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Linking National Culture and Product Innovation Performance: What Really Influences the Interplay, Strategy Formulation Or Implementation Effectiveness?

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Abstract

A thorough understanding of the impact of culture on innovation strategy formulation and implementation processes as well as product innovation performance is crucial for successful innovation management. The paper through a combination of two research approach, KJ analysis and formal survey aims to shade light on the extent and direction of culture's impact on product innovation performance. A hypothetical model that links the three bodies of knowledge, national culture, innovation strategy and product innovation performance was developed and tested by using survey data from Ethiopian manufacturing firms. Major problems with the current innovation strategy formulation and implementation process were identified and the role of culture was explored. The result indicates that even though the current cultural setup has a detrimental effect on the performance, the extent of its impact can be minimized through task oriented leadership practice.

Keywords: national culture, strategy formulation, strategy implementation, product innovation performance, leadership orientation

1. Introduction

1.1 Background of the Problem

Product innovation as a source of strategic competitive advantage and social-wellbeing has attracted the attention of both policy makers and researchers (Acar & Acar, 2012; Guan, Richard, Tang, & Lau, 2009). However, studies show that manufacturing firms operating in different territories have difference in their innovation competence. Furthermore, some of the differences were credited to the socio-cultural setups of the operating environment and the innovation strategy pursued by the firms themselves (Fariborz Damanpour, Walker, & Avellaneda, 2009). Nevertheless, while both culture and innovation strategy were credited for their impact on product innovation performance, only limited studies address the implication of their interplay to firm's innovation performance.

In addition, even though the innovation strategy pursued by manufacturing firms is an important element of competitive advantages, most studies were dominated by comparative studies among different types of strategy (See for example Vega-Jurado, Gutiérrez-Gracia, Fernández-de-Lucio, & Manjarrés-Henríquez, 2008). Thus, our understanding about the role of the efficiency in innovation strategy formulation and implementation process on the innovation performance of firms is still scarce. Hence, the paper by considering the cases of textile and leather product manufacturing firms in Ethiopia aims to address the following research questions.

- How deep is the existing problem related to the innovation strategy formulation and implementation process?
- What role is the national culture playing on the innovation strategy formulation and implementation problems?
- What implication does the interplay among cultural elements and innovation strategy formulation and implementation process have on the product innovation performance of the manufacturing firms?

A combination of two research approaches, KJ analysis and formal survey, was used to collect relevant first hand

data. While the KJ analysis pinpoints the existing problems in innovation strategy formulation and implementation process, the survey provides supportive information about the role of culture and the interrelations among the constructs. The insight developed through the extensive use of the deployed research approach in the case of Ethiopian manufacturing sector will have important implication.

In attaining the underlying objectives the paper will contribute to both the theory of innovation and managerial practice. First, the paper forges an interrelationship among three separate body of knowledge, culture, innovation strategy and performance. In doing so, it develops and tests a hypothetical model relating the three constructs. Hence the result of the analysis will help to fill existing literature gaps. Second, it develops a more detailed conceptual model by dividing product innovation performance into project performance and commercial performance. While the project performance concerns with the internal efficiency of the innovation process, the commercial performance focuses on the financial gain of organizations and the level of customer satisfaction imported due to the new product. Hence, the model will be an alternative analysis tool for further similar tests and theory development. Third, considering that the current national cultural setup has a detrimental effect on the innovation performance firms, it will guide the management of the firms in pioneering and cultivating favorable organizational culture that counteracts such an effect. Fourth, the result of the paper will help policy maker to identify the areas and types of intervention in the process of helping manufacturing firms to enhancement their innovation activity.

