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Change management through strategic leadership: the mediating effect of knowledge management in public organizations, Ethiopia

Worku Lemlemu Ferede^{1*} , Yalew Endawoke² and Gedif Tessema¹

Abstract

The purpose of this study is to investigate the effects of strategic leadership on change management within public organizations, mediated by knowledge management. In this study, an explanatory design and a quantitative approach were employed. A structured questionnaire survey was administered to 366 randomly selected respondents from public organizations in northwest Ethiopia. The reliability and validity of the scale items were rigorously assessed, and the data were analyzed using partial least squares structural equation modeling. The findings reveal the direct effects of strategic leadership and knowledge management on change management, with knowledge management partially mediating the relationship between strategic leadership and change management. The study addresses a significant gap in the literature by shedding light on how strategic leadership drives change in public organizations. Its interdisciplinary approach and examination of mediation offer original insights, paving the way for future studies on challenges within public service contexts. Recommendations underscore the importance of considering local context, embracing adaptive leadership, and integrating knowledge processes for effective change management in public organizations.

Keywords Change management, Knowledge management, Public organizations, Strategic leadership

Introduction

Change is an inevitable aspect of organizational life, crucial for global developments, societal well-being, economic shifts, and technological advancements [32, 33, 59]. Recognizing its global significance, change management becomes crucial in public organizations, enabling adaptability to dynamic environments [57, 64, 73]. This finding is corroborated by [78], who confirmed that change management is essential for improving

service delivery, productivity, and innovation in public organizations.

Although change management has played a vital role in fulfilling social responsibility—providing services and goods and achieving development goals—it continues to be indispensable for ensuring sustained success. This entails the gratitude of strategic architecture and the establishment of knowledge processes [16, 43, 44].

Strategic leadership is crucial in public organizations for mission alignment, resource optimization, stakeholder engagement, and adaptability to change, risk management, and trust building [41, 98]. According to [85], strategic leader setting a clear vision, making decisions, adapting to external changes, and effectively communicating with stakeholders. Strategic leadership fosters a culture of innovation, encouraging creative thinking and risk-taking [92]. As evidence of this, we can claim that both strategic leadership and change management

*Correspondence:

Worku Lemlemu Ferede
workulemlemu550@gmail.com; workuwlf@gmail.com; worku.lemlemu@uog.edu.et

¹ Department of Management, College of Business and Economics, University of Gondar, P.O. Box 196, Gondar, Ethiopia

² Department of Psychology, College of Social and Humanitarian Science, Bahirdar University, P.O. Box 79, Bahirdar, Ethiopia

are interconnected, providing direction and guidance for change effectiveness.

Likewise, knowledge management proves to be crucial for successful organizational change, involving the creation, sharing, and utilization of knowledge [7, 100]. This strategic utilization of knowledge helps organizations adapt to and implement changes, particularly in the context of public organizations [5, 39, 100]. The effective use of knowledge, learning from past experiences, and promoting a collaborative culture are key contributors to successful change planning [102]. Within public organizations, learning and adaptability are crucial drivers of change [40, 42].

In essence, the seamless integration of these elements—change management, strategic leadership, knowledge management—forms the bedrock for successful organizational change in public settings.

However, studies estimated the failure rate of change, particularly planned organizational changes, between 60 and 70% [24, 55, 104, 122]. The above scholars affirm that in a global survey, only 26% of executives said that their change initiatives had been successful. In addition, developing nations, as exemplified by developing nations, like Ethiopia, face challenges in implementing change management due to constraints in resources, strategic architecture, knowledge processes, and resistance [38, 80, 84].

Public sector organizations undergo fluctuations due to various influences such as organizational functionality, legislative, and leadership decisions [53]. Despite ongoing debates, researchers and management consultants have explored various change management models to improve the success of change initiatives. Notably, in Ethiopian public organizations, change management tools such as the Balanced Scorecard, Business Process Reengineering, Kaizen, and Deliverology have shown varying levels of effectiveness [21, 38, 79, 111].

In public organizations, these challenges encompass political decay, corruption, unethical practices, technological inefficiencies, and legal violations. These issues hinder the successful execution of change initiatives. Furthermore, the overall consequences of a deteriorating state-society relationship, due to political instability, ineffective governance, and inefficient service delivery in the study area, compound the complexities of change management implementations. Successfully navigating these challenges requires strategic leadership and, comprehensive knowledge. These elements are indispensable to enhancing adaptive capacity and achieving strategic objectives amid the multifaceted challenges organizations change and its management encounter in such environments.

