Advancing teachers’ human capital through effective leadership and institutional safety: Mediating effect of professional learning and teaching climate

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Abstract: This study examined the direct and indirect influences of school leadership, institutional safety and professional learning and teaching climate on in-service teachers’ human capital development. To this purpose, correlational design with structural equation modeling was employed. The data were collected from 379 randomly selected in-service teachers in primary schools using six-point Likert-type scale. Internal consistency and composite reliability coefficients for all constructs were above .80. The constructs had adequate convergent and discriminant validities. Confirmatory factor analysis was performed using AMOS software to validate the measurement model. The model fit indices showed a good fit of measurement model and structural model to the data. Results showed that professional learning-teaching climate has a relatively stronger influence on teachers’ human capital development compared to school leadership and institutional safety. Professional learning-teaching climate mediates the influences of school leadership and

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PUBLIC INTEREST STATEMENT

Positive school climate is a key to build learning community in teaching profession. This study has showed great influence of professional learning-teaching climate within school in boosting teachers’ human capital development. School leadership and institutional safety have indirect influences on teachers’ human capital development via professional learning-teaching climate. Hence, establishing positive professional learning-teaching climate is very crucial step to help teachers develop human capital by acquiring up-to-date professional competencies through continuing professional learning and development endeavors. In conclusion, school principals and education officials should give due attention for teachers’ professional learning-teaching climate to encourage their engagement in professional learning and development activities which in turn escalate teachers’ human capital development. To this end, it is suggested that school principals need to exercise shared leadership and create positive sense of physical and emotional safety among teachers to establish positive professional learning-teaching climate in a way that build teachers’ human capital.
institutional safety on teachers’ human capital development. After controlling institutional safety and professional learning-teaching climate, school leadership specifically exhibited a significant direct effect on human capital development. Likewise, institutional safety exhibited a significant direct effect on human capital development given controlled professional learning-teaching climate and school leadership. Thus, we conclude that the schools with shared leadership and safe institutional climate can foster in-service teachers’ human capital development by establishing supportive professional learning and teaching climate that highly invests in continuing professional learning and development. To this end, establishing supportive professional learning-teaching climate for teachers is suggested to boost their human capital which in turn will enhance student learning and achievement.

**Subjects:** Primary/Elementary Education; School Leadership, Management & Administration; Teachers & Teacher Education; Classroom Practice; Continuing Professional Development

**Keywords:** institutional safety; human capital; professional learning/development; mediating effect

### 1. Introduction

Teaching quality is the heart and soul of education quality. As teaching quality is a result of teacher’s professional quality, boosting teacher’s human capital is considered crucial for educational quality and success in the overall education system. Hargreaves and Fullan (2012) coined human capital as one constituent of teachers’ professional capital. Teachers’ human capital consists of their knowledge, skills, competencies and experiences (Hargreaves & Fullan, 2012; Reichenberg & Andressen, 2018; Uba & Chinonyerem, 2017). From this view, a focus on in-service teachers’ human capital development is crucial since the professional abilities of individual teachers can build up over the course of their careers by promoting professional learning and development endeavors.

A substantial body of literature on teacher education and training has reframed the focus on continuous professional learning and development (CPLD, hereinafter) programs are vital strategies to build up in-service teachers’ professional competencies and build up human capital (Fullan & Hargreaves, 2016; Hargreaves & Fullan, 2012, 2013; Nolan & Molla, 2017). As International Labor Organization (International Labour Organization (ILO), 2012) pointed out, a rational for investing in CPLD is the need to enhance teachers’ professional knowledge and skills either individually or as a group—build up human capital. However, the success of investment in CLPD programs for teachers can be influenced by school’s institutional factors. Accordingly, previous studies indicated that school leadership (Cohen et al., 2009; Dary & Pickeral, 2013; Hughes & Pickeral, 2013), institutional safety of school (Cohen et al., 2009; Payne, 2018; Thapa et al., 2013), and positive learning and teaching climate (Cohen et al., 2009; Dary & Pickeral, 2013; DeWitt & Slade, 2014; Payne, 2018) as school climate aspects that had substantial effect on in-service teachers’ professional learning and development endeavors. In addition, school climate factors either promote or complicate teachers’ learning ability and their performance (Alqahtani, 2015; National School Climate Center (NSCC), 2015; Voight & Nation, 2016). As teachers’ CPLD is a prerequisite for their human capital development, school climate factors that affect teachers’ CPLD undertakings might also affect their human capital development. Based on this evidence, it seemed crucial to investigate direct and indirect influences of school climate factors on in-service teachers’ human capital development. However, what school climate factors matter for teachers’ human capital development were less investigated, except very few recent attempts made to assess the relationships of principal’s leadership practice (Adams, 2016) and behaviors (Brett, 2018) to teachers’ human
capital development. In addition, what school climate factors matter for in-service teachers' human capital development is barely investigated issue. In connection to this, the present study will contribute to the knowledge and literature of teacher education and professional capital in teaching profession by examining school climate factors that significantly influence teachers' human capital development. By invigorating the influences of school leadership, institutional safety and professional learning and teaching climate, which are the key elements of school climate, on in-service teachers' human capital development, this study will provide insightful foundation about what institutional factors matter for the success of future all on the job teachers' education, learning and professional capital development reform efforts. Thus, this study attempted to examine direct and indirect influences of school leadership, institutional safety and professional learning and teaching climate on teachers' human capital development. To this end, the following research questions were constituted: (1) Do school leadership, institutional safety and professional learning and teaching climate have direct effect on in-teachers' human capital development? and (2) Do school leadership and institutional safety have indirect effects on teachers' human capital development through professional learning and teaching climate?