1.2 Manufacturing in Ethiopia

As one of the fastest growing nations that shows record economic development in the last decade, Ethiopia is becoming the hub of foreign direct investment in the continent. More importantly, due to its low labor cost and availability of ample resource to support the sub sectors, Ethiopia is becoming one of the locations for large international textile and leather product (tannery and footwear) manufacturing firms (Muchie, 2000). Consequently, the national government is currently giving a high preferential focus for the sectors for three interrelated economic reasons. First, most of the input for the two sub sectors is locally produced agricultural product. Second, both sectors require a massive low and medium level skilled manpower which will help the government to attain the wealth creation objective. Third, as the sectors are export oriented, they will be part of the solution for the nation's hard currency problem (Lemma, Tegegne, & Hoekstra, 2012)

Culturally, Ethiopia is categorized to the Eastern cultural environment which by many scholars was characterized to be dominated by high power distance; high collective thinking and high uncertainty avoidance (see for example Top, Öge, Atan, & Gümüş, 2015). This was reflected in the recent cultural value evaluation of Hoftede (2010) in which the country scores 70 for power distance, 80 for collectivism and 55 for uncertainty avoidance. The current cultural setup of the nation is also reflected in the structure and management philosophy of the manufacturing firms and influencing their day-to day activity. Thus, a deeper understanding about the interrelationship between culture and product innovation performance will support the long term profitability of firms in the nation.

2. Literature Review and Hypotheses

Though product innovation has been considered as a key source of strategic competitive advantage and sustainable profit, studies show that not all firms benefit equally in its practice. According to Muchie, (2000) manufacturing firms operating in different territories have difference in their innovation competence and innovation performance. Triggered by such differences, researchers dedicated huge effort to identify and evaluate factors that contribute to such differences (Fariborz Damanpour et al., 2009). Some of the findings have indicated that the culture within which a firm operates and the innovation strategy it pursued have potential contribution towards the difference in innovation competence (Menguc & Auh, 2010). Thus, with the aim of extending the theory, the paper though an extensive literature review conceptualizes the model in figure 1 and proposed hypotheses to be followed.

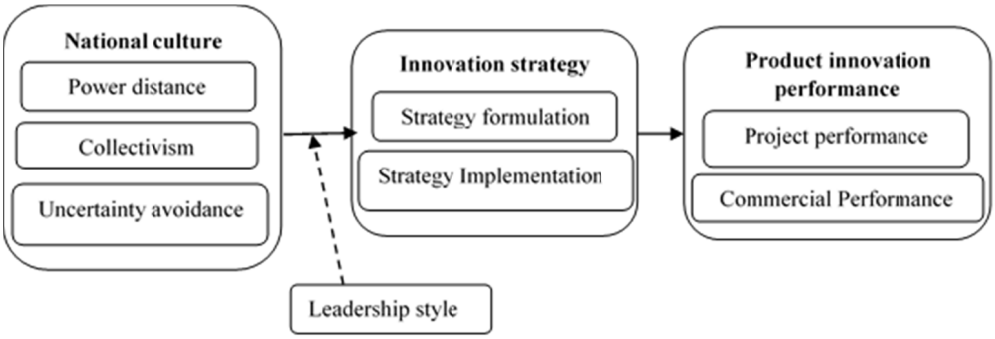

Figure 1. Conceptual framework

2.1 Product Innovation Performance

Product innovation is the diffusion and translation of market and Technology related information in to products of higher customer values (Samara, Georgiadis, & Bakouros, 2012). Product innovation performance on the other hand is defined either from market perspective, process perspective or the combination of the two. According to Menguc and Auh (2010) product innovation performance is a continuous organizational process that measures the effectiveness of the innovation process and the related success in marketing the new product. Menguc and Auh (2010) also conceptually poised that success in product innovation of firm is a measure of its competence to successfully execute new product generation process and successfully commercialize it. Thus, the paper based on the existing findings considers product innovation to be a total performance of an organization's innovation process measured in terms of its project performance and commercial performance.

The commercial performance is the market success of a new product related to organization's financial gain and the level of customer satisfaction imported due to its introduction (Laforet, 2008; Menguc & Auh, 2010). The project performance on the other hand is concerned with the internal efficiency of the innovation process. The project performance is the total effort an organization invested on the innovation process and is manifested through the speed of idea generation and development, the process and output quality and the overall cost reduction effort (Kok & Biemans, 2009; Martín-de Castro et al., 2012). A notion in recent findings is that firms that have faster new product generation process supported by lower cost and high quality outperform their counterparts (Kessler, 2000; Nieto & Santamaría, 2007). According to Menguc & Auh, (2010) also the culture that surround an organization and the efficiency of its innovation strategy formation and implementation processes make a difference in their product innovation performance.