Despite the established link between strategic leadership and change management [57, 64], prior research

falls short of conducting a comprehensive examination of the mediating roles played by knowledge management in this relationship. There is a significant theoretical gap in various perspectives on strategic leadership, resulting in a lack of consensus and a unified framework for understanding this dynamic field [110, 113, 119]. Some view it as a distinct by leadership style, aligning it with transformational leadership [8, 15, 61, 129], while other scholars argue that strategic leadership is a crucial process that develops alongside strategic management [1, 56, 57]. The other scholars contended with the aforementioned argument that they defined 'strategic leadership' as 'the scopes and levels of the CEO, Board of Directors, and TMT,' by considering upper echelon theory [3, 106]. Furthermore, recent reviews have defined strategic leadership functions in cognitive-thinking and behavioral action, highlighting ongoing debates [106, 119]. Drawing insight from the aforementioned literature, the researcher contend that the body of literature on strategic leadership is fragmented, lacking middle management and specific leadership styles. This fragmentation hinders comprehensive theory development, goal alignment, and organizational environment navigation.

The study also lacks comprehensive literature; previous change management research has predominantly focused on resistance to change in organizations [9, 67, 107, 120]. Nowadays, change management demands a shift toward understanding the factors necessary for successful implementation. In a similar manner, the literature change management has predominantly centered on private and business organizations [25, 75]. However, it is important to note that these factors can also apply to public and non-profit organizations. Knowledge management process has been effective in improving change management [6, 11, 43]; this very important area has not been researched in public organizations in Ethiopia. To have a clearer understanding of the problem under investigation in terms of its depth and magnitude, the researcher observed the problems while working for the last ten years in different positions in public organizations in Ethiopia. During his time there, the researcher noticed a lack knowledge management, which hindered effective change management processes. This highlights the need for further research in this area.

Moreover, there is a notable absence of a comprehensive conceptual framework that integrates strategic leadership, knowledge management, and change management for practical application within public organizations. Prior research has not adequately addressed the specific challenges and complexities associated with change management, strategic leadership, and knowledge management in public organizations in developing countries, such as Ethiopia [4, 23, 112].

The above-identified research gaps underscore the need for a comprehensive exploration of the relationship between strategic leadership and change management through mediation analyses—motivates this imperative. Motivated by multiple theoretical assumptions encompassing change management, organizational learning theory, the argument posits [29] that leadership significantly influences the effectiveness of change management [54, 92, 115]. Empirical research linking organizational change to leadership and knowledge management strongly supports this assertion [20, 63, 114]. This context is marked by political, cultural, and historical intricacies, where balancing tradition and modernity, collaborative leadership, and diversity management are paramount [21, 72, 83]. The study purposes for a comprehensive approach, not only contributing to theoretical advancements and filling gaps in the literature but also providing tailored practical insights for the specific context of northwest (Central Gondar) Ethiopia. The exploration of mediating factors deepens our understanding of how strategic leadership influences change management in public organizations. Therefore, the research investigates the complexities related to the effects of strategic leadership on change management in public organizations in northwest Ethiopia (central Gondar). It specifically explores how knowledge management mediates this relationship. Two key research questions guide the study: (a) to investigate the effect of strategic leadership on change management; (b) to examine the effect of knowledge management on change management; and (c) to what extent does knowledge management mediate the effect of strategic leadership on change management? To fulfill its research question, the study employed a structured questionnaire survey, randomly sampling respondents within the study area to ensure the reliability and validity of scale items. Subsequent data analysis utilized SEM-PLS version 4. This research aims to bridge the gap between theory and practice by providing theoretical insights and actionable strategies, thus offering valuable guidance for leaders in Ethiopian public organizations. It addresses identified gaps by examining the effects of strategic leadership on change management, specifically exploring how strategic leadership influences organizational change through the mediating role of knowledge management. The paper is structured with a literature review and hypothesis development in Sect. "Literature Review", followed by a description of the research methodology in Sect. "Methodology", analysis of measurement and structural models in Sect. "Results", discussion of findings in Sect. "Discussions", and conclusion in

Sect. "Conclusions", which discusses implications, limitations, and suggestions for future studies.