2. Conceptual framework

2.1. Human capital in teaching profession

The concept of human capital in this study was drawn from Hargreaves and Fullan's (2012) work titled Professional capital: Transforming teaching in every school. In fact, the conceptualization of human capital traced back to eighteenth century (United Nations, 2016). As United Nations (2016) pinpointed, the origin of the human capital concept as individual's intangible asset delineated in terms their knowledge and abilities goes back to the work of Adam Smith in the eighteenth century (p. 8). Since then, the concept of human capital pertains to the economically valuable knowledge and skills that need to be developed in individuals basically through education and training (Hargreaves & Fullan, 2012, 2013). In any organizational context, including the school, human capital development often refers to a strategy that helps employees to advance their personal and organizational skills, knowledge and ability (Healthfield, 2011). According to Healthfield, the notion of human capital development comprises the competency improvement opportunities for employees, such as employee training, career development, coaching, monitoring, and performance management and development. In economists' view, human capital in industries and business organizations is mostly defined as input measured in terms of economic returns or profits they earned. On the other hand, human capital in education can be taken as both input and outcome defined against cumulative knowledge, skills and abilities overall education systems have generated through abundant education and training provisions.

Human capital in teaching profession typifies teachers' owning and developing the required knowledge and skills (Hargreaves & Fullan, 2012). Hargreaves and Fullan have also explained that the teachers' human capital is about their subject matter and its teaching knowledge, understanding the students and their learning styles, and exhibiting emotional and social capabilities to support students' from diverse backgrounds. Human capital theorists presume that the “well-being of a society is a function not only of the traditional stocks of financial capital, labor and natural resources but also of the knowledge and skills of individuals” (Crocker, 2006, p. i). From this perspective, the researchers argued that the teachers' human capital outweighs other resources in improving students’ learning and the overall school success. As Crocker (2006) noted, human capital theory recognizes education and training as prominent strategy to develop individuals' knowledge and skills. In this view, the researchers argued that continuous professional learning and development (CPLD) programs are vital strategies to develop in-service teachers' professional competencies and then, build up their' human capital. Moreover, Uba and Chinonyerem (2017) clearly delineated that the human capital development of a school incorporates the provision of learning, training and development opportunities for teachers in order to improve their individual, team, and school performance. They also pinpointed that the notion of human capital has
acknowledged that the development and growth of teachers is a potential asset to realize the school's success.

Based on this impression, human capital is defined as cumulative professional competencies of in-service teachers developed through ample CPLD opportunities provided both inside and outside the school. In fact, investment in teachers' human capital development needs supportive school climate. Literature has shown that the teachers' human capital development and management could be impeded by the nature of school district governance, fiscal condition and health of the district, availability of qualified teacher, and nation's educational policy matters such as “licensing, tenure, salary incentives, professional development or teacher mentor programs” (Odden & Kelly, 2008, p. 29). From this perspective, it was argued that the school climate factors including school leadership, institutional safety and professional learning and teaching climate would have a significant influence on teachers’ human capital development. Furthermore, the current study will contribute to teacher education and development literature in general and substantiate the emerging concepts of professional capital in teaching profession by invigorating school climate factors that determine investments in building in-service teachers’ human capital. Thus, the study attempted to assess how the school leadership, institutional safety and professional learning and teaching climate influenced teachers' human capital development in primary schools.

2.2. Effect of school leadership on teachers’ human capital development

The concept of leadership as one aspect of school climate was drawn from previous research works and school climate briefs (Cohen et al., 2009; Dary & Pickeral, 2013; Hughes & Pickeral, 2013; Thapa et al., 2013). In schools with positive climate, principals possess quality leadership in building teachers' human capital through various professional learning and development opportunities. Literature has documented that supportive school leadership is a core dimension of positive school climate (Cohen et al., 2009; Dary & Pickeral, 2013; Hughes & Pickeral, 2013; National School Climate Center (NSCC), 2015) that fosters teachers' learning and development. Conceptually, effective leadership as one aspect of positive school climate consists of leadership characteristics and decision-making style of the school's administration such as establishing and communicating a clear vision, supporting and appreciating teachers development, involving teachers in key decisions, and becoming friendly and approachable (Hughes & Pickeral, 2013; National School Climate Center (NSCC), 2015). In other words, a principal in a positive school climate exhibits a great quality of shared leadership that fosters teachers’ professional learning and development and then, builds up teachers' human capital. In essence, a shared school leadership results in shared power and decision-making where school members work together to create an engaging positive school climate for learning and teaching (Hughes & Pickeral, 2013). Hughes and Pickeral further explained that a school with positive climate encourages, supports and rewards shared leadership so as to establish safe, equitable, engaging and high-quality school climates as distinguishing norms in primary schools. Based on this view, it was argued that the school leadership can positively contribute to teachers’ human capital development by establishing a positive professional learning and development climate within school. Thus, this study aimed at examining direct and indirect influences of school leadership on teachers' human capital development.

