



## Assessing the Impact of Leadership Orientation on Innovation Performance: Does Learning Orientation Play a Mediating Role?

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**Abstract:** The accumulation and application of knowledge has long been considered to be the primary determinant of innovation capability and performance. In light of the importance of knowledge, significant research work has been dedicated to investigate factors that determine the success of organization's learning process. Recent findings showed that the organization's leadership and its philosophy significantly influences learning process. The main aim of the study is to examine the impact of specific types of leadership styles, employee oriented and task oriented, on organizational learning orientation and innovation performance. A hypothetical model relating leadership orientation, learning orientation and innovation performance was developed. The model was empirically tested by using a survey data from 432 senior and middle management members currently working in 127 textile and leather product manufacturing firms in Ethiopia. The structural equation modeling based analysis reveals that leadership style influences both learning and performance of an organization. Moreover, it shows the relationship between leadership and innovation performance is fully mediated by the learning orientation of the organizations.

**Keywords:** commercial performance, leadership orientation, learning orientation, project performance

### 1 Introduction

Manufacturing firms of small and large size, residing in both developed and developing countries, are currently operating under increasingly dynamic and unpredictable environment <sup>[1, 2]</sup>. Challenged by such market factors, many are considering innovation in general and product innovation in particular as their key strategic competitive advantage <sup>[2, 3]</sup>. Innovation on the other hand is considered to be the direct outcome of organizational learning <sup>[4-6]</sup>. Significant number of literatures indicated that organizations which encourage both individual and group learning and organized themselves in such a way outperform their competitors and improve the overall organizational performance <sup>[4, 5, 7]</sup>. Recent studies also showed that because of its influence on the selection of strategic direction and resource decisions, the leadership of an organization has impact on individuals and groups learning propensity <sup>[5, 7]</sup>. In effect, while some leadership styles encourage

learning, others create a competition among organizational members and discourage the process <sup>[8, 9]</sup>. However, most of the research works were concentrated in developed economies where performance is the total effect of the supply chain, the access to newly developed technologies, proximity to highly efficient academic personnel and of course the leadership <sup>[5, 7, 10]</sup>. These factors of production however are far beyond absence in the case of African countries in general and Ethiopia in particular. Consequently, the performance in this case is entirely dependent on the production process in hand, the efforts to learn from internal and external sources and most importantly on the management-employee interaction. Therefore, the main aim of the paper is to forge a linkage among the three bodies of knowledge, leadership, learning and innovation performance and test the impact of leadership on the other constructs. Moreover, it explores the significance of the mediating role of learning orientation on the relationship between leadership orientation and innovation performance. By addressing the aforementioned objective, the paper will have varying contribution. First, the linkage among the three constructs will create an alternative model for similar analysis. Second, along with the creation of linkage among the three constructs, the paper develops a further detailed model that divides innovation performance into project performance (internal performance of the innovation process related to cost, quality and speed of innovation) and commercial performance (the market success of newly introduced product with respect to financial gains and customer satisfaction).

The remainder of the paper is organized as follows. The second section presents the literature review along the hypothesis to be tested. In the third section deals with the methodology employed to collect and analyze the survey data. The result of the analysis is presented in the fourth section followed by the related discussion. Finally, the theoretical and practical implications of the findings as well as the limitation and future research directions are described.

### 2 Literature and hypothesis

Manufacturing firms of varying size operating in different economic geographies are currently being

challenged by the intensive competition and technological turbulence [2]. In such uncertain times, many consider product innovation as their strategic competitive advantage [2, 3]. Product innovation in turn is a direct outcome of individual and group learning in an organization [4, 6, 7]. Significant number of literatures consider that learning is primary source of competitive advantage which increase the efficiency and efficacy of the innovation process and the overall innovating performance [4, 10]. Moreover, the literatures showed that the overall learning process and its structure is the reflection of the leadership style an organization follows [5, 7]. Thus, based on the findings of these theories, we develop the following hypothetical interrelationship model de among leadership orientation, learning orientation and product innovation performance (see Fig. 1) and proposed the following hypotheses

