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### **Ethical Leadership and Technological Innovation: The Mediating Role of Knowledge Management Capability in Banking Industry**

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#### **ABSTRACT:**

This study aims to investigate the effects of ethical leadership on technological innovation through the mediating role of knowledge management capability in Commercial Bank of Ethiopia. Data were collected from 266 employees (followers and managers) of Commercial Bank of Ethiopia in 93 branches through self-administered questionnaire survey. The structural equation modeling (SEM) approach with AMOS 23.0 was deployed to test the research hypotheses. The results of this investigation revealed that ethical leadership has a positive effect on technological innovation and knowledge management capability. Knowledge management capability also influences technological innovation positively. Moreover, knowledge management capability has a partial mediation role on the relationship between ethical leadership and technological innovation. Theoretical and practical implications are discussed in light of these findings.

**KEYWORDS:** Ethical Leadership, Knowledge Management Capability, Technological Innovation

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## **1. INTRODUCTION**

The deepened rivalry in today's unpredictable and global world is mainly characterized by technological progress that is often laborious for any type of organization<sup>1</sup>. With a very comparable vein, unremitting competitiveness and survival of individual firms which have been running within these turbulent environments need to have capability for reinventing themselves through innovative strategies<sup>2</sup>. In the face of more passionate rivalry and environmental uncertainty, the ability to innovate has become ever more significant as a means of survival in addition to cheering growth<sup>3</sup>. Likewise, innovation is a deep-seated condition for the 21<sup>st</sup> century in realizing economic growth and sustainability of an organization<sup>4</sup>. Consequently, such organization pays all costs to strengthen their capacity to create innovative environments as it secures their competitive advantage<sup>5</sup>. The same case happens in banking industry<sup>6,7,8</sup>.

It is palpable that innovation as a field of study is extremely broad and diverse<sup>9</sup>. The previous authors tried to understand innovation in various ways<sup>10</sup>. These authors have also categorized it under the diffusion and adoption of innovation studies in line with innovativeness and innovating research endeavors<sup>6</sup>. Despite the insignificant extent of overlap between those concepts and theories, this study focused only on the adoption of technological innovation as it has become most critical for knowledge-intensive organization<sup>11</sup>. Technological innovation stresses on advancing the performance of products/ services and the processes that can be used either to generate novel products/services or improving the existing ones notably<sup>10</sup>. Nowadays, the only certainty is uncertainty; leadership and knowledge management are among the most commonly cited as the sure sources of core competencies<sup>12,13</sup>, and these can enhance the performance of technological innovation in the vibrant business atmosphere<sup>14,15</sup>.

An organization needs to have an effective leader to realize its pre-determined strategic objectives<sup>16</sup>. Research findings argued that an ethical leader is an effective leader<sup>17</sup>. Ethical leader exhibits normatively appropriate norms and promotes such norms to his/her subordinates through two-way open communication, participatory decision making, and reinforcement<sup>18,19</sup>. In this case, followers are encouraged to express their concerns and opinions freely, and also their ideas are valued and listened sincerely<sup>20,21</sup>. In turn, such ethical behavior can certainly inspire the subordinates to enhance the existing work processes, methods and procedures through generating and creating novel ideas<sup>22,23</sup>. Ethical leaders can also provide higher degree of influence and autonomy for their employees at any decision making process<sup>18</sup> and then, followers can have more freedom and power to do their tasks creatively<sup>20</sup>. As a result, novel ideas can certainly be proposed, promoted, and implemented within a given knowledge-intensive organization<sup>23</sup>. Accordingly, ethical leadership has become one of the critical drivers of technological innovation<sup>22,15,24,23</sup> and banking industry as well<sup>25</sup>.

The concept of knowledge management has been gaining a meaningful concern<sup>26</sup> and its significant role in promoting innovation and achieving sustainable competitive advantage is intrinsically accredited<sup>27</sup>. Comparably, due to the ever-increasing importance of knowledge in enhancing technological innovation, organizations have been starting to strengthen their knowledge management capability<sup>28</sup>. Such capabilities can enable an organization in capturing, collecting, transferring, distributing, applying and securing valuable knowledge<sup>29,30,31,32</sup>. In turn, employees can develop and sustain innovative behaviours<sup>33</sup>. Thus, knowledge management capability enables a knowledge-intensive organization in innovating the existing products or services, methods, procedures, devices and tools<sup>14,34,26,35</sup>. It also has meaningful significance in banking industry<sup>4,36,27</sup>.