2.3. Effect of institutional safety on human capital development

Psychologically, safety is a basic need for any human being. In school context, institutional safety is individual's basic need for learning and development. In this study, the concept of institutional safety as a component of positive school climate was drawn from previous works (Cohen et al., 2009; National School Climate Center (NSCC), 2007, 2015; Thapa et al., 2013). As National School Climate Center (NSCC) (2015) pointed out, safety as a basic need of school community comprises school safety rules and norms, physical safety and social-emotional safety. In connection to this, a teacher who feels physically, socially and emotionally safe at school will have a good engagement in professional development and learning activities and share knowledge with colleagues in a way that helps them build human capital. This means that safe school environment fosters teachers' human capital development via a positive professional learning and development climate.
A positive school climate has clearly communicated rules and regulations about physical violence, verbal abuse, harassment and teasing as well as consistent enforcement of those rules (National School Climate Center (NSCC), 2015). In such institutional climate, the overall school members feel physically, socially and emotionally safe and thus show great engagement in learning and development. Feinstein and Kiner (2011) pinpointed that the extent to which institutional safety rules and regulations are consistently and fairly enforced shapes school community's feelings in school. To create positive school climate typified by school member's manifest feeling of social, emotional, and physical safety and security (Cohen et al., 2009; Hanuliaková & Barnová, 2015; Rudasill et al., 2017), school rules and regulations must be clearly communicated as well as fairly and consistently enforced whenever bullying, pestering, harassment and mocking occurs (National School Climate Center (NSCC), 2015; Thapa et al., 2013), both inside and outside the school setting. Consequently, safe and orderly school climate smoothness the progress of students’ and teachers’ engagement in learning and realizes their healthy development (Cornell et al., 2016).

Likewise, Devine and Cohen (2007) noted that the students and teachers who feel emotionally safe are capable of being active learners and innovators. They further explained that a safe and caring school social and physical climate could establish an optimal climate for teachers’ professional and development. In addition, Dary and Pickeral (2013) pointed out that a positive institutional safety climate supports teachers’ capability to be adult learners and enhances students' academic success. Based on this evidence, the researchers hypothesized that the institutional safety as school climate dimension would have direct and indirect influence on teachers’ human capital development. Institutional safety would have indirect effect on teachers’ human capital development through professional learning and teaching climate of that school.

2.4. Effect of professional learning and teaching climate on human capital development

A positive school climate induces prompting professional learning and teaching climate for teachers. In school climate literature, learning and teaching climate dominantly pertained to students learning. In fact, school is not a learning organization only for students but for teachers too. A substantial body of literature has documented teaching and learning as core domain of school climate (e.g., Cohen et al., 2009; National School Climate Center (NSCC), 2007, 2015; Thapa et al., 2013). The concept of professional learning and teaching was rooted in teaching and learning domain of school climate defined by National School Climate Center (NSCC) (2015). Positive professional learning and teaching climate fosters teachers’ engagement in professional learning activities and stimulates their professional development that significantly contributes to teaching practices improvement (Thoonen et al., 2011).

Based on National School Climate Center (NSCC) (2015), we defined professional learning and teaching climate as state of interactions between teachers and school principals that consisted of providing constructive feedback, supporting learning from mistakes, handling difficult situations, expressing emotions and feeling, and providing students with opportunity to demonstrate knowledge and skills in a variety of ways. Based on this, the study hypothesized that professional learning and teaching climate would have direct influence on teachers' human capital development (Figure 1). Likewise, researchers hypothesized that a positive professional learning and teaching climate would mediate the structural relationships of school leadership and institutional safety to teachers’ human capital development.

3. Method

3.1. Participants

This study employed correlational research design with structural equation modeling. Sampling procedure went through multiple steps. Initially, four sites were randomly selected from 12 local administrative areas (woredas, hereinafter) situated in Awi administrative zone, which is one administrative zone in Amhara National Regional State of Ethiopia. Then, 12 primary schools with grade levels ranged from Grade 1 to Grade 8 were randomly chosen from selected woredas,
Figure 1. Hypothesized structural model predicting teachers’ human capital development.

Byrly 3 schools involved from each woreda. Finally, questionnaire was administered to 400 randomly selected teachers at selected primary schools. But 380 participants completed the survey and returned the filled-in questionnaire, showing 95% response rate. To this end, the data from 379 participants were put into SPSS for further analyses. The data from one participant was dropped because of 28% missed data. Moreover, majority (44.6%) of participants had teaching experiences that ranged from 8 years to 15 years and 77.6% of participants were diploma graduates.

3.2. Instrumentation

In this study, school leadership and institutional safety were exogenous variables while teachers’ human capital development was endogenous variable. Also, professional learning and teaching climate was a mediator variable represented as both exogenous and endogenous variable. Teachers’ human capital development measurement items were adapted from Hargreaves and Fullan (2012) inventory devised to survey teachers’ human capital. Teachers’ human capital development described professional learning and development opportunities in-service teachers had obtained within school. After factor analysis, four items were retained to measure in-service teachers’ human capital development. Items had six-point Likert-type scale that ranged from 1 (strongly disagree) to 6 (strongly agree). For example, sample items included: “I am provided with career opportunities that improve my professional growth and practices.” and “I am provided with feedbacks that improve my professional practice.” School leadership measured the school principals’ administrative undertakings (National School Climate Center (NSCC), 2015). This construct was measured with seven items having six-point Likert-type scale that ranged from 1 (strongly disagree) to 6 (strongly agree). Sample items included: “Our school principal fairly allocates resources for curriculum, instructional and professional development” and “Our school principal uses teachers’ voice in decision making.”