### 2.1 Leadership orientation and organizational learning

Leadership is a process of influencing and inspiring others to accomplish pre-determined organizational goals [4, 7]. Literatures in organizational learning indicated that leader are the role models of their subordinates and their behavior related to organizational direction and resource allocation has an impact on organizational learning process [4, 11, 12]. Moreover, the findings show that different leadership styles result in different learning orientation. That is, while some styles encourage cooperation among members and encourage learning, others create a competition among the members and discourage the process [4, 8]. Accordingly, [7], indicate that while employee oriented leaders (leaders who focuses on subordinates' human needs, build effective work group and support development and empowerment) motivate learning, task oriented leaders (who focused on achievement of goals, lower cost and higher efficient and associate itself with the need of planning, classifying and monitoring) negatively influence the learning process of an organization. On the other hand, [13] indicate that leaders encourage learning though a high level of control (lower nurturing). Hence by considering these findings and from the conceptual framework in Fig. 1, we hypothesized that

H<sub>1</sub>: *The Leadership orientation of an organization is positively and significantly related to organizational learning orientation.*

### 2.2 Organizational Learning and innovation performance

Organizational learning as source of innovating capability and strategic competence was the focus of significant number of research works [7, 14]. Learning orientation, through which organizations collect and disseminate customer, competitors and technology related information was at the core of these investigations [4, 7, 15]. According to [7], learning orientation is an organization's shared mental model that calls for commitment, shared organizational goal and openness.

These concepts were further explained in the work of [16] as follows:

Commitment to learning: the degree of emphasis an organization gave to the value of learning and keeps committed to it. On the other hand, organization's open mindedness is the extent of organizational openness to accept changes and new ways of doing things. It is also the willingness of the organization to question long held assumptions and beliefs and unlearn them if necessary [4]. The presence of commitment and openness in an organization need a coordinated and structured learning which should works towards the attainment of common goals. For this the presence of a shared vision is the core of the learning orientation. In effect, it guides "what and how" of the learning process of organizations [17].

In relation to the learning orientation and learning process of organizations, organizational performance in general and innovation performance in particular were the focus of academic scholars and managers [7]. Learning and the orientation of learning were found to be the causes of change in behavior and improve the capacity of organizational members which in effect impacts their performance [18-20].

Product innovation performance got a slightly different meaning for different academic scholars and managers. In one hand, it is considered to be the market success of a newly introduced product measured against the financial gain [21]. On the other hand [2], consider product innovation performance to be the totality of both project performance and commercial performance. while the project performance is concerned with the process of organization's innovation process (speed of innovation, quality of innovation and innovation process's cost), the commercial performance concerns about the market success of newly introduced product measured in terms of financial gains and customer satisfaction [17, 22]. Though mostly focused on the commercial performance of a newly introduced product, extant literatures found that the learning orientation of an organization is positively related to its innovation performance [4, 10, 20]. More importantly, it was shown that the learning capacity and learning structure of organizations have significant impact on the speed of learning which in turn affects innovation performance of an organization [20, 23, 24]. Accordingly, the attempt to learn and the orientation deployed are fundamental factors that affect the innovation performance of organizations [14]. Hence relying on these findings, we hypothesized that

H<sub>2</sub>: *The learning orientation of an organization (commitment to learn, shared vision and open mindedness) is positively and significantly correlated to its innovation performance (Project and commercial).*

### 2.3 Leadership orientation and innovation performance

Leadership is the way of inspiring organizational members to accomplish pre-stated organizational goals. Leadership thus has the responsibility of clearly defining the organizational goals and encouraging subordinates in

the process of achieving those goals<sup>[4, 7]</sup>. According to<sup>[25]</sup>, leaders are both the developers and facilitators of the innovation process of an organization. Thus, leaders use a role modeling style, allocate resources and define clear product development goals to motivate their follower<sup>[4,25]</sup>. Studies, mostly focused on the comparison of transactional and transformational leadership styles, indicated that different leadership styles have different impacts on the innovation performance<sup>[26]</sup>. The notion was also supported by the findings of<sup>[7]</sup> who stated that because of their responsibility to make strategic decisions, allocate resources and set the future direction of an organization, the leadership of an organization and its philosophy significantly influences its innovation performance. Thus, relying on these findings, we hypothesized that

H<sub>3</sub>: *The leadership orientation of an organization (employee oriented and task oriented) has positive and significant correlation with its innovation performance (project and commercial performance).*