Numerous studies have been conducted on the relationship between ethical leadership and organizational innovation<sup>37,24,38,39,40,41,23</sup>; ethical leadership and knowledge management<sup>16,42,21,43</sup>; knowledge management and organizational innovation<sup>44,45,27,14,46,34,26</sup>. However, most of the knowledge management studies focused on the knowledge process aspect while the knowledge infrastructural one was ignored. The author was also unable to find even a single previous study published electronically that was conducted comprising ethical leadership, knowledge management capability and technological innovation at once in banking industry. Moreover, almost all of these previous studies were developed and tested in western and Asian contexts. Accordingly, it is common that a research identifying contextual conditions that would be most pertinent to individuals in diverse cultures is warranted<sup>47</sup>.

Despite ethical leadership influences organizational innovation directly, earlier studies argued that the direct effects are weak<sup>16,15,24</sup>. Such weak relationship indicates that ethical leadership and organizational innovations need to have a mediation factor to enhance this weak relation<sup>22,38</sup>. However, studying the mechanisms that could explain such relationships have been given insufficient concern and thus, investigation is required to understand and address the processes through which ethical leadership affects organizational innovations. Consequently, this study was intended to fill this literature gap by investigating the effects of ethical leadership on organizational innovations through the mediating role of knowledge management capability (infrastructural and process capabilities).

The organizational innovation literature reveals that earlier research works focused mainly on the manufacturing sector<sup>48</sup>. On the other side, the world seems to move from manufacturing to service sectors due to the advancements of information communication processing and transportation technologies<sup>7,27</sup>. In the same coin, studies explored on the areas of innovations in the service sector are underrepresented<sup>49,50</sup> while none of them investigated on the inter-relationship among ethical leadership, knowledge management capability, and technological innovation. Similarly, leadership

and change have been popular topics of research in service industries, but the ethical aspect of studies are too limited and needs to be explored<sup>38,39,40,23</sup>. Thus, this study was proposed to have the following contributions: first, this study encourages and strengthens ones understanding of how ethical leadership influences knowledge management capability and technological innovation in commercial banks; second, the mediated mechanism of knowledge management capability between ethical leadership and technological innovation is the new contribution of this study. Thus, the present study was proposed to examine the effects of ethical leadership on technological innovation with the mediating role of knowledge management capability.

## **2. MATERIAL AND METHODS**

### **2.1 Research measures**

The present study deployed Ethical Leadership Questionnaire (ELQ) survey which was developed by<sup>51</sup> with 15 items aimed at measuring ethics related leadership at individual level. Sample items like “my supervisor shows a strong concern for ethical and moral standards” and 0.84 was  $\alpha$  reliability of this measure. Knowledge Management Capability (KMC) survey was used and developed by<sup>29</sup>. Knowledge infrastructure capability was measured through 10, 11 and 12 items for technological, structural and cultural sub-dimensions and sample items like “my organization has a technology to search for new knowledge”. 0.71, 0.73 and 0.72 were  $\alpha$  reliability of these measures respectively. Knowledge process capability was also evaluated through 11, 9, 12 and 10 items for acquisition, conversion, application and protection sub-dimensions and sample items like “my organization has a process for making inter-organizational collaboration”. 0.82, 0.87, 0.91 and 0.85 were  $\alpha$  reliability of these measures respectively. Moreover, the author has borrowed multi-scale items of technological innovation from<sup>52,53</sup> with some contextual modifications. It was measured with 10 items and sample items like “Our bank is able to replace obsolete services” and 0.71 was  $\alpha$  reliability of this measure. All instruments were rated in 5 Likert scale (1= strongly disagree to 5= strongly agree).