2.2 Innovation Strategy and Innovation Performance

The establishment of a business enterprise necessitates a strategy of customer value creation and coping up with the actions of key competitors (Kessler & Bierly, 2002). According to Ulwick (2005) innovation strategy is a plan of action that outlines the direction of individual and group contribution in attending organizational goals related to the generation, development and commercialization of products with higher customer values. In accordance to Nag, Hambrick, and Chen (2007) product innovation strategy comprises both the formulation and implementation processes.

Through innovation strategy formulation process, organizations determine their new product development process, the selection mechanism of new product idea to pioneer and identify the type of competence to develop and resources to be allocated (Ulwick, 2005). The team of experts participated in the KJ analysis role playing stage identify three important factors that determine the effectiveness of the innovation strategy formulation process. These include input information, the level of consensus among decision makers and the amount of information involved in the evaluation process of alternative strategies. A break through innovation strategy formulation needs a well-structured information acquisition, organization and prioritization process. However, due to limitation in the power of data analysis, most strategic choices are results of a defensive process and are dominated by the intention of powerful people (Ulwick, 2005). This according to Lehner (2004) is one of the important sources of failure in strategy implementation.

The innovation strategy implementation process is an organization wide effort that entails the commitment of organizational members and the allocation of necessary resources. According to Zhang et al. (2009), a properly formulated innovation strategy accompanied with clear goals encourages the involvement of organizational

members and increases the success rate of the implementation process. However, with respect to the KJ analysis role players, top management of their respective firms consider the formulation process as an end by itself. Accordingly, at the end of the formation process, top management commitment become low, middle management are reluctant to create awareness and resources are restricted. The notion of the experts was also reflected in the work of Acar and Acar (2012) and Zhang et al. (2009) that for most firms the pace of management commitment and resource allocation are lower at the end of strategy formulation process.

Existing literatures concerned with the interrelationship between strategy process (Formulation and implementation) and product innovation performance have reported a significant positive correlation between the two constructs (See for example Acar & Acar, 2012; Ulwick, 2005). A properly formulated and implemented innovation strategy facilitates information flow, reduces the cost of development, speeds up the new product development process and increase the level of customer satisfaction. The notion was also shared by Zhang et al. (2009) both the formulation and implementation processes through their influence on type of information needed, the source of information and the interplay among difference pieces of information are positively correlated to innovation performance of organizations. Hence, we hypothesized that

H_1: Both innovation strategy formulation and implementation processes are positively correlated to the project and commercial performance of firm's innovation process.

2.3 National Culture and Innovation Performance

National culture is a source of an organization's internal culture and through its influence on the structure, it impacts innovation strategy formulation and implementation process as well as product innovation performance (Sumaco, Imrie, & Hussain, 2014). Accordingly, while some cultures encourage collaboration among organizational members, others are sources of conflict and hinder the performance of an organization. Culture according to Hofstede, (1980) is a collective mind programing of group of people that distinguishes them from others and influences their behavior towards changes in their environment. Though dubious and still facing some critics related to units of analysis, number of dimension and the possibility of cultural change with time the Hofstede cultural framework is frequently used in organizational analysis (Casey, Riseborough, & Krauss, 2015). The paper adopts the Hofstede cultural framework and reexamines the impact of the three cultural dimensions, power distance, collectivism and uncertainty avoidance on product innovation performance of manufacturing firms in Ethiopia.