The third factor, institutional safety, described the availability of safety rules and fair enforcement of those rules to prevent physical and verbal harassments as suggested by National School Climate Center (NSCC) (2015). To measure this construct, three items with six-point Likert-type scale that ranged from 1 (strongly disagree) to 6 (strongly agree). Example items included: “In this school, there are clear rules against physically hurting, insulting, teasing, harassment and other verbal abuses” and “Teachers in this school fairly enforce rules against physical and verbal harassment.” Moreover, professional learning and teaching climate described the school heads’ support to foster in-service teachers’ academic, social and emotional skills learning and development (National School Climate Center (NSCC), 2015). This factor had eight items with six-points Likert-type scale ranged from 1 (strongly disagree) to 6 (strongly agree). Sample items included: “Heads teach teachers to express emotions in proper ways to resolve disagreements everyone would be satisfied with” and “Heads help teachers in handling difficult situations.”
3.3. Preliminary analyses
Statistical analyses of the data began with cleansing unengaged responses, missed values, multivariate outlier influences and testing multivariate assumptions. Unengaged responses were assessed for each case with standard deviation estimates. As Collier (2020) pinpointed, unengaged responses subject to deletion will have a standard deviation value less than .25, showing that a respondent answered to each question in exactly the same way. In this view, standard deviation estimate for each case was greater than 0.65. Hair et al. (2019) noted that the cases with less than 10% missing data are subject to any data imputation technique. Accordingly, only one respondent with 30% missed data was excluded while five respondents’ data with less than 1% randomly missing values were imputed for analysis purpose. Cook’s distance test estimates for multivariate outliers and influential scores ranged from 0.00 to 0.06 that asserted absence of influential outliers.

Regarding linearity of relationships, results showed a significantly linear relationship between predictor variables and outcome variable, \( F(3, 375) = 103.92, p < .001 \). Likewise, variance inflation factor (VIF) values that ranged from 1.69 to 1.97 asserted that there was no multicollinearity issue. As Collier (2020) pinpointed, the data are presumed normally distributed when the skewness values are between \(-2\) and \(+2\), and the kurtosis values are between \(-10\) to \(+10\). Results revealed that skewness values ranged from \(-0.66\) to \(-0.98\) and kurtosis values ranged from 0.30 to 0.61, thereby proved normal distribution of the data.

Before proceeding to factor analyses, it is important to assess internal consistency and item-total correlations and decide which item to retain or delete. As Ho (2006) noted, the 0.33 criterion of corrected item-total correlation and the 0.7 criterion of Cronbach’s alpha coefficient can be used in deciding which item to retain or delete. Based on this criterion, only three items from human capital development measures were deleted because they had low item-total correlation. Furthermore, the overall Cronbach’s alpha coefficients for internal consistency reliability test were above .80, which indicates adequate reliability. Consequently, we performed exploratory factor analyses to identify and retain factors with eigenvalues above or equal to 1 and items with factor loadings above .40.

4. Results

4.1. Factor analysis for factor structure testing
Initially, we assessed the adequacy of the recruited sample and the existence of significant relationships using Kaiser–Meyer–Olkin’s (KMO) test and Bartlett’s test of Sphericity SPSS outputs, respectively. Literature has pointed out that the KMO test value greater than .5 shows adequacy of the study sample size, while a significant Bartlett’s test (\( p < .05 \)) indicates that correlation matrix has significant correlations among at least some of the variables, supporting the suitability of data for factor analysis (Hair et al., 2019). The results showed that the KMO’s measure of sampling adequacy value was .95, which is by far greater than threshold value (.5) that assured adequate sampling. Likewise, Bartlett’s Test of Sphericity showed the sufficiently significant (\( p < .001 \)) relationships between variables. These results indicated data suitability for factor analysis. As a result, the researchers performed factor analysis using maximum likelihood extraction method and varimax rotation method to determine the structure of constructs (factors). Maximum likelihood extraction method was employed because the given dataset also served in confirmatory factor analysis (CFA) and structural mediation analysis based on maximum likelihood estimations. In factor analysis, factors with eigenvalues greater than or equal to one and the indicators (items) with factor loadings greater than or equal to .40 were retained. Given this criterion, factor analyses showed that the indicators of human capital development (four items retained) had factor loadings ranged from .71 to .81. The results also showed that institutional safety indicators (five items retained) had factor loadings that ranged from .48 to .67. School leadership indicators (15 items retained) had factor loadings that ranged from .61 to .81. Moreover, professional learning and teaching climate indicators (16 items retained) had factor loadings that ranged from .53 to .81. To
this end, we put SPSS data of retained items into AMOS 23 for CFA to determine construct validity and reliability and assess measurement model fit.

4.2. Confirmatory factor analysis—measurement model test

Initial measurement model. The initial measurement model with 44 unobserved variables and 40 observed variables was tested using CFA in AMOS. To assess measurement model fit, normed chi-square test ($\chi^2/df$), goodness-of-fit index (GFI), normed fit index (NFI), relative fit index (RFI), Tucker–Lewis index (TLI), comparative fit index (CFI), incremental fit index (IFI), root mean square error of approximation (RMSEA) and standardized root mean square residual (SRMR) to determine whether or not the developed measurement model fitted to the sample data. As Collier (2020) points out, normed chi-square value ($\chi^2/df$) less than 3 indicates a good model fit. In addition, a substantial body of literature has documented that the value of .90 or above shows acceptable level for GFI, NFI, RFI, TLI, CFI and IFI (Collier, 2020; Hair et al., 2019; Ho, 2006; Schumacker & Lomax, 2016). Likewise, RMSEA value below .08 and SRMR value below .05 indicate a good model fit (Collier, 2020; Schumacker & Lomax, 2016). CFA results for initial measurement model showed the normed chi-square test ($\chi^2/df$) value of 3.67, GFI value of .73, NFI value of .83, RFI value of .82, TLI value of .86, CFI value of .87, IFI value of .87, RMSEA value of .08 and SRMR value of .05. Based on the aforementioned criteria, the results showed that the measurement model has no good fit, indicating the need for model modification.