Literature review

Theoretical underpinning

Organizational learning theory (OL) posits that organizations enhance their capacity for change and innovation through continuous learning processes [12, 94]. In the context of this study, OL serves as the theoretical foundation for understanding how strategic leadership influences knowledge management practices, which, in turn, mediate the effectiveness of change management initiatives within northwest Ethiopian public organizations.

Firstly, in the context of strategic leadership, according to OL, strategic leaders play a pivotal role in shaping the organizational environment to promote learning and innovation [93, 127]. Their vision, values, and actions influence the organizational culture and climate, fostering a shared commitment to learning and adaptation [14, 37, 46]. In northwest Ethiopian public organizations, strategic leaders articulate a compelling vision for change, aligning organizational goals with external challenges and opportunities.

Additionally, knowledge management (KM) aligns with OL and emphasizes the importance of knowledge creation, sharing, and utilization in driving organizational performance and adaptation [26, 91]. KM practices such as knowledge sharing platforms, communities of practice, and organizational memory systems facilitate the transfer of tacit and explicit knowledge among employees [45, 88]. In Ethiopian public organizations, effective KM enhances the organization's capacity to leverage internal expertise and external best practices to inform strategic decision-making and change implementation.

Furthermore, change management and organizational leadership recognize that change is a fundamental aspect of organizational life and that learning is essential for successful adaptation to change [58, 69]. In the context of Ethiopian public organizations, CM initiatives guided by strategic leaders are informed by organizational learning processes, enabling the organization to anticipate and respond effectively to internal and external challenges.

Finally, within the conceptual framework of this study, SL influences KM practices by shaping the organizational culture and providing strategic direction for knowledge creation and sharing. KM, in turn, mediates the relationship between SL and CM, facilitating the translation of strategic goals into actionable change initiatives through the effective utilization of organizational knowledge resources.

Overall, organizational learning theory provides a comprehensive framework for understanding the interrelationships between strategic leadership, knowledge

management, and change management within northwest Ethiopian public organizations. By fostering a culture of learning and innovation, strategic leaders can leverage knowledge management practices to drive successful change management outcomes in response to evolving internal and external demands.

Strategic leadership and change management

The study substantiates that strategic leadership and change management are interconnected and essential for organizations to effectively navigate complex environments [17, 86, 92]. Strategic leadership involves setting a clear vision, aligning resources, and making informed decisions, while change management manages changes effectively. These skills are especially important in today's rapidly evolving business landscape, where organizations must constantly adapt to stay competitive. Strategic leadership and change management help organizations identify opportunities, mitigate risks, and drive innovation to achieve long-term success. In business and private organizations, strategic leadership acts as a dynamic force, driving various organizational aspects. Aarons et al. [1] highlighted strategic leadership catalyst for effective change management, and enablers' leaders to navigate complex political landscapes and articulate the rationale for change [31]. The strategic vision and guidance provided by leaders become instrumental in steering organizations through the change process, aligning actions with strategic goals [1, 2]. By integrating the above-mentioned variables, the study can present a more nuanced and comprehensive understanding of the relationship between strategic leadership and change management, supporting the proposed hypothesis with well-rounded evidence and an insightful synthesis. In light of the above argument, the study suggests the following hypotheses:

H1: Strategic leadership has positive effect on change management.

Strategic leadership and knowledge management

Strategic leadership and knowledge management are crucial for organizational success, providing direction, execution, and innovation [86]. Integrating these elements allows organizations to adapt to organizational conditions, drive change, and achieve improved performance.

Research shows that support positively impacts leadership on knowledge management in organizations, as evidenced by differences in peer knowledge sharing contributions during model invariance testing [82, 108]. Delving deeper, the intersection of strategic leadership and knowledge management becomes apparent, particularly in decision-making processes. Hitt [124] and Samimi et al. [106] assert that informed decision-making relies on efficient knowledge management techniques.

Knowledge management facilitates knowledge sharing, continuous learning, and innovation, enabling organizations to adapt to market conditions and support strategic leadership by capturing and disseminating relevant societal needs and trends [86, 87]. Overall, empirical research has consistently demonstrated that strong strategic leadership significantly enhances the performance of knowledge management in public companies [82, 108]. Building upon these insights, the hypothesis posits that strategic leadership in public organizations is positively correlated with effective knowledge management practices. This refined relationship sets the stage for a more rigorous examination of the intricate relationship between strategic leadership and knowledge management in public organizations. Taking into account the preceding reasoning, the study proposes the following hypothesis:

H2: Strategic leadership has positive effect on knowledge management.