Power distance signifies the extent to which low powerful members of a society expect and accept the existence of unequal power distribution (Hofstede, 2001). According to Tihanyi, Griffith, and Russell (2005) and Mihet, (2013) high power distance culture influences the structure at both national and organizational levels. Accordingly, business organizations operating in high power distance societies have very formalized and rigid structure that leave no room for employee participation. The top management of organizations in such culture is highly dependent on the rules and regulations of the organization and lateral communication is at its minimal. Employees are entirely dependent on management consultancy about what and how to do their daily activity (Hauff, Richter, & Tressin, 2015). Such an environment will arguably influence the way how innovation strategies are formulated and implemented and through such an influence, it affects the innovation performance of the organizations. Hence, we propose the hypothesis that

H_2: The high power distance culture in the country through its influence on the innovation strategy formulation and implementation process is negatively correlated to the product innovation performance of the manufacturing firms.

Due to long standing religious ties, the Ethiopian culture as reflected by the cultural evaluation module of (Hoftede, 2010) is characterized as a highly collective culture. Studies show that business enterprises operating within highly collective culture prioritize social thinking and encourages the presence of shared organizational values (Griffith, Zhang, & Cavusgil, 2006). However, when it comes to the effect of collective culture on performance, existing literatures draw inconsistent conclusions. Studies that consider the Western cultural environment (See for example Hofstede et al., 1991) conclude that low collectivist culture encourages individuals to incorporate their creativity and perform higher. On the other hand, findings from the Eastern culture, especially those considered Japanese culture (See for example Engelen, Brettel, & Wiest, 2012; House, Hanges, Javidan, Dorfman, & Gupta, 2004) claimed that highly collective societies are more creative and productive. The latter argues that highly collective cultures create a platform for smoother information flow and organizational learning which in turn boosts individual and group performance. Hence, by considering the notion we hypothesized that

H_3: The high collectivism culture in the country through its influence on the innovation strategy formulation and

implementation process positively influences product innovation performance of manufacturing firms.

Uncertainty avoidance is a cultural indicator that signifies the extent a society is threatened by ambiguous conditions and the type of mechanisms it deployed in handling them (Hofstede, 2001). According to Efrat, (2014), business organizations operating within high uncertainty avoiding society are highly inflexible and resist possible changes. In such a culture, the management tightens the rules and regulations and controls the duties and responsibilities of organizational members (Ayoun & Moreo, 2008). Consequently, the dependence on the rules and regulations might make employees to be reluctant in taking risks which in turn influences both individual and group performance. In support of the notion, House et al. (2004) suggested that because of the high uncertainty associated with product innovation, firms operating within high uncertainty avoidance culture perform lower than their counterparts. Thus, with respect to the manufacturing firms in Ethiopia, we hypothesized that

H_4: The high uncertainty avoidance culture in the country through its influence on the innovation strategy formulation and implementation process negatively influences the product innovation performance of manufacturing firms.

2.4 The Moderating Role of Leadership Style

The effect of culture on firm's product innovation performance is reflected through its influence on the behavior and actions of organizational members. Most importantly, the impact is a reflection of the values, attitude and leadership philosophy of the top management (Ayoun & Moreo, 2008). The effect of culture on the leadership in turn affects the level of management proactivity and risk taking propensity. According to Ayoun and Moreo (2008), the difference in those values and attitudes creates a difference in the way organizations handle the formulation and implementation process of innovation strategy as well as their innovation performance. The notion was shared by Menguc and Auh (2010) that the outcome of innovation strategy is different for different leadership structures and philosophies. The leadership of an organization is responsible for pioneering the innovation strategy, allocating resource and influencing the behavior of its followers towards the attainment of predetermined organizational goals

Due to the frequency of practice in the study area under consideration, the paper examines the level of moderating effects of task and employee oriented leadership styles. Employee oriented leadership focuses on subordinates' human needs, builds effective work group and supports development and empowerment. On the other hand, task oriented leaders focused on achievement of goals, lower cost and higher efficiency (Özsahin, Zehir, & Acar, 2011). As the study is concerned with the efficiency of innovation strategy formulation and implementation processes, the paper argues that the task oriented leadership style will bring better performance than the employee oriented one. Hence, we hypothesized that:

H_6: The influence of the national culture on product innovation performance is stronger in firms that pursue employee oriented leadership than in firms that have task oriented leadership style.