4.2.1. Modified measurement model

As Collier (2020) points out, it is acceptable to retain an indicator (item) with standardized value less than .70 if a construct has adequate convergent validity, i.e., average variance extracted (AVE) greater than .50. CFA results showed that unstandardized factor loading path coefficients (B) for all indicators of studied constructs ranged from 0.81 (Lead 7) to 0.99 (Lead 2) and the results found to be significant by the critical ratio (t-value) test ($\geq$1.96, $p < .001$), except those items fixed to a value of 1. Results also delineated that the standardized factor loading path coefficients (B) of all indicators (items) of study variables were between .67 (My school places high priority to attract highly effective teachers) and .93 (Our school principal fairly allocates resources for curriculum, instructional and professional development). This means that unobserved latent variables explained between 45% and 86.5% of variance in their indicators, thereby each indicator sufficiently explained the intended unobserved variable. Put it other way, results of squared multiple correlations ($R^2$) depicted that the variance explained in each unobserved variable by their respective indicators ranged from .45 (45%) to .87 (87%), respectively. Standardized estimates for the relationships between unobserved variables showed significant correlations of institutional safety to school leadership ($r = .70, C.R. = 9.56$), professional learning and teaching climate ($r = .71, C.R. = 9.69$) and teachers’ human capital development ($r = .59, C.R. = 8.05$). Likewise, school leadership had significant relationships to professional learning and teaching climate ($r = .73, C.R. = 10.33$) and teachers’ human capital development ($r = .57, C.R. = 8.37$). Results also showed a significant relationship between professional learning and teaching climate and teachers’ perceived human capital development ($r = .72, C.R. = 9.75$). All correlation coefficients were significant at $p < .001$. Moreover, the measurement model achieved good model fit ($\chi^2 = 481.38, df = 203, p < .001, \chi^2/df = 2.37, NFI = .94, RFI = .93, IFI = .96, CFI = .96, TLI = .96, RMSEA = .06, SRMR = .038, GFI = .90$) with adequate reliability and validity of constructs. At 95% confidence interval, the lower and upper bounds of RMSEA values ranged from .05 to .07, indicating adequate fit of measurement model (Table 1). To this end, almost all absolute values of standardized residual covariances were less than 2, which showed adequately specified measurement model.

4.3. Construct reliability and validity analyses

Based on CFA test results, we evaluated internal consistency reliability, composite reliability, convergent validity and discriminant validity of the study constructs. As shown in Table 2, Cronbach’s alpha coefficients ranged from .83 to .96, which indicates good internal consistency of items that measured each variable. Likewise, the composite reliability of the overall constructs ranged from .84 for institutional safety to .96 for school leadership. This means that all constructs had sufficiently reliable items that adequately measured they intended to measure. Likewise, maximum reliability of the constructs was between .84 for institutional safety and .96 for school leadership, there by affirmed high reliability of construct measures by far above
| Constructs                                      | $R^2$ | $\beta$ | C.R. |
|------------------------------------------------|------|--------|------|
| Teachers’ human capital                        |      |        |      |
| - Career opportunities improved my professional growth and practices. | .62  | .79*   | 16.23|
| - Professional feedbacks improved my professional practice | .66  | .81*   | **   |
| - Able to access and consult with specialists to improve teaching practice. | .63  | .80*   | 16.42|
| - High priority to attract highly effective teachers. | .45  | .67*   | 13.34|
| School leadership: our school principal …     |      |        |      |
| - Fairly allocates resources for curriculum, instructional and professional development. | .87  | .93*   | 28.10|
| - Provides teachers with opportunities to work together collaboratively. | .82  | .91*   | 26.49|
| - Appreciates what the teachers do in the school. | .76  | .87*   | 24.29|
| - Uses teachers’ voice in decision making.    | .77  | .88*   | **   |
| - Effectively communicates a strong and compelling school vision. | .81  | .90*   | 26.1 |
| - Collaborates with teachers to solve classroom discipline problems. | .68  | .82*   | 21.67|
| - Ensure that teachers take responsibility to improve teaching skills. | .68  | .82*   | 21.64|
| Professional learning and teaching climate: in our school … |      |        |      |
| - Teachers can get extra help if they need it. | .56  | .75*   | 18.74|
| - Heads provide teachers with constructive feedbacks on their work. | .76  | .87*   | 25.22|

(Continued)
| Constructs                                                                 | $R^2$ | $\beta$ | C.R. |
|---------------------------------------------------------------------------|-------|---------|------|
| - All teachers are given appropriately challenging work.                  | .54   | .73*    | 18.03|
| - Heads help teachers figure out how they learn best from their own mistakes. | .81   | .90*    | **   |
| - Heads teach teachers to express emotions in proper ways.                 | .76   | .87*    | 25.36|
| - Heads and teachers discuss issues to help them become good professionals. | .74   | .86*    | 24.64|
| - Heads help teachers in handling difficult situations.                   | .65   | .81*    | 21.49|
| - Heads encourage teachers to understand the importance of their feelings and those of others. | .63   | .79*    | 20.69|
| **Institutional safety: in our school ...**                               |       |         |      |
| - There are clear rules against physical hurting and verbal abuses.       | .62   | .79*    | 16.15|
| - Teachers stop students’ physical hurting and verbal abuses.             | .58   | .76*    | 15.64|
| - Teachers fairly enforce rules against physical and verbal harassment.   | .69   | .83* ** |      |

