR	Trans.	INN.
Vision	1	.425**	.139**	.062	.021	.239**	.097
IC	.425**	1	.417**	.211**	.265**	.471**	.364**
IS	.139**	.417**	1	.390**	.203**	.252**	.189**
SL	.062	.211**	.390**	1	.467**	.275**	.459**
PR	.021	.265**	.203**	.467**	1	.511**	.614**
INN.	.097	.364**	.189**	.459**	.614**	.335**	1

\*\* . Correlation is significant at the 0.01 level (2-tailed)

#### 3..1.1 Hypotheses Testing

The testing of the hypotheses was accomplished through the estimation of one linear regression model. Hypothesis five has been test by correlation test. model was tested via SPSS11. To test effects involving the variables in hypotheses, the following regression equation was analyzed:

$$Y = \alpha + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5$$

Where,

Y = Innovation's objective,  $\alpha$  = intercept,  $X_1$ = Vision ,  $X_2$ = Inspirational communication,  $X_3$ = Supportive leadership,  $X_4$ = Intellectual stimulation,  $X_5$ = Personal recognition , and  $\epsilon$  = random disturbance terms.

The results of hypotheses testing are summarized in table 5. The results from the linear regression show that inspirational communication ( $b_2 = .203$ , t- value = 5.255,  $p < .01$ ), supportive leadership ( $b_3 = .171$ , t- value = 4.952,  $p < .01$ ), intellectual stimulation ( $b_4 = -.071$ , t - value = |1.982|,  $p < .05$ ), and personal recognition ( $b_5 = .361$ , t- value = 10.086,  $p < .01$ ) had a significant effect on innovativeness. But intellectual stimulation showed a negative effect on innovativeness. As such, hypotheses 2, 3 & 5 were supported, and hypothesis 5 was not supported. vision ( $b_1 = -.007$ , t - value = |1.83|,  $p = .0855$ ) was not statistically effected on innovativeness. As such, hypotheses 1 were not supported.

The fully specified model, after inclusion of all the variables, resulted in  $R^2 = .462$  (F - value = 51.884,  $p < .01$ ). the following regression equation was concluded:

$$Y = 1.082 + 0.203X_2 + 0.171X_3 + 0.361X_5 + \epsilon$$

variable	b	Std.error	$\beta$	t-valuc	sign	hypothesis	rresult
(constant)	1.082	.169		6.338	.000		
Vision	-.007	.039	-.008	-.183	.855	H1	Not supported
IC	.203	.039	.263	5.255	.000	H2	Supported
SL	.171	.034	.230	4.952	.000	H3	Supported
IS	-.071	.036	-.090	-1.982	.048	H4	Not supported
PR	.361	.036	.498	10.086	.000	H5	Supported
<b>R square = .462</b>							
<b>F- value = 51.884 (p &lt;.01)</b>							

#### 4 CONCLUSION AND LIMITATIONS

Our findings indicate that nature of supply chains has an influence on which leadership type is successful. we discover support for our hypotheses that dimension of transformational leadership excide vision have a moderating influence on the innovativeness. Inspirational communication, supportive leadership and personal recognition have a positive moderating effect on the innovativeness, and, intellectual stimulation has a weakly negative influence on innovativeness.

As such, these results contribute to the literature in at several ways. Our findings extend academic research on supply chains by analyzing cases beyond simply individual firms. These were manufacturers that produce parts, respectively, for automobile manufacturer. Our finding imply that leadership, with emphasize on firms and supply chains managers, can either properly or improperly lead the Innovativeness's output, depending on type of leadership in context.

It is especially important here to understand the importance of transformational leadership and its several dimensions, first inspirational communication include expression of positive and encouraging messages about the organization, and statements that build motivation and confidence and supportive leadership includes concern for followers and taking account of their individual needs and then, personal recognition includes provision of rewards such as praise and acknowledgement of effort for achievement of specified goals that it is positive correction with transactional leadership.

Our results must be only cautiously generalized because this study has several limitations. First, the study is limited by specified group of automobile part manufacturer in the Iran. Secondly, survey data based on self reports may be subject to social desirability bias.

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