### **2.2 Pilot test**

Despite this study has employed standardized questionnaire, pilot was conducted for all measurement scales to establish construct reliability and validity. During pilot test, the author has prepared the instrument in a good format and directive instructions were incorporated for each scale to secure face validity. Content validity was also established through systematic and detail review of literature besides to taking comments from university professors and practitioners. Moreover, the present study has put its effort to secure the criterion validity by using back-translation technique. Pilot testing has also conducted for ensuring the reliability of the study constructs. The present study

has distributed 50 initial questionnaires to both followers and branch managers of 20 branches of Commercial Bank of Ethiopia and the response rate was 100%. The result of the pilot study confirmed that the Cronbach's alpha value for all study constructs were more than 0.70 and confirmed that instruments generate same results consistently with different contexts, in line with criterion recommended by<sup>54</sup>.

### ***2.3 Target population and sampling***

The target populations for this study were the permanent employees of Commercial Bank of Ethiopia in Amhara regional state with a total of 93 branches in three Districts (Bahir Dar, Gondar, and Dessie) and a total population size of 2,964 (2,698 subordinates and 266 managers). The present study selects only 93 branches from the total of 207 purposively based on their grade which signifies the overall performance of each branch. In each 93 branches, both assistant and branch managers were taken for knowledge management capability and technological innovation scales; and followers those who directly report to his or her immediate supervisor and also assistant managers those who directly report to his or her branch manager were considered for ethical leadership survey. Thus, the total sample size was 266 for both followers and managers since the total number of branch managers in 93 branches are 266. A simple random sampling technique was used to select subjects for ethical leadership survey (followers and assistant managers).

### ***2.4 Procedure of data collection***

At the very beginning of data collection, the author has made a contact with the human resource director of each district office with the survey letter and got its approval to distribute the instrument. Next to getting approval from the human resource director of each district office, the author visited and distributed the self-administered questionnaires in each target branches of Commercial Bank of Ethiopia. Two separate data were prepared and distributed to employees (followers) and leaders (branch managers). The survey scales related with ethical leadership were collected from followers. At the same time, items related with knowledge management capability and technological innovations were collected from branch managers. Among the 266 total questionnaires distributed to each subjects (followers and branch managers), the author has collected only 239 responses with a response rate of 90 percent from branch managers and 243 responses with a response rate of 91 percent from followers. But, the investigator has used only 231 for both since other cases were found to be incomplete and unengaged. More importantly, the Structural Equation Modeling (SEM) approach was used to test the inter-dependence relationships of the ethical leadership, knowledge management capability, and technological innovation through the help of AMOS 23.0.

### 3. RESULTS

#### 3.1 Evaluation of the measurement model

The present study has employed structural equation modeling through AMOS 23.0 to test the research hypotheses. SEM is a two-stage multivariate analysis technique in which confirmatory factor analysis needs to be used to evaluate the measurement model before structural model<sup>55</sup>.

##### 3.1.1 Model fitness

A good model fit is maintained if the values of GFI, CFI, and TLI are greater than 0.90; RMSEA values less than 0.08; the value of Normed  $X^2$  is less than 5.00 and the chi-square statistics is insignificant<sup>55</sup>. As table 1 shows that  $X^2/DF= 1.704$ , GFI= 0.92, CFI= 0.96, TLI= 0.95, and RMSEA= 0.055. For instance, these indices indicated that the measurement model showed a better fit to the data considering all the loading items.

**Table No. 1: “Measurement model fit indices”**

Model	$X^2$	df	p	$X^2/df$	GFI	CFI	TLI	RMSEA
Final model	163.57	96	0.000	1.704	0.92	0.96	0.95	0.055

##### 3.1.2 Unidimensionality, reliability and construct validity

This study has used factor loading of items to assess unidimensionality in line with the criterion<sup>56</sup>. As table 2 shows that the respective loadings of items for ethical leadership, technological innovation, knowledge infrastructure capability and knowledge process capability were greater than 0.60 and it indicates that parceled items were loaded satisfactory on their respective factors, in line with the criterion value suggested by<sup>56</sup>.