Knowledge management and change management

Knowledge management (KM) and change management are intertwined with existing theories and literature integrations. Scholars such as Balasubramanian et al. [18] and North and Kumta [89] emphasize the pivotal role of KM in enhancing organizational adaptability and facilitating successful change implementation. KM is described as involving the systematic collection, organization, and dissemination of knowledge, enabling employees to access relevant information for decision-making and problem-solving.

Moreover, research by Abubakar et al. [5] and Razzaq et al. [99] highlights that KM supports the sharing of best practices and lessons learned, fostering a culture of continuous improvement and innovation within the public sector. This aligns with the theoretical understanding that systematic knowledge capture through KM provides valuable insights that inform and guide current change efforts.

The relationship between strategic leadership and knowledge management (KM) is crucial for public organizations. By leveraging effective KM practices, these organizations can better understand the challenges and risks associated with change, allowing them to refine their change plans and processes [65]. Studies by Abubakar et al. [5] and Razzaq et al. [99] provide valuable insights on the key factors influencing successful change efforts, underscoring the importance of strategic leadership in integrating KM into the organization's change management approach. Effective knowledge management (KM) fosters a culture of learning, collaboration, and continuous improvement in public organizations, providing a strong theoretical foundation for successful

change management [118]. The theoretical integration indicates that a culture of learning and collaboration, facilitated by strategic KM, can positively influence the success of change management efforts in public organizations. This highlights the critical role of strategic leadership in aligning KM and change management strategies to drive organizational transformation and adaptability.

H3: Knowledge management has positive effect on change management.

Meditations of knowledge management

This section explores the improvement of simple meditation practice among knowledge management, examining the relationship between independent variables and dependent variables.

Knowledge management serves as a mediating factor in the relationship between organizational culture and change management, influencing how organizational culture impacts the success of change efforts [74, 121]. Knowledge management, a key influencer of employee attitudes toward change, plays a crucial role in change management [65, 71]. Knowledge management, involving the capture and sharing of knowledge, acts as a mediator between organizational culture and change management by facilitating the transfer of information, skills, and experiences [5]. Despite this, the empirical examination of the interplay between change management through knowledge management is still incomplete [87, 89]. In public organizations, the mediating role of knowledge management in enhancing the relationship between strategic leadership and the effectiveness of change management has not been extensively explored [18, 28, 76]. The hypothesis relevant to this study and the public organizational context focuses on the role of knowledge management in mediating the relationship between strategic leadership and the effectiveness of change management. By synthesizing these thoughts, the study can offer a holistic understanding of how knowledge management interacts as a meditation effect. The evidence provided will help support the mediation analysis, showcasing the interconnectedness of these elements in shaping the organizational landscape. Considering the aforementioned argument, the research proposes the subsequent hypothesis:

H4: Knowledge management mediates the relationship between strategic leadership and change management.

Therefore, based on the above perspective, the researcher developed a conceptual framework to examine the impact of strategic leadership on change management in public organizations, mediating through knowledge management. The conceptual framework offers a comprehensive analysis, enhancing our understanding of their dynamic relationship. It provides both

theoretical and practical insights for the effective implementation of change in public organizations.

Figure 1 depicts the relationship between strategic leadership and change management in public organizations through multiple mediation analyses.

Methodology

Study setting, population and sampling

The study focuses on public organizations operating in the northwest region of Ethiopia, particularly in central Gondar, Amhara Region. The study examines public service organizations in Central Gondar Administration Zone, northwest Ethiopia, comprising 37 entities providing essential services to the local population. In and around Gondar, selected as the study site, is a vital tourist destination, fostering economic, social, cultural, and political development in the region [34, 125, 126]. The study explores the challenges faced by these service providers in key areas such as healthcare, education, investment, agriculture and infrastructure development, to identify potential improvement strategies.

Thirty-seven public organizations employed stratified random sampling to collect data from various departments, including health, education, agriculture, and others. The purpose of this sampling was to ensure representation and coverage of strategic leadership attributions, knowledge management, accountability, cultural practices, and change effectiveness.