Notes: *p < .001, $R^2$ = squared multiple correlations coefficients, C.R. = critical ratio estimates or calculated t-values for significance test, ** Items constrained (fixed to 1) for measurement model identification purpose.
Table 2. Reliability, convergent and discriminant validity of constructs

| Constructs | α   | CR | AVE | MSV | MaxR(H) | TaL | Saf | Lead | HC |
|------------|-----|----|-----|-----|---------|-----|-----|------|----|
| TaL        | .94 | .96| .68 | .53 | .95     | .82 |     |      |    |
| Saf        | .83 | .84| .63 | .51 | .84     | .71 | .79 |      |    |
| Lead       | .96 | .96| .77 | .53 | .96     | .73 | .70 | .88  |    |
| HC         | .85 | .85| .59 | .52 | .86     | .72 | .59 | .57  | .77|

Note: CR = composite/construct reliability; AVE = average variance extracted; MSV = maximum shared variance; MaxR(H) = maximum reliability; Lead = school leadership; Saf = institutional safety; TaL = professional learning and teaching climate; HC = human capital; and PC = professional capital. Square roots of AVE estimates are shown in bold font.
the cut point .70. Criteria for convergent validity is that the average variance extracted (AVE) must be greater than .50 (Collier, 2020; Hair et al., 2019). As shown in Table 2, AVE for the overall constructs was greater than .50. This means that all constructs had adequate convergent validity. As Collier (2020) points out, a construct with discriminant validity must have AVE estimate greater than maximum shared variance (MSV) and the square root of AVE should be greater than inter-construct correlations. Thus, the overall constructs had AVE values greater than MSV values and the square root of AVE greater than their correlation coefficients. This means that the overall constructs had adequate discriminant validity, thereby indicating each construct measured distinct concepts.

4.4. Structural model analysis
As aforementioned, this study hypothesized that the school leadership, institutional safety and positive professional learning and teaching climate of the school had direct influence on teachers’ human capital development. This hypothesis was tested using structural model analysis with AMOS version 23 to determine whether or not the identified independent variables had a direct effect on teachers’ human capital development in primary schools. Here, school leadership, institutional safety and professional learning and teaching climate of the school were exogenous (independent) variables, while teachers’ human capital was endogenous (outcome) variable. Standardized regression estimates showed a significant direct influence of positive professional learning and teaching school climate (β = .60, C.R. = 7.73, p < .001) on teachers’ human capital development in primary schools. However, both unstandardized regression estimates and standardized regression estimates showed a nonsignificant direct influence of school leadership (β = .05, C.R. = .73, p = .468) and institutional safety (β = .124, C.R. = 1.59, p = .112) on teachers’ human capital development in primary schools. The squared multiple correlation coefficients (R²) indicated that the school leadership, institutional safety and professional learning and teaching school climate explained .54 or 54% of variance in teachers’ human capital development. This means that the identified factors did not explain 46% of variance in teachers’ human capital development. Moreover, specific direct influence of school leadership on teachers’ human capital development was examined after controlling institutional safety and professional learning-teaching climate. As a result, school leadership had a significant direct influence on teachers’ human capital development (β = .575, C.R. = 10.683, p < .001) and the squared multiple correlation (R²) was .330, indicating 33% variance explained in human capital development specifically given institutional safety and professional learning-teaching climate controlled. Similarly, institutional safety had a significant direct influence on teachers’ human capital development (β = .581, C.R. = 9.644, p < .001) and the squared multiple correlation (R²) was .338 indicating 33.8% variance explained in human capital development specifically given school leadership and professional learning-teaching climate controlled. These results indicated that school leadership had no significant direct effect on teachers’ human capital development in combination with institutional safety and professional learning-teaching climate. However, after controlling institutional safety and professional learning-teaching climate, school leadership showed positive and significant direct effect on teachers’ human capital development (Table 3). Similarly, institution safety had a significant direct effect on human capital development given specifically given school leadership and professional learning-teaching climate controlled, though it had a nonsignificant direct effect in combination with those variables. Furthermore, the structural model had a good fit to the data (χ² = 481.38, df = 203, p < .001, χ²/df = 2.37, NFI = .94, RFI = .93, IFI = .96, CFI = .96, TLI = .96, RMSEA = .06, SRMR = .038, GFI = .90, AGFI = .87). Also, the lower and upper bounds of RMSEA values at 95% confidence interval ranged from .05 to .07, supporting adequate fit of the structural model. In general, almost all absolute values of standardized residual covariances were less than 2 that showed adequately specified structural model.

4.5. Mediation analysis
As results from structural model analysis have showed, the school leadership and institutional safety did not directly influence the teachers’ human capital development. This does not mean that the mentioned factors never affect the teachers’ human capital development endeavor. Since school leadership and institutional safety had significantly strong relationship to teachers’ human capital development, full mediation analysis was performed using AMOS. As Collier (2020) points
out, full mediation takes place when predictor variables have a nonsignificant direct effect on outcome variable, but a significant indirect effect on it through mediator variable. As Collier notes, full mediation is usually mentioned as indirect only. In this view, we assessed indirect effects of school leadership and institutional safety on teachers’ human capital development through mediating variable called positive professional learning and teaching climate of school.

Mediation test standardized estimates showed a significant direct effect of school leadership on teachers’ professional learning and teaching school climate, $\beta = .45$, C.R. = 7.68, $p < .001$, 95% CIs [0.29, 0.61]. Institutional safety had also significant direct influence on positive professional learning and teaching school climate, $\beta = .40$, C.R. = 6.47, $p < .001$, 95% CIs [0.23, 0.55]. Squared multiple correlation estimate ($R^2 = .61$) indicated that school leadership and institutional safety explained 61% of positive professional learning and teaching school climate. This result was significant at $p = .001$, 95% CIs [0.54, 0.68]. Likewise, positive professional learning and teaching school climate had a significant direct effect on teachers’ human capital development in primary schools, $\beta = .73$, C.R. = 13.91, $p < .001$, 95% CIs [0.63, 0.82].