### 2.4 The mediating role of learning orientation

Though the leadership orientation of an organization in many instances was found to have a positive relationship with the innovation performance, some scholars doubt the presence of direct relationship between leadership and innovation performance<sup>[27, 28]</sup>. Moreover, a number of literatures show that good leaders encourage individual and group learning, set specific goals and encourage innovations and their effort in doing so results in high and faster learning which in turn affects the performance of the innovation process<sup>[7]</sup>. As a result, we proposed the hypothesis that

H<sub>4</sub>: *The relationship between leadership orientation and product innovation performance of an organization is fully mediated by its learning orientation.*

## 3 Methodology

### 3.1 Data and sample selection

The proposed hypotheses were tested by means of a mail survey data from large and medium sized textile and leather product manufacturing organizations in Ethiopia.

Both the selected sectors are economically important for the nation and got the focus of the national government<sup>[29]</sup>. Moreover, as new entrant to the international market, they need a leadership which will create and motivate the opportunity of learning. The final population includes 127 manufacturing firms each with more than 50 employees.

Before the actual survey, the survey questionnaire that contain measurement items from existing literatures was thoroughly validated and pretested through interviews with academia experts and senior management members. In accordance to<sup>[30]</sup>, ten questionnaires along with a cover letter stating the objective of the study and a prepaid envelop was sent to the human resource department of each organization to be distributed among the management members<sup>[31, 32]</sup>. A total of 432 (out of 1502) usable questionnaires, 286 from textile and 146 from leather manufacturing firms (total response rate of 29%) were collected back. The paper use senior and middle management members of each firm as key informants<sup>[33]</sup>.

### 3.2 Measurement

A multi-item measurement scales were developed from existing literature to measure all the constructs of the study depicted in Fig. 1

**Leadership orientation:** a 12 (6 items of task orientation and 6 items of employee orientation) item scale adopted from<sup>[7]</sup> was used to measure the opinion of the respondents about how they characterize general practice of the overall management in their organization.

**Leaning orientation:** 12 item scale from<sup>[4]</sup> was used to measure the components of learning orientation (commitment to learning, shared vision and open mindedness). A five point Likert was used to collect the opinion of the respondents about their feeling related to the learning process in their respective organization.

**Innovation performance:** it was measured by using two components, project performance and commercial performance. An eight item scale adopted from<sup>[34]</sup> and<sup>[23]</sup> were used to measure the three project performance components (innovation speed, innovation quality and process cost reduction). The commercial

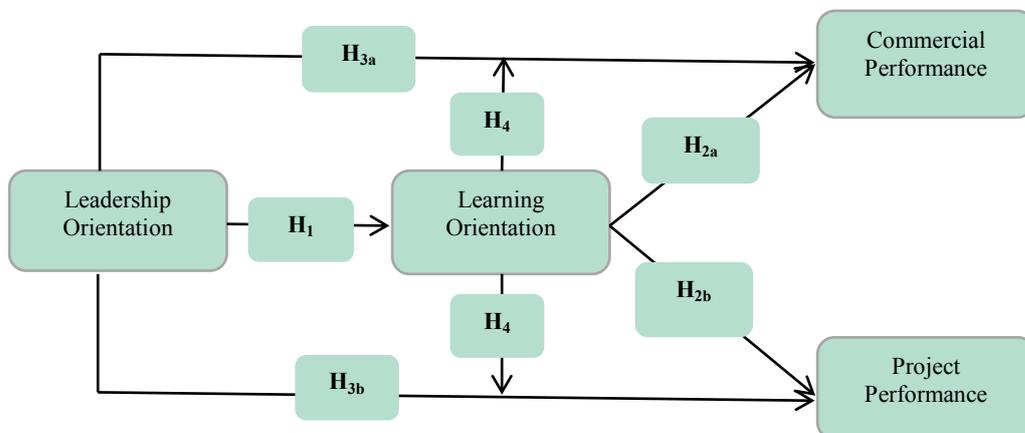


Fig.1 Conceptual framework

Performance (financial performance and customer satisfaction) was measured by six item scale adopted form<sup>[35]</sup> and <sup>[36]</sup>. In both cases, respondents were asked to compare the performance of their organization with their key competitors.