To determine the sample size, the study applied the Taro Yamane formula [128] with a 95% confidence interval, considering the population size ($N=1374$) to ensure representativeness. A margin of error (5%) was specified to account for acceptable deviation. The sampling method used had a sample size (n) of 310, representing the target population. $n = \frac{N}{1+Ne^2} = 310$. Researchers often adjust the sample size by 10% for non-participants, 10% for the non-response rate to account for unreachable individuals, and 30% for non-response [60]. Researchers used an adjusted sample size of 404 for reliable data, resulting in. However, 23 questionnaires were unreturned, seven were deemed unusable, and eight were rejected due to incomplete or inconsistent responses. As

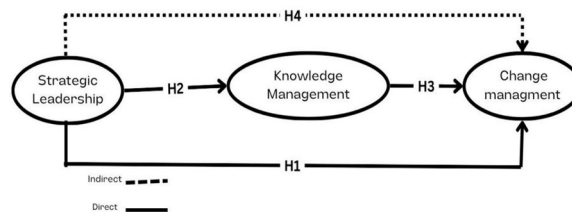


Fig. 1 Conceptual model of the present study

a result, 366 questionnaires (90.6%) were analyzed carefully this rigorous approach not only ensures a robust dataset but also enhances the generalizability of the findings to the broader population of professionals within public organizations at Central Gondar, Ethiopia.

Overall, there were 366 responses, with 71.9% men and 28.1% women. The majority of respondents fell within the age range of 46 to 55 (43.2%), followed by those between 31 and 45 (38.3%), 56 and older (17.2%), and those under 30 (1.4%), respectively. The majority of respondents (67.8%) were first-degree holders followed by master's degree holders (29.2%), diploma holders (2.2%), and PhD holders (0.8%), respectively. In terms of professional experience, the majority of respondents (38.8%) had 16 years or more, followed by those with 11 to 15 years (33.3%), 6 to 10 years (23.5%), and 1 to 5 years (4.4%). This indicates that the survey sample comprised a diverse group of men with varying ages, educational backgrounds, and professional experience. The findings suggest that the majority of respondents were middle-aged, well-educated individuals with a significant amount of work experience.

Measurement tools

Strategic leadership encompasses measuring leaders' strategic actions aimed at shaping future success. This includes setting clear visions, making long-term decisions, inspiring collaboration, adapting to external changes, and fostering innovation and growth [37, 106]. The assessment utilizes 24 Likert scale questionnaires adapted from previous studies [30, 56, 57, 81, 106]. The researcher aimed to manage the large number of items, simplify complex models, and enhance measurement reliability and validity by reducing measurement error. To achieve this, item parceling was employed, and items were recoded into eight items. By relying on employee perceptions, this evaluation reveals how leaders influence the overall view of the organization's strategic direction, providing valuable insights into leadership effectiveness and its impact on organizational strategy change and effectiveness. Consider the example item: *"My leader effectively articulates strategic decisions."*

To rigorously measure the effectiveness of change management initiatives, this study leveraged a refined, multi-item questionnaire extensively validated in prior research [53, 81]. The nine-item, five-point Likert scale questionnaire enabled a comprehensive assessment of how planned change management efforts impact critical organizational outcomes, such as employee engagement and efficiency. Respondents rated their agreement with statements capturing various dimensions of organizational change, including the role of strategic leadership.

For instance, the item *"Change initiatives often emanate from senior management"* directly taps into this factor.

The definitive tool for measuring the knowledge management process, crafted from well-established literature, examines information across four crucial dimensions: capturing, storing, sharing, and utilizing. Consisting of 17 items rated on a five-point Likert scale, this tool, as cited in [35, 65, 90, 95], stands as a valuable resource for comprehensively gauging knowledge management processes within organizations. An example item is *"The exchange of ideas and knowledge is encouraged."* By utilizing this validated instrument, the study provided a holistic, data-driven evaluation of how change management practices translate into tangible improvements in organizational performance and employee outcomes.

Common method bias (CMB)

The researcher prioritized participant anonymity and data confidentiality in their responses by implementing meticulous protocols to safeguard identities. Unrelated marker variables were included to detect method bias and control the study's scale or format. Data collection involved questionnaires for both exogenous and endogenous variables that potentially introduce common method bias (CMB) [22]. The study's Harman's single-factor analysis revealed no significant bias, with a single factor explaining 47.692% of the total variance, below the 50% threshold [97]. Furthermore, Hair's (2021) study also revealed that the PLS-SEM analysis consistently found values below the threshold of five, suggesting that multicollinearity was not present in the common method bias (CMB). Based on these considerations, the study concludes that there is no significant common method bias (CMB).