To assess the significance level of indirect effects of school leadership and institutional safety on teachers’ human capital development, we performed bootstrap analyses with bias-corrected percentile method and 95% confidence interval. Positive professional learning and teaching climate within the school served as a mediating variable in full-mediation analysis. Mediation test standardized estimates showed a significant indirect effect of school leadership on teachers’ human capital development, $\beta = .33$, $p < .001$, 95% CIs [0.25, 0.41]. This means that school leadership contributed to teachers’ human capital development indirectly through establishing positive professional learning and teaching climate for teachers. Likewise, results showed significant indirect effect of institutional safety on teachers’ human capital development, $\beta = .29$, $p < .001$, 95% CIs [0.21, 0.38]. This means that institutional safety contributed to teachers’ human capital development indirectly through positive professional learning and teaching climate within the school. Finally, we assessed the type of established mediation model. As results showed, school leadership ($p = .468$) and institutional safety ($p = .112$) had a nonsignificant direct influence on teachers’ human capital development. On the other hand, results showed highly significant indirect influences ($p < .001$) of school leadership and institutional safety on teachers’ human capital development through positive professional learning and teaching school climate. Based on this result, we inferred that the established model was full mediation model. As model fit indices indicated, the model had a good fit ($\chi^2 = 486.204$, $df = 205$, $\chi^2/df = 2.372$, $NFI = .94$, $IFI = .96$, $TLI = .96$, $CFI = .96$, $GFI = .90$, $AGFI = .87$, $RMSEA = .06$, $SRMR = .04$). At 95% confidence interval, RMSEA test value ranged from .05 to .07 that indicated a good model fit. To this end, almost all

### Table 3. Structural equation model predicting teachers’ human capital development

| Hypothesized relationships                                      | $\beta$  | C.R. | Hypothesis supported |
|---------------------------------------------------------------|----------|------|----------------------|
| H1: School leadership human capital development               | .05$^*$  | 0.73 | Not supported         |
| H2: Institutional safety human capital development            | .12$^*$  | 1.59 | Not supported         |
| H3: Professional learning and teaching climate human capital development | .60$^*$  | 7.73 | Supported            |
| Squared multiple correlation ($R^2$):                          |          |      |                      |
| Teachers’ human capital                                       | 0.54     |      |                      |

Note: $^*$ $p < .001$ & $^p > .10$, two tailed. C.R. = critical ratio or calculated t-value, H = hypothesis, standardized estimates reported.
Table 4. Test for mediation using a bootstrap analysis with a 95% confidence interval

| Relationships                                                                 | Direct effect | Indirect effect | Confidence interval | Conclusion |
|-------------------------------------------------------------------------------|---------------|-----------------|---------------------|------------|
| School leadership Professional learning and teaching climate Human capital development | .05*          | .33*            | .25                 | .41        | Full mediation |
| Institutional safety Professional learning and teaching climate High human capital | .12†          | .29*            | .21                 | .38        | Full mediation |

Model Fit Statistics: $\chi^2 = 486.204$, $df = 205$, $x^2/df = 2.372$, NFI = .94, IFI = .96, TLI = .96, CFI = .96, GFI = .90, AGFI = .87, RMSEA = .06 at 95% CIs [.05, .07], SRMR = .04

Notes:*p < .001 & †p > .10, two tailed. Standardized coefficients reported.

absolute values of standardized residual covariance estimates were less than 2 that asserted adequate specification of mediation model (Table 4).

5. Discussion and conclusion

This study hypothesized the direct and indirect influences of school leadership, institutional safety and professional learning and teaching climate on in-service teachers’ human capital development. In this study, professional learning and teaching climate was hypothesized to mediate the relationship between school leadership and teacher human capital development and between institutional safety and teacher human capital development. The CFA and SEM results confirmed that the measurement model and structural model with four latent factors, respectively, had adequate fit to the data. The results show how in-service teachers’ human capital development varies with their perception of school leadership. Results indicate that the school principal’s leadership has a strong indirect relationship to in-service teachers’ human capital development. The school principal’s leadership indirectly influences the in-service teachers’ human capital development by instituting supportive professional learning and teaching climate within the school. Contrary to expectations, school leadership has no significant direct influence on in-service teachers’ human capital development.

Similar to previous findings in the literature (e.g., Brett, 2018; Cardillo, 2013; Cohen et al., 2009; Dary & Pickeral, 2013; Hughes & Pickeral, 2013), the school principal who fairly allocates resources for curriculum, instructional and professional development provides teachers with opportunities to work together, appreciates what the teachers do in the school, and uses teachers’ voice in decision making can influence in-service teachers’ human capital development by creating a positive professional learning and teaching climate to them. Likewise, the principal who effectively communicates school vision, collaborates with teachers to solve classroom discipline problems, and takes actions to ensure that teachers take responsibility for improving their teaching skills, which are the attributes of shared leadership, can influence in-service teachers’ human capital development by instituting supportive climate for professional learning and teaching. This finding lends support to previous findings in literature that indicated great contribution of shared leadership in developing teachers’ knowledge and skills by establishing positive and engaging school climate and fostering teachers’ collaboration and sense of belongingness through shared responsibility (Cardillo, 2013). As Cardillo (2013) points out, a positive school
climate with shared leadership is a place where “inclusiveness is both a vision and practice to ensure everyone is engaged” that nurtures every teacher's leadership in establishing positive school climate (p. 23). The results in current study also substantiate Cohen et al.'s (2009) finding which indicated great impact of school climate on teachers' capability of becoming adult learners and their retention rates, which in turn affects teachers' human capital development. In addition, results support the notion that a school with positive climate can support and nurture effective in-service teacher learning through the shared leadership that provides the optimal basis for productive professional improvement efforts (Cohen & Brown, 2013). They further noted that a school with shared leadership engages all teachers in creating a shared vision, fosters professional development through effective supports and emphasizes on building professional learning communities, which are crucial steps to boost in-service teachers’ human capital development. Likewise, a positive school climate with shared leadership and meaningful adult learning supports teachers to become effective educators “considering what they want and need to learn more about to effectively educate students and support safe, supportive, engaging and flourishing classrooms and schools” (Cohen & Brown, 2013, p. 55).