3. Methodology

3.1 Sample and Data Collection

The study sought to explore the extent of impact of national culture on the product innovation performance Ethiopian manufacturing firms. To have a compelling survey data with a deeper understanding about the interplay between national culture and innovation strategy and it role on the product innovation performance, the paper employs a combination of two stage research approach. In the first stage 42 top and middle management members from leather and textile product manufacturing firms were invited for a one day role play in KJ analysis. The experts were with background of strategy formulation and implementation process and have worked for an average of five Years as members of the managements in their respective firms. The experts were divided in to groups to conduct KJ analysis concerning the existing problems related to strategy formulation and implementation process. From this stage it was emerged that six main areas including characteristics of strategic decision makers, decision efficiency, input information, level of employee participation, resource allocation and relevance of the strategy itself were pinpointed to be the primary problems. See figure … for the summarized result of KJ analysis.

In the second stage, a formal survey with the aim of collecting firsthand information about the role of culture on the aforementioned innovation strategy formulation and implementation problems was conducted. As they are the most informed bodies of an organization (García-Morales, Jiménez-Barrionuevo, & Gutiérrez-Gutiérrez, 2011; Wang, 2012), the top and middle management of each firm were used as key informants. Before the actual survey, the survey questionnaire that contains measurement items from existing literatures was thoroughly

validated and pretested through interviews with academia experts and senior management members. In accordance to Dillman (1978) 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. At the end of the second week of the first distribution, a second wave of questionnaire was sent to each participating firm as a reminder. The effective response rate was 29% which includes 286 from textile and 146 from leather product manufacturers (See Table 1). The survey was conducted from December 2013 to May 2014.

3.2 Measurement Instrument

To test the proposed hypotheses, multi-scale item were used. The measurement items were adopted from existing literatures and professionally translated in to Amharic.

National culture: items related to the three Hofstede cultural diminutions, power distance, collectivism, and uncertainty avoidance were adopted from Rhyne, Teagarden, and Van den Panhuyzen (2002). Respondents, on 5-point Likert scale, were asked to evaluate the level of influence of the enlisted cultural factors on efficiency of strategy formulation and implementation processes of manufacturing firms.

Table 1. Respondents' characteristics

	First stage		Second stage	
Current position	*Frequency*	Percentage	*Frequency*	Percentage
General managers	3	7.1	13	3.0
Production managers	8	19.0	102	23.6
Project managers	7	16.7	19	4.4
Marketing and sales managers	9	21.4	53	12.3
Facility managers			43	10.0
Design managers	4	9.5	45	10.4
Quality managers	1	2.4	52	12.0
R&D managers	5	11.9	48	11.1
Financial managers	5	11.9	32	7.4
Human resource managers			25	11.9
Gender				
Male	37	88.1	354	81.9
Female	5	11.9	78	18.1

Innovation strategy: the paper is mainly concerned with the effect of the efficiency of strategy formulation and implementation process in the firms. Based on the outcome of the first stage, the formulation process was measured against the input information, the characteristics of the decision making process and overall process efficiency (Minarro-Viseras, Baines, & Sweeney, 2005; Ulwick, 2005). The implementation process on the other hand was measured by using the level of employee participation and resource allocation (Radomska, 2014). Measurement items were adapted from Lehner (2004).

Product innovation performance: the paper considers product innovation to be the total performance of both project and commercial performance of the innovation process of the firms. While project performance is measured against speed, quality and cost of the innovation process (Kessler, 2000; Wang & Wang, 2012), the commercial performance was measured with organization's financial gain and imported customer satisfaction (Menguc & Auh, 2010). Measurement items for both commercial and project performances were adapted from Bodlaj (2011) and Wang (2012).

Moderating variable: The paper considers leadership style as moderating variables on the impact of national culture. A dummy variable, 1= employee oriented, 2= task oriented were used to characterize the general leadership style in each firm.

4. Result

The correlation matrix in Table 2 is an important indication about the significance of the relationship among national culture, innovation strategy and product innovation performance.