### 3.3 Statistical analysis

The paper uses structural equation modeling to analysis with maximum likely hood estimation method in Amos version 21.0. Currently, many research works in management field have shown the adequacy of structural equation modeling <sup>[37, 38]</sup>. In the analysis, latent variables were manifested as an average for each respondent <sup>[39]</sup>. The survey data was first tested for multi-variant normality and linearity and from the final result; there was no any violation of the assumption<sup>[38]</sup>.

The measurement model was evaluated by using the convergent and discriminant validity testes. While the convergent validity is the degree that measurement factors supposed to measure a given construct the convergent validies was tested by using the factor loading, which should be more than 0.5, composit reliability (CR) which exceed 0.6 for all constructs and the average variance extracted (AVE) which need to be more than 0.5. As Tab. 1 shows, all the factor loading, the composite reliability and the average variance extracted exceeds the aforementioned criterias and signifies the adequcy of the convergent validity. The discriminant validity was evaluated by comparing the square root of the AVE of each construct with the correlation values of the construct with the other constructs <sup>[40]</sup>. Accordigly as can be seen from Tab. 1 (the bold diagonal values), we found that all the AVE values are greater than the corrleation values hence, the mesurement items have acceptable discriminant validiy.

The structural model was also tesed for its data fit different goodness of fit index. These includes; absolute fit measurement (chi-square,  $\chi^2$ ; degree of freedom, df. ; Goodness of fit index, GFI; and Root mean square error

approximation, RMSEA), and incremental fit measurements (Normed fit index, NFI; Non normed fit index, NNFI and comparative fit index, CFI). All the fit indexes meet the criteria mentioned in different literatures <sup>[31, 37]</sup>. Thus, the structural model fits well with the survey data. See Tab. 1

### 3.4 Hypothesis testing

The analysis and evaluation of both the measurement and structural models leads to the test of the proposed hypothesis. Based on the structural equation model analysis displayed in Fig. 2 and the effect decomposition shown in Tab. 2, we found the following concerning the relationship between the constructs.

The first hypothesis [H<sub>1</sub>] predicts a positive and significant relationship between leadership orientations (Employee oriented and Task oriented) with learning orientation (commitment to learning, shared vision and open mindedness). From the analysis result, the employee oriented leadership has a strongly significant positive effect on commitment to learning, shared vision and open mindedness (path coefficients of  $\beta=0.54$ ,  $p<0.01$ ;  $\beta= 0.45$ ,  $p<0.01$  and  $\beta=0.58$ ,  $p<0.01$  respectively). As for the task oriented leadership style, while it shows a strongly significant and positive relationship with both the shared vision and open mindedness (path coefficient  $\beta=.014$ ,  $p<0.01$  and  $\beta= 0.17$ ,  $p<0.01$  respectively), its relationship with commitment to learning was not supported ( $\beta=0.14$ ,  $p>0.1$ ).

The second hypothesis predicts the level of impact of organizational learning orientation on its innovation performance [H<sub>2a</sub>, H<sub>2b</sub>]. The result presents supportive evidence that learning orientation has strongly significant positive relationship with innovation performance. Thus the proposed hypotheses in this case were fully supported.

**Tab.1 Descriptive statistics and convergent and discriminant validity test results**

Mean	3.52	3.46	3.67	3.65	3.83	3.70	3.67
SD	0.80	0.64	0.82	0.89	0.89	0.69	0.76
Range of loading	0.70-0.81	0.68-0.74	0.75-0.85	0.73-0.86	0.77-0.92	0.73-0.85	0.74-0.84
CR	0.84	0.80	0.87	0.81	0.87	0.83	0.84
AVE	0.65	0.73	0.69	0.78	0.76	0.67	0.70
Constructs	EMOR	TAOR	COLE	SHVI	OPMI	PRPE	COPE
Employee oriented (EMOR)	<b>0.81</b>						
Task Oriented (TAOR)	0.12**	<b>0.85</b>					
Commitment to learning (COLE)	0.40**	0.12**	<b>0.83</b>				
Shared vision (SHVI)	0.56**	0.42**	0.27**	<b>0.88</b>			
Open Mindedness (OPMI)	0.55**	0.24**	0.56**	0.34**	<b>0.87</b>		
Project Performance (PRPE)	0.49**	0.15**	0.51**	0.45**	0.48**	<b>0.82</b>	
Commercial Performance (COPE)	0.53**	0.13**	0.40**	0.40**	0.58**	0.49**	<b>0.84</b>
<b>Structural model goodness of fit index</b>							
Chi Square ( $\chi^2$ )=1041.562	Degree of freedom (df)=239						
Mean square residual (RMR)=0.023	Goodness of fit index (GFI)=0.96						
Normed fit index (NFI)=0.93	Non-normed fit index (NNFI or TLI)=0.93						
Comparative fit index (CFI)=0.95	Root square error of approximation (RMSEA)=0.058						
**Correlation is significant at the 0.01 level (2-tailed).							
*Correlation is significant at the 0.05 level (2-tailed).							