In the same vein, results from current study lends support to Brett's (2018) findings which showed positive perception of teachers about school leader's practices in supporting the improvement of human capital through hiring and maintaining a quality teaching staff, applying formal and informal observations to develop teacher content knowledge and skills and providing constructive feedbacks. This study has showed the direct relationship between school's investment in the teachers' individual growth and professional development and their human capital development. The most interesting finding in our study is that the professional learning and teaching climate within school mediates the relationship between school leadership and in-service teachers’ human capital development.

The results also indicate that the school's institutional safety has a significant indirect influence on in-service teachers' human capital development by nurturing positive professional learning and teaching among teachers within the school. In institutionally safe schools, clear rules against physically hurting, insulting, teasing, harassment and other verbal abuses are devised and these rules are fairly enforced against any kind of physical and verbal harassments both inside and outside the school. Such type of school creates positive professional learning and teaching climate where heads provide teachers with constructive feedbacks, help teachers figure out how they learn best from their own mistakes, discuss issues that help teachers become good professionals, help teachers in handling difficult situations, and encourage teachers to understand the importance of their feelings and those of others. This means that the school has supportive professional learning and teaching climate that leads to in-service teachers' human capital development. This kind of school climate boosts in-service teachers’ human capital by providing them with: career opportunities that improve their professional growth and practices, constructive feedbacks to improve professional practice, access to supportive specialists to improve teaching practice, and by placing high priority to attract more effective teachers.

This finding substantiates evidences from previous studies and literature (e.g., Cohen et al., 2009; Cornell et al., 2016; Dary & Pickeral, 2013; Devine & Cohen, 2007) which indicated the importance of clearly communicated and fairly enforced institutional safety rules and regulations in establishing positive learning and teaching climate and thereby boosting teachers' human capital development through investment in professional learning and development strategies. As Feinstein and Kiner (2011) and Hanuljaková and Barnová (2015) have noted, consistent and fair enforcement of the institutional safety rules and regulations can shape teachers' feelings in school and encourage their engagement in professional learning and development undertakings. Similarly, safe and orderly school climate fosters the progress of teachers' engagement in professional learning and development endeavors as well as supports their capability to become adult learners through establishing an optimal climate for in-service teachers’ professional learning and development (Cornell et al., 2016; Dary & Pickeral, 2013; Devine & Cohen, 2007) that results in a healthy development of teachers’ human capital. Furthermore, safe and orderly school with positive professional learning and teaching climate
fosters teachers’ engagement in professional learning activities and stimulates their professional development that significantly contributes to teaching practices improvement (Thoonen et al., 2011) that can build up the in-service teachers’ human capital. The key finding in our study is that the professional learning and teaching climate within school mediates the relationship between institutional safety and in-service teachers’ human capital development.

In conclusion, the results of this study indicate a nonsignificant direct effect of school leadership and institutional safety on in-service teachers’ human capital development. Supportive professional learning and teaching climate mediates the effect of school leadership and institutional safety on in-service teachers’ human capital development. This means that quality school leadership can build up in-service teachers’ human capital by establishing positive professional learning and teaching climate within the school. Likewise, intensifying institutional safety of the school builds up in-service teachers’ human capital by improving professional learning and teaching climate within the school. In general, we conclude that the schools with shared leadership and safe institutional climate can develop their teachers’ human capital by establishing supportive professional learning and teaching climate and investing in continuing professional learning and development programs. To this end, this study contributes to the growing literature of professional capital in teaching profession, which is an emerging concept initially documented in Hargreaves and Fullan (2012), by analyzing and validating theoretically suggested measures of human capital as one dimension of teacher professional capital. This study provides new insights in to teacher professional capital determinants research by analyzing and validating the structural linkage between school climate aspects and in-service teachers’ human capital development.

5.1. Limitations and future research

The current study highlighted the practical implications of school climate factors in cultivating in-service teachers’ human capital by investigating structural relationships from school leadership, institutional safety and professional learning and teaching climate to in-service teachers’ human capital development. However, this study may have two major limitations. First, models tested in this study did not consider some important determinants that may affect in-service teachers’ human capital development. For example, teacher’s professional identity elements such as self-efficacy, motivation and job satisfaction and school’s institutional climate aspects such as the relationships among school communities and physical environment of the school may have great influence in building teachers’ human capital. Hence, the future researchers on teacher education and human capital development can replicate the models identified in this study by considering potential determinants. Second, the sample was restricted to Ethiopian in-service teachers in one district, although teachers came from a wide variety of randomly selected primary schools. Hence, the validity and reliability of measurement and structural models developed in the current study should be retested by future researchers in another context.

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