In the estimation of the overall path relationship among the constructs of the study, the paper uses structural equation modeling (SEM) with IBM Amos version 21.0. Because of its reliability to support conceptual

interrelationship among constructs and its applicability to estimate measurement errors simultaneously, SEM is becoming a handy management research tool (Damanpour & Gopalakrishnan, 1998). The validity and reliability of the measurement items and the overall structural model were evaluated by using acceptable criteria used in management researches (see Fornell & Larcker, 1981; Kline, 2011). Accordingly, discriminant validity, convergent validity and content validity were tested by using factor loading, composite reliability (CR), average variance extracted (AVE) and cronbach's alpha (C-α). The values for factor loading, CR, AVE and C-α depicted in Table 3 exceed the threshold points described in different literatures (see for example Wang, (2012) and Fornell & Larcker, (1981). The content validity of the measurement scale was tested by using cronbach's alpha (C-α).

Table 2. Descriptive statistics and discriminant validit test result

	Mean	SD	PODI	COLE	UNAV	FORM	IMPL	COMPER	PROPER
PODI	3.489	0.801	**0.82**						
COLE	3.843	0.905	0.214**	**0.80**					
UNAV	3.562	0.742	0.424**	0.131**	**0.79**				
FORM	3.687	0.706	0.349**	0.153**	0.339**	**0.88**			
IMPL	3.658	0.739	0.624**	0.217**	0.625**	0.409**	**0.84**		
COMPER	3.678	0.762	0.498**	0.329**	0.355**	0.346**	0.493**	**0.87**	
PROPER	3.707	0.669	0.358**	0.222**	0.393**	0.432**	0.451**	0.639**	**0.82**

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

4.1 Statistical Analysis

The structural model was also tested by using different fit indices (chi-square, χ^2; degree of freedom, Df. Goodness of fit index, GFI; Root mean square error approximation, RMSEA comparative fit index, CFI). All the fit indexes meet the criteria mentioned in different literatures (Kline, 2011; Z. Wang & Wang, 2012) thus, the structural model fits well with the survey data. See Table 4.

Table 3. Measurement validit and reliability test results

Construct	X^2	Df	CFI	TLI	RMSEA	Factor Loading	C-α	CR	AVE
PODI	22.77	18	0.98	0.96	0.057	0.63-0.76	0.73	0.86	0.67
COLE	33.83	17	0.98	0.96	0.061	0.70-0.74	0.78	0.81	0.64
UNAV	30.09	11	0.96	0.97	0.054	0.81-0.94	0.86	0.89	0.62
FORM	21.65	11	0.98	0.96	0.047	0.69-0.85	0.80	0.86	0.78
IMPL	25.09	5	0.96	0.94	0.056	0.72-0.89	0.83	0.87	0.71
COMPER	32.34	12	0.97	0.95	0.060	0.70-0.93	0.80	0.81	0.76
PROPER	26.39	6	0.97	0.94	0.059	0.65-0.85	0.75	0.77	0.67

4.2 Hypothses Testing

The result of the analysis has indicated that both the formulation and implementation process of innovation strategy are positively correlated to the project and commercial performance of the innovation process. The three Hofstede cultural dimensions, power distance, collectivism and uncertainty avoidance significantly correlated to the formulation and implementation processes of innovation strategy as well as the product innovation performance. Consistent with the proposed hypothesis, power distance and uncertainty avoidance have significant negative impact on product innovation performance. Accordingly, power distance exerts an indirect effect of (β=-0.81, =<0.01) and (β=-0.58, =<0.01) on project performance and commercial performance respectively. Similarly, uncertainty avoidance exerts an indirect effect of (β=-0.49, =<0.01) on project performance and (β=-0.28, =<0.01) on commercial performance.

However, when it comes to the effect of the collectivism culture, we find a mixed result. Accordingly, while it has a positive effect of (β=0.11, =<0.05) on project performance, it exerts a negative impact of (β=-0.13, =<0.05) on the commercial performance of the innovation process. Hence, in this case, the proposed hypothesis was only partially supported (see Table 5). The result also shows an important fact that the effects of culture on both

project and commercial performance are fully mediated by the innovation strategy formulation and implementation processes. Table 4 also presents the analysis result for the moderated models. It indicates that manufacturing firms that practice task oriented leadership minimize the detrimental effects of current cultural setup on their strategy formulation and implementation process as well as on product innovation performance.