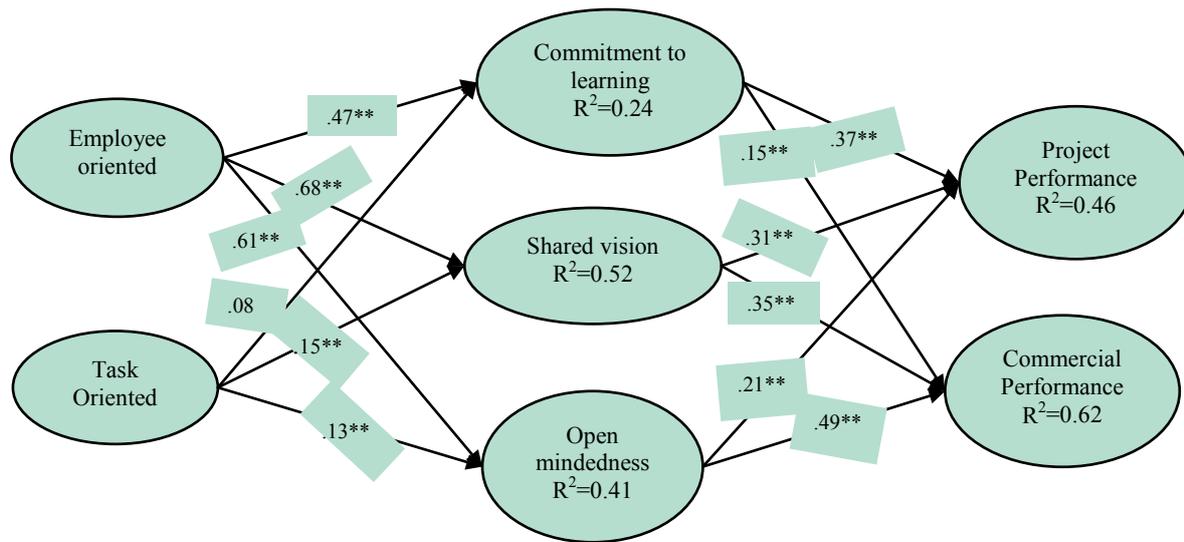


Fig.2 Overall path model (Standardized estimates)

Tab.2 Effect decomposition

Path	Standardized coefficients (t-values)		
	Total effect	Direct effect	Indirect effect
Employee oriented → Commitment to learning	0.47 (9.33**)	0.47 (9.33**)	---
Employee oriented → Shared vision	0.68 (11.01**)	0.68 (11.01**)	---
Employee oriented → Open mindedness	0.61 (10.95**)	0.61 (10.95**)	---
Task Oriented → Commitment to learning	0.10 (1.73)	0.10 (1.73)	---
Task Oriented → Shared vision	0.15 (3.59**)	0.15 (3.59**)	---
Task Oriented → Open mindedness	0.13 (2.71**)	0.13 (2.71**)	---
Commitment to learning → Project Performance	0.37 (6.75**)	0.37 (6.75**)	---
Commitment to learning → Commercial Performance	0.15 (3.32**)	0.15 (3.32**)	---
Shared vision → Project Performance	0.31 (5.14**)	0.31 (5.14**)	---
Shared vision → Commercial Performance	0.35 (6.39**)	0.35 (6.39**)	---
Open Mindedness → Project Performance	0.21 (3.80**)	0.21 (3.80**)	---
Open Mindedness → Commercial Performance	0.49 (8.71**)	0.49 (8.71**)	---
Employee oriented → Project Performance	0.40 (6.25**)	---	0.40 (6.25**)
Employee oriented → Commercial Performance	0.45 (7.55**)	---	0.45 (7.55**)
Task Oriented → Project Performance	0.12 (3.27**)	---	0.12 (3.27**)
Task Oriented → Commercial Performance	0.13 (2.82**)	---	0.13 (2.82**)

The third hypothesis was about the relationship between the leadership orientation and innovation performance [H<sub>3a</sub>; H<sub>3b</sub>].