Reliability is secured if the values of Cronbach’s alpha and composite reliability are more than 0.70<sup>55</sup>. As it has been shown in table 2, both the Cronbach’s alpha and composite reliability values of all constructs are greater than 0.70. Accordingly, the reliability for all study constructs is maintained. Convergent validity is secured if the value of CR is more than 0.70; whereas, the value of AVE is more than 0.50<sup>55</sup>. As table 2 demonstrates, the values of composite reliability for all constructs are greater than 0.70, and also the values of average variance extracted for all study factors are more than 0.50. For instance, convergent validity for all study constructs is established.

**Table No. 2: “Properties of the final measurement model”**

Constructs and Variables	Standardized loading	Cronbach’s alpha	Average variance Extracted (AVE)	Composite Reliability (CR)
Ethical Leadership		0.79	0.56	0.79
ELP <sub>1</sub>	0.68***			
ELP <sub>2</sub>	0.83***			
ELP <sub>3</sub>	0.72***			
Technological Innovation		0.79	0.57	0.80
TIP <sub>1</sub>	0.74***			
TIP <sub>2</sub>	0.78***			
TIP <sub>3</sub>	0.72***			
Knowledge Management Capability		0.78	0.80	0.89
KIC	0.82***			
KPC	0.96***			
Knowledge Infrastructure Capability		0.75	0.54	0.77
TKP <sub>1</sub>	0.66***			
SKP <sub>2</sub>	0.91***			
CKP <sub>3</sub>	0.60***			
Knowledge Process Capability		0.87	0.57	0.84
AQP <sub>1</sub>	0.76***			
CVP <sub>2</sub>	0.84***			
AP <sub>3</sub>	0.84***			
PRP <sub>4</sub>	0.75***			

\*\*\*Indicate highly significant at < 0.001

Discriminant validity can be established if the square root value of AVE for a given study construct is more than the correlations between two constructs and when the correlation between two factors are greater than 0.85<sup>55</sup>. Table 3 shows that the square root value of each constructs is more than the correlation between this construct with others. At the same time, the correlations among constructs are less than 0.85. Accordingly, these tests confirmed that each concept is different.

**Table No. 3: “AVE and square root of correlation between constructs”**

Constructs	EL	KMC	TI
EL	<b>0.75</b>		
KMC	0.34	<b>0.89</b>	
TI	0.46	0.66	<b>0.75</b>

Note: Diagonal elements are the square root of Average Variance Extracted for their respective constructs and other non-diagonal values are the co-variances between latent constructs.

### 3.2 Structural model and hypothesis testing

As same as the CFA model, the structural model fit is also evaluated through chi-square statistics, Normed X<sup>2</sup>, Goodness of fit index (GFI), comparative fit index (CFI), Tucker Lewis index (TLI), and root mean square error of approximation (RMSEA) with the same cutoff point (Hair *et al.*, 2010). As SEM result shows that X<sup>2</sup>/DF= 1.740, GFI= 0.92, CFI= 0.95, TLI= 0.94, and RMSEA= 0.057. For instance, these indices confirmed that the structural model showed a better fit to the sample data. This study has tested four hypotheses based on results shown in table 4 (H<sub>1</sub>, H<sub>2</sub>, and H<sub>3</sub>) and table 5 (H<sub>4</sub>). The results revealed that ethical leadership has a direct significant positive

influence on technological innovation ( $\beta = 0.462$ ,  $CR = 5.336$ ,  $p < 0.001$ ) and then  $H_1$  was supported. Hypotheses 2 states that ethical leadership has a direct significant positive influence on knowledge process capability ( $H_{2a}$ ) ( $\beta = 0.319$ ,  $CR = 3.939$ ,  $p < 0.001$ ) and knowledge infrastructure capability ( $H_{2b}$ ) ( $\beta = 0.271$ ,  $CR = 3.353$ ,  $p < 0.001$ ) and then  $H_2$  was accepted. Hypotheses 3 states that knowledge process capability has a direct positive effect on technological innovation ( $H_{3a}$ ) ( $\beta = 0.624$ ,  $CR = 7.468$ ,  $p < 0.001$ ) and knowledge infrastructure capability has also a direct positive effect on technological innovation ( $H_{3b}$ ) ( $\beta = 0.568$ ,  $CR = 6.560$ ,  $p < 0.001$ ) and then  $H_3$  was supported.