5. Discussion

The main aim of this study is to investigate the impact of the national culture on innovation strategy formulation and implementation processes and product innovation performance of the manufacturing firms in Ethiopia. More specifically, it explores the extent and direction of the impact of three Hofstede's cultural dimensions (Hofstede, 1984, 1991) on the formulation and implementation process of innovation strategy as well as project and commercial performance of innovation process. Hofstede's cultural characterization was proved to be reliable for cases in different geographies (Newburry & Yakova, 2006) and considerably clear and meaningful for management in different sectors (Kirkman, Lowe, & Gibson, 2006). Furthermore, according to Shane, (1992), the three cultural dimensions, power distance, collectivism and uncertainty avoidance, predict organization's tendency towards innovation. The formulation process follows the traditional way described by Ulwick, (2005) in which instead of facts, decision on which strategy to pursue is highly influenced by power. Moreover, the amount of data used in decision making is far less than the available data; hence, the overall process is less efficient. Therefore, the group of experts believes that, most of the failure in the implementation process is due to improper formulation process, lack of employee participation and resources.

Table 4. Parametr estimates for moderated and unmoderated modles

						Moderated model					
			Total model (Unmoderated)			Employee oriented leadership			Task oriented leadership		
Relationship			a*	SE	b*	a*	SE	b*	a*	SE	b*
FORM	<---	PODI	-0.66	0.08	-0.55	-0.91	0.13	-0.87	-0.87	0.09	-0.73
IMPL	<---	PODI	-0.78	0.05	-0.73	-0.81	0.21	-0.74	-0.64	0.11	-0.55
FORM	<---	COLE	-0.40	0.06	-0.47	-0.36	0.06	-0.31	-0.28	0.13	-0.26
IMPL	<---	COLE	0.24	0.08	0.21	0.26	0.07	0.23	0.30	0.06	0.22
FORM	<---	UNAV	0.36	0.05	0.31	0.74	0.08	0.65	0.81	0.08	0.72
IMPL	<---	UNAV	-0.69	0.05	-0.52	-0.88	0.14	-0.80	-0.74	0.08	-0.65
IMPL	<---	FORM	0.61	0.07	0.53	0.42	0.07	0.36	0.40	0.12	0.39
PROPER	<---	FORM	0.21	0.05	0.14	0.29	0.06	0.24	0.31	0.06	0.27
COMPER	<---	FORM	0.25	0.05	0.30	0.33	0.13	0.26	0.55	0.07	0.41
PROPER	<---	IMPL	0.83	0.05	0.76	0.60	0.06	0.43	0.68	0.08	0.48
COMPER	<---	IMPL	0.53	0.05	0.41	0.74	0.08	0.68	0.77	0.08	0.65
Model fit index											
X^2, Df, CFI,			598.11, 156, 0.095			688.01, 156, 0.94			607.28, 156, 0.94		
TLI, RMSEA			0.93, 0.056			0.92, 0.061			0.93, 0.058		

Note. a*= unstandardized estimate, b*=Standarized estimate, SE=Standard error.

The second stage with the aim of investigating the role of the national culture towards the aforementioned innovation strategy problems deployed a formal research methodology. The result of the analysis demonstrates that the hypothetical model that relates culture, innovation strategy and product innovation performance closely fits to the survey data. The significance of the relationship between the antecedent (national culture dimensions) and innovation strategy as well as the consequences innovation performance and innovation strategy were indications of the mediating role of both innovation strategy formulation and implementation processes. Subsequently, the effects of the three cultural dimensions on project and commercial performance were found to be fully mediated by innovation strategy formulation and implementation processes. Thus, through its effect on the formulation and implementation processes of innovation strategy, culture significantly influences the product innovation performance of manufacturing firms. The result supports the findings of Hadjimanolis and Dickson (2001) and Waarts and Van Everdingen (2005) that culture shapes the behavior of organizational -members and through its influence on their perception, motivation and expectations, it influences organizational activities.