As can be seen from the effect decomposition (Tab. 2), organization's learning orientation is positively and significantly related to the innovation performance components. Hence, the proposed hypothesis holds true.

The positive and significant path coefficients for the indirect relationship between leadership orientation and innovation performance components (Tab. 2), and the level of explained variance of both the project performance and commercial performance (Fig. 2), presents supportive evidence about the significance mediating role of learning orientation, [H<sub>4</sub>].

The significance of the mediating role was further evaluated by testing the four conditions proposed by [41]. From the result in Tab. 3, the four conditions were

adequately met indicating that the relationship between leadership orientation and product innovation performance is fully mediated by organization's learning orientation.

#### 4 Discussion and conclusion

Recent evidences show that the number of scholarly work related to the investigation of factors that enhance organizational learning and improve innovation performance is alarmingly increasing [4]. The impact of leadership orientation is among those factors got the attention and is vastly investigated [15, 26]. The leadership of an organization is a responsible body for setting strategic direction and coordinates organizational activities and allocate resources [4, 7]. Leadership also creates organizational conditions that encourage both

individual and group learning which in effect changes the behavior and capacity of organizational members<sup>[10,25,42]</sup>. Through these actions, the leadership will impact the innovation process and its performance<sup>[25,26]</sup>. Learning is an organization wide mental model that needs structural and cultural supports and its effectiveness is entirely dependent on the level of commitment, organizational openness and the availability of commonly shared vision<sup>[16, 17]</sup>. The first aim of the paper was to investigate the extent of impact of specific types of leadership orientation, employee oriented and task oriented, on both the learning orientation of an organization. The result of the analysis.

Based on the characteristics of employee oriented leadership mentioned by<sup>[7]</sup>, the result is a confirmation of the findings in existing literatures<sup>[15, 42]</sup>. As for the task oriented leadership, the result shows that it strongly and positively impacts both shared vision and open mindedness but falls to support the presence of significant impact on commitment to learning. According to<sup>[7]</sup>, task oriented leaders mostly concentrate on efficiency and cost reduction and focus on planning, control and monitoring of their subordinates. Hence, the lack of subordinate commitment to learn is an expected result. The second objective has been investigating the extent of impact of learning orientation on project and commercial performance of organization's innovation process. As predicted, the three components of organizational learning orientation were found to have strongly significant positive relationship with both project and commercial performance.

This confirms the notion of existing literatures that manufacturing firms which organized themselves in a way it encourages high level of learning orientation improve its performance and outperform its competitor<sup>[7,43]</sup>. Interesting enough, the result also reveals that most of the impact of learning orientation on innovation performance is reflected through the creation of organization wide shared vision. The result was supported by the view stated by<sup>[7]</sup> that each unit in an organization needs varying information and the lack of commonly shared organizational vision will result in disintegrated learning efforts.

Large number of management literatures considers that organization's leadership and the management philosophy it follows influences the innovation performance<sup>[7, 25]</sup>. Furthermore, these literatures indicated that the influence of leadership on innovation performance is indirect and is mediated by other management processes<sup>[27, 28]</sup>. The result of the paper confirms that leadership orientation has a significant impact on innovation performance and the relationship was fully mediated by the learning orientation.

## 5 Conclusion

The paper by considering a survey data from textile and leather product manufacturing industries in Ethiopia investigates the extent of impact of employee oriented

and task oriented leadership styles on the learning orientation and innovation performance. The result confirms that while employee oriented leadership has strongly positive impact on learning commitment, shared vision and open mindedness, the task oriented leadership style has similar relationship only with the shared vision and open mindedness components. Moreover, consistent with the extant literatures, we found firms highly organized to encourage learning will have relatively better innovation performance. The result of the study also confirms that the relationship between leadership orientation and innovation performance was fully mediated by the learning orientation of an organization. Therefore, with respect to the textile and leather product manufacturing firms in Ethiopia, the firms will gain more innovation performance by practicing employee oriented leadership. And if the task oriented leadership is in action, it will be important to create conditions and allocated resources to the attainment of commitment to learn. The result will have both theoretical and practical implication.