**Table No. 4: “Standardized regression weights and coefficient of determination”**

	Path		Path coefficients ( $\beta$ )	$R^2$	CR	P
TI	<---	EL	0.462	0.213	5.336	***
KIC	<---	EL	0.271	0.074	3.353	***
KPC	<---	EL	0.319	0.102	3.939	***
TI	<---	KIC	0.568	0.322	6.560	***
TI	<---	KPC	0.624	0.390	7.468	***

\*\*\*Indicate highly significant at  $< 0.001$

Moreover, the last hypothesis,  $H_4$ , states that knowledge management capability mediates the relationship between ethical leadership and technological innovation. As table 5 shows that knowledge process capability ( $H_{4a}$ ) plays a partial mediation role on the relationship between ethical leadership and technological innovation (direct effect:  $\beta = 0.46$ ,  $p < 0.001$ ; indirect effect:  $\beta = 0.29$ ,  $p < 0.001$ ; total effect = 0.46) and knowledge infrastructure capability ( $H_{4b}$ ) has a partial mediation role on the relationship between ethical leadership and technological innovation (direct effect:  $\beta = 0.46$ ,  $p < 0.001$ ; indirect effect:  $\beta = 0.33$ ,  $p < 0.001$ ; total effect = 0.45). Accordingly,  $H_4$  was supported.

**Table No. 5: “Results of the mediation model”**

	Path		Path coefficients ( $\beta$ )	$r^2$	P-value	Remark
TI	<---	EL	0.46	0.21	***	Direct effect
TI	<---	EL	0.29		***	Indirect effect
KPC	<---	EL	0.33		***	
TI	<---	KPC	0.53		***	
Total effect			<b>0.29+(0.33*0.53)= 0.46</b>	<b>0.46</b>		
TI	<---	EL	0.46	0.21	***	Direct effect
TI	<---	EL	0.33		***	Indirect effect
KIC	<---	EL	0.27		***	
TI	<---	KIC	0.48		***	
Total effect			<b>0.33+(0.27*0.48)= 0.45</b>	<b>0.43</b>		

\*\*\*Indicate highly significant at  $< 0.001$

#### 4. DISCUSSION

The main aim of this study was to examine the effects of ethical leadership on technological innovation with the mediating role of knowledge management capability in Commercial Bank of Ethiopia. The result of the current study demonstrated that ethical leadership has a significant positive influence on knowledge management capability and technological innovation. It was also



found that knowledge management capability has a significant positive influence on technological innovation. Furthermore, knowledge management capability has a partial mediation role on the relationship between ethical leadership and technological innovation.

*H<sub>1</sub>: Ethical leadership will have a direct significance positive influence on technological innovation* The results of this study revealed that ethical leadership was found to be positively related to technological innovation in the context of commercial banks. This finding is aligned with the findings of other related previous studies<sup>37,24,38,39,40,41,23</sup> and they all argued that ethical leadership is considered as one of the most careful driving forces for fostering and securing innovations through generating and implementing novel ideas. An ethical leader exhibits normatively appropriate norms and promotes such norms to his/her subordinates through two-way open communication, participative decision making, and reinforcement<sup>19</sup>. In turn, such ethical norms can certainly inspire the subordinates to generate and create novel ideas<sup>23</sup> and such new ideas can enable employees to enhance the existing work processes, methods, and procedures innovatively<sup>22</sup>. Likewise, if employees can generate and create novel ideas within an organization, such novel ideas can be used to produce a good or service that is refined or original in its applications or features through the help of ethically behaved leadership<sup>57</sup>. Ethical leadership is indispensable in banking sector for building supportive, participative, encouraging, creative, and autonomous environment which aims at enhancing the culture of innovation<sup>6</sup>. Such environment can enable the employees to exert their optimum resources in generating novel ideas continuously and be committed to implement such ideas by producing or adopting new services, methods, procedures, tools, devices, and knowledge within the bank. Besides to this, employees are always ready to learn task related skills and knowledge in every scenario and these new knowledge and skill can enable them to strengthen the performance of technological innovation<sup>57</sup>.