The overall result of the analysis demonstrates that the current cultural setup in the country has a detrimental

effect on the strategy formulation and implementation process as well as the project and commercial performance of the firms. However, more interestingly, the result provides supportive evidence that leadership style pursued by the firms moderates the effect of national culture on project and commercial performance. Accordingly, we found that firms that pursue task oriented leadership style experience lower impact of the national cultural elements than their counterparts.

Table 5. Effect decomposition for the total structural model

Effect	On	FORM			IMPL			PROPER			COMPER		
From		Dir.	Indir.	Tot.	Dir.	Indir.	Tot.	Dir.	Indir.	Tot.	Dir.	Indir.	Tot.
	a*	-0.66		-0.66	-0.78	-0.40	-1.18		-0.81	-0.81		-0.58	-0.58
PODI	SE	0.08		0.08	0.05	0.07	0.12		0.07	0.07		0.06	0.06
	b*	-0.55		-0.55	-0.73	-0.29	-01.02		-0.65	-0.65		-0.47	-0.47
	a*	-0.40		-0.40	0.24	-0.30	-0.06		0.11	0.11		-0.13	-0.13
COLE	SE	0.06		0.06	0.08	0.05	0.13		0.07	0.07		0.05	0.05
	b*	-0.47		-0.47	0.21	-0.25	-0.04		0.10	0.10		-0.10	-0.10
	a*	0.36		0.36	-0.69	0.22	-0.47		-0.49	-0.49		-0.28	-0.28
UNAV	SE	0.05		0.05	0.05	0.04	0.09		0.06	0.06		0.05	0.05
	b*	0.31		0.31	-0.52	0.15	-0.36		-0.35	-0.35		-0.21	-0.21
	a*				0.61		0.61	0.21	0.51	0.72	0.24	0.32	0.56
FORM	SE				0.07		0.07	0.07	0.07	0.14	0.05	0.05	0.10
	b*				0.53		0.53	0.14	0.40	0.54	0.30	0.22	0.52
	a*							0.83		0.83	0.53		0.53
IMPL	SE							0.05		0.05	0.05		0.05
	b*							0.76		0.76	0.53		0.53

Note. a* = unstandardized effect, b*= standardized effect, SE=Standard error.

6. Conclusion

Though still dubious and facing scholarly critics, the Hofstede cultural framework is frequently used in the organizational analysis (Casey et al., 2015). More specifically, the Hofstede cultural dimensions (Hofstede, 1991), power distance, collectivism vs. individualism and uncertainty avoidance have been credited for their influence on firms' strategic choice and product innovation performance (Starren, Hornikx, & Luijters, 2013). On the other hand, literatures in strategic management (see for example Acar & Acar, 2012; Ulwick, 2005) have reported a positive correlation between innovation strategy and product innovation performance. However, studies that considered the influence of culture on the formulation and implementation process of innovation strategy are still scarce. Moreover, still there exists a literature gap concerning the impact of the interplay between culture and strategy formulation and implementation process on the product innovation performance of manufacturing firms.

The main objective of the study therefore was to shade light on the role of the Ethiopian national culture on the existing problems related to the formulation and implementation process of innovation strategy and its indirect implication to the product innovation performance. Overall the result of the analysis shows that the current national culture setup in the country has a detrimental effect on both innovation strategy formulation and implementation processes as well as the product innovation performance of the firms operating within it. The paper will have significant implication to both the innovation theory and management practice.

Theoretically it will help to further our insight on how the national culture elements; power distance, collectivism and uncertainty avoidance, influence the formulation and implementation of innovation strategy as well as product innovation performance of firms. The paper develops a more detailed conceptual model by dividing product innovation performance into project performance and commercial performance. While the project performance concerns with the internal efficiency of the innovation process, the commercial performance focuses on the financial gain of organizations and the level of customer satisfaction imported due to new product introduction. Hence, the model will be alternative analysis tool in future similar cases. From the practical perspective, the findings will guide management of the sectors in the process of designing and cultivating of favorable organizational culture

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Appendix A

KJ analysis result