### 5.1 Implication

With the aim of examining the extent of impact of leadership orientation on organizational learning and product innovation performance, the paper forges a relationship among three constructs. The linkage creates a new theoretical model (see Fig. 2). Furthermore, along with the creation of linkage among the three constructs, the paper develops a further detailed model that divides innovation performance into project performance (internal performance of the innovation process related to cost, quality and speed of innovation) and commercial performance (the market success of newly introduced product with respect to financial gains and customer satisfaction). The resulted theoretically model will therefore be an alternative model for further analysis of similar factors. On the other hand, as a decision making body the finding will be a guide for the management in the process resource allocates.

### 5.2 Limitation

The study has some limitations that need further investigation for a comprehensive and more generalized conclusion. First, it considers only textile and leather products manufacturing industries in the country and for more generalized conclusion, it might be important to expand the survey to other sub sectors. In addition, a new model which considers product innovation performance as a combination of project and commercial performance was developed and might need further evaluation.

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## Appendix A. (Questionnaire items)

### A.1. Leadership orientation<sup>[7]</sup>

What is your level of agreement concerning the following points in relations to the leadership in the organization? (1= totally disagree, 5= Totally agree)

The management in the organization

#### A.1.1. Employee oriented leadership

Socialize with people to build relationships (EMOR1)

Keep people informed about actions affecting them (EMOR2)

Consult with people on decision affecting them (EMOR3)

Recognize contributions and accomplishments (EMOR4)

Help resolve conflicts(EMOR5)

Empower people to implement new strategies(EMOR6)

#### A.1.2. Task oriented leadership

Assign work to groups or individuals (TAOR1)

Clarify role expectations and task objectives (TAOR2)

Explain rules, policies, and standard operating process (TAOR3)

Direct and coordinate the activities of unit (TAOR4)

Plan short term operations (TAOR5)

Organize work activities to improve efficiency (TAOR6)

### A.2. Organizational learning orientation<sup>[7]</sup>

How much is your level of agreement about the following items in your organization (1= strongly disagree, 5= strongly agree)

#### A.2.1. Commitment to learning

Employees view themselves as partners in charting the direction of the organization (COLE1)

All employees are committed to the goals of this organization (COLE2)

There is a well expressed concept who we are and where we are going as a business (COLE3)

There is a total agreement on our organizational vision across all levels, functions and divisions (COLE4)

#### A.2.2. Shared vision

Top leadership believes in sharing its vision for the organization with lower levels (SHVI1)

Employees are not afraid to reflect their ideas even those are opposite to the shared assumptions(SHVI2)

Managers encourage employees to “think outside box” (SHVI3)

Original ideas are highly valued in this organization(SHVI4)

#### A.2.3. Open mindedness

The basic values of this organization include learning as a key to improvement (OPMI1)

Learning in my organization is seen as a key commodity necessary to guarantee organizational survival (OPMI2)

Our organization’s ability to learn is seen as the key to our competitive advantage and development (OPMI3)

The collective wisdom in this enterprise is that once we quit learning, we endanger our future (OPMI4)

### A.3. Product innovation performance<sup>[35,36]</sup>

Relative to the organization’s key competitors, how much do you agree to the items with respect to performance? (1= strongly disagree, 5= strongly agree)

#### A.3.1. Project performance

Innovation times were less than the normal for the industry (INSP1)

New products were launched ahead of time (INSP2)

Innovation projects were accomplished in less time than planned (INSP3)

The production process provides the necessary customer value (INQU1)

Quality is a package of the innovation process (INQU2)

Team members consider the effect of innovation time on quality (INQU3)

Cost reduction is central for the innovation process (COST1)

Product concepts were always made clear (COST2)

External resource usage was kept minimum (COST3)

A.3.2. Commercial performance

Relative to competitors, the firm has higher product sales (FIPE1)

Our market share is higher than our key competitors' (FIPE2)

Product's profitability is relatively higher for the firm (FIPE3)

Necessary efforts are invested to bring customer satisfaction (CUST1)

Firm's innovation process always provides higher customer values (CU)