*H<sub>2</sub>: Ethical leadership will have a direct significance positive influence on knowledge management capability*

The SEM result of this study demonstrated that ethical leadership has a direct positive effect on knowledge process capability in the context of commercial banks (H<sub>2a</sub>). Ethical leaders give a critical concern in developing supportive, encouraging, careful, autonomous and creative working conditions<sup>19</sup>. If leaders can support, encourage and care their followers, and make them autonomous on their duties, these ethical behaviours enable employees to generate and acquire new knowledge<sup>58</sup>. With the same vein, if employees can communicate and cooperate to each other, disseminating and sharing knowledge between them become possible<sup>59</sup>. Accordingly, ethical leadership can enhance knowledge process capability of banks. This study is aligned with previous empirical studies<sup>42,43</sup>.

Moreover, the result of this study showed that ethical leadership was found to be positively related to knowledge infrastructure capability in the context of commercial banks ( $H_{2b}$ ). This ever changing and globalized business environments need to require technological, structural, and cultural knowledge infrastructures for creating, converting, applying, and protecting knowledge<sup>29</sup> as such intangible resource has a weighty value for securing banking sector from turbulent and competitive scenarios<sup>36</sup>. Ethical leadership can enhance the technological capability of an organization through building learning organization, improving the skill and knowledge of employees, allocating reasonable capitals, designing training and development programs, and sustaining change oriented working conditions<sup>42</sup>. If supportive training and development programs can be adjusted for improving the skill and knowledge of employees within an organization, knowledge practicing technologies can effectively be implemented as employees possess updated skill and knowledge. Likewise, ethical leadership can strengthen the structural capability of an organization through sustaining decentralized, team-oriented, participative, and autonomous structure<sup>60</sup>. If such like structure becomes to be functional, knowledge can easily be disseminated, used, and exchanged within the system<sup>61</sup>. Furthermore, ethical leadership can also promote the cultural capability of an organization through building shared, communicative, participative, secured, and trustful culture<sup>62</sup>, and then employees can exchange their ideas to each other. Consequently, ethical leadership influences knowledge infrastructure capability. This study is supported with previous related studies<sup>16,43</sup>.

*H<sub>3</sub>: Knowledge management capability will have a direct significance positive influence on technological innovation*

Knowledge process capability was found in this study to be positively related to technological innovation in the case of Commercial Bank of Ethiopia ( $H_{3a}$ ). Knowledge-intensive organizations can advance the performance of their innovative behaviour through acquiring, converting, and applying valuable knowledge<sup>63</sup>. Effectively practicing these knowledge processes can enable a given organization to generate new ideas, which are the most considerable driving factor for producing or adopting novel products, methods and procedures<sup>14</sup>. An organization needs to strengthen its knowledge acquiring capability for generating different novel ideas<sup>64</sup>. This capability can enable employees to think and do things differently as they are capable enough to acquire new and updated knowledge. Doing things differently through updated knowledge can enable the doers to produce novel products, tools, devices, or procedures<sup>27</sup>. Likewise, organizations having knowledge application capability can retrieve and store knowledge efficiently. Besides to this, this capability can enable such organization to use right knowledge with the right form for the intended purpose. If one can apply knowledge retrieved from the right storage with the right form, performing activities in an

improved and innovative way become critical<sup>33</sup>. Thus, knowledge process capability can enable knowledge-intensive organization to enhance technological innovation. This study is supported with various related previous studies<sup>44,45,27,14,46,34,26</sup>.

Knowledge infrastructure capability was also found in this study to be positively related to technological innovation in the context of Commercial Bank of Ethiopia (H<sub>3b</sub>). Knowledge infrastructure capability can influence the innovative behaviour of a knowledge-intensive organization through adequate technological, structural, and cultural knowledge enablers<sup>65</sup>. Technological capability can promote a given organization to build a distributive learning. With the help of such capability, employees of the organization can acquire new knowledge from a single source at a single point of time, share updated knowledge to each other, retrieve the existing knowledge, and get on-job training whenever they want. Accordingly, employees can start to perform their activities in a unique and a different way<sup>29</sup>, which in turn, new products or processes (technological innovation) can certainly be generated<sup>66</sup>. Knowledge leveraging structure can also allow all members of the organization to be participated in any kind of organizational decision making process. Employees are free to forward any opinions, suggestions and ideas. At this time, varieties of constructive and novel ideas are forwarded to stage and taken to be considered. Thus, such constructive and new knowledge can enable employees to use new methods of doing for producing new products or services<sup>67</sup>. Cultural capability can also enhance innovation through developing trustful, communicative, risk taking, flexible, integrated, and responsible environments<sup>68</sup>. Consequently, knowledge infrastructure capability enables a given knowledge-intensive organization to enhance technological innovation. The result of the present study is supported by other previous related studies<sup>69,8,70,71,72</sup>.

*H<sub>4</sub>: Knowledge management capability mediates the relationship between ethical leadership and technological innovation*

Dependent on the results of this study, the relationship between ethical leadership and technological innovation is enhanced through the partial mediation role of knowledge process capability in the context of Commercial Bank of Ethiopia (H<sub>4a</sub>). Ethical leadership gives a due value for building encouraging, supportive, participative, change oriented and autonomous working environments within a knowledge-intensive organization<sup>58</sup>. These working situations can enable employees of such ever changing business to acquire, share, and use new and improved knowledge<sup>73</sup>. Employees needs to be free to communicate openly to each other and participate in any decision making process for acquiring updated knowledge. Similarly, autonomous and creative environments can also motivate employees to generate new ideas or opinions, which in turn new knowledge is acquired<sup>61</sup>. Since ethically behaved leaders can allow employees to communicate openly and work

together, exchanging updated and improved knowledge becomes the concern<sup>59</sup>. As a result, different products or services, methods, procedures, devices, and other tools can certainly be improved and/or innovated. Accordingly, knowledge process capability mediates the relationship between ethical leadership and technological innovation. This study is supported with other previous related empirical studies<sup>12,15</sup>.

Furthermore, the result of this study argued that ethical leadership is positively related to knowledge infrastructure capability, which in turn is positively related to technological innovation in Commercial Bank of Ethiopia (H<sub>4b</sub>). Ethically behaved leaders support their followers and allocate the necessary resources to implement different knowledge leveraging technologies for acquiring, sharing, mapping, disseminating and applying new and improved knowledge. With the same vein, ethical leadership can also build a structural infrastructure which enables employees to communicate to each other, participate in any decision making process, do their doings autonomously and differently, and stick on change<sup>43</sup> and then, such structure can help employees to acquire, share, and use updated knowledge<sup>61</sup>. Moreover, ethical leadership can strengthen the knowledge infrastructural capability through developing a culture of knowledge creating, exchanging, disseminating, applying and protecting<sup>62</sup>. Consequently, strengthening the technological, structural and cultural capabilities of knowledge leveraging infrastructure can enable an organization to acquire, share, disseminate and apply new or improved knowledge, which in turn different products or services, and processes can certainly be improved and/or innovated. Thus, knowledge infrastructure capability can play a partial mediation role on the relationship between ethical leadership and technological innovation. The result of the present study is aligned with these studies<sup>13</sup>

## **5. LIMITATION AND FUTURE RESEARCH DIRECTION**

The author examined the relationship between ethical leadership and technological innovation with the mediating role of knowledge management capability. However, there are several moderating and mediating factors that could play a worthwhile role between ethical leadership and technological innovation; knowledge management capability and technological innovation. Accordingly, the author recommended future researchers to conduct a study on the mediating role of employees' creativity between ethical leadership and technological innovation, and knowledge management capability and technological innovation.

## **6. CONCLUSIONS**

This article concluded that ethical leadership and knowledge management capability enhances the ability of a knowledge-intensive organization (banking industry) to increase the performance of its technological innovation. Strengthening knowledge infrastructural and procedural

capabilities is central to have strong relationship between ethical leadership and technological innovation.

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