Model estimation

Partial least squares structural equation modeling (PLS-SEM) is a statistical technique that is versatile and utilized to assess intricate relationships between latent variables in structural equation models [48–50]. By maximizing explained variance and minimizing residuals, this method can be used for both reflective and formative studies, and it is especially useful in the social sciences and management domains [27, 50].

Chain et al. (2020) and Hair et al. (2021) emphasize the importance of considering explanatory and predictive modeling criteria within PLS-SEM. Explanatory modeling is crucial for evaluating the effectiveness of the model among variables, while predictive modeling assesses its accuracy in predicting outcomes related to change implementation [109]. This study utilizes PLS-SEM to analyze the relationship between strategic leadership and knowledge management in public organizations,

specifically focusing on how these factors impact change implementation. PLS-SEM is suitable for analyzing mediation dynamics in this context [117]. In addition, it manages reflective and formative measurement models, accommodates various scales and data types, and ensures accurate data collection.

Reliability and validity

The study assessed the instrument’s quality, standard, adequacy, and practicability using reliability measures from the pilot test. Cronbach’s alpha coefficients were calculated for the five main variables: knowledge management ($\alpha=0.920$), strategic leadership ($\alpha=0.894$), and change management ($\alpha=0.956$), demonstrating a substantial level of internal consistency. These reliability coefficients affirm the consistent and dependable performance of the instrument in measuring each construct.

The author conducted a comprehensive validation process to ensure the reliability and validity of the instrument used in the study. Content validity was assured by subjecting the instrument to expert reviews, ensuring it covered all intended domains thoroughly. Convergence validity was established by demonstrating a strong correlation between the measurement tool and external criteria relevant to the constructs being measured. Discriminant validity was confirmed by ensuring that the instrument did not show excessive correlation with unrelated constructs, thus effectively distinguishing between different variables.

Overall, this rigorous validation process affirmed the instrument’s ability to accurately measure the intended constructs. These measures ensure that the instrument can be relied upon for future research and practical applications, providing a solid foundation for data collection and analysis.

Ethical consideration

The study has received ethical approval from the University of Gondar Institutional Review Board (IRB). The study underwent rigorous ethical review by the university’s IRB to ensure compliance with ethical standards and principles. The IRB carefully evaluated the research methodology, data collection procedures, and potential risks and benefits to participants.

Prior to starting data collection, written consent was obtained to ensure participants were fully informed and capable of making informed decisions. The consent form, attached to the questionnaire, included essential information such as the research title, study purpose and description, participant involvement, potential benefits, confidentiality, data use authorization, voluntary participation, withdrawal procedures, and the principal investigator’s contact information. It aimed to uphold ethical

standards and safeguard participants’ rights throughout the study, ensuring that participation was voluntary. Data collection began only after obtaining consent, and participants were duly acknowledged for their involvement.

Results

Descriptions of respondents characteristics

In this section, the profiles of respondents, specifically the employees of public organizations, were presented and discussed. The primary variables examined in the study included demographic characteristics such as sex, service years, and academic qualifications. Descriptive statistics, including frequency and percentage, were employed for data presentation. Further details are provided in Table 1.

Assessment of the reflective measurement model

In partial least squared structural equation modeling (PLS-SEM), reflective measurement modeling has demonstrated reliability, convergent validity, and discriminant validity across various data types [52, 77]. Three commonly used measures for assessing the reliability of a scale or measurement instrument are factor loading, composite reliability, and Cronbach’s alpha are considered 0.7 and above. Discriminant validity measures construct distinctness in a structural model using heavier loading, the heterotrait–monotrait ratio (HTMT), ideally

Table 1 Demographic profile of the respondents (n = 366)

Respondents particulars	Frequency of respondents	Percentage of respondents
<i>Sex</i>		
Male	263	71.9
Female	103	28.1
<i>Age</i>		
Below 30 years	5	1.4
31–45 years	140	38.3
46–55 years	158	43.2
56 and above	63	17.2
<i>Education</i>		
Diploma	8	2.2
Degree	248	67.8
Master	107	29.2
Doctoral degree	3	0.8
<i>Experience</i>		
1–5 years	16	4.4
6–10 years	86	23.5
11–15 years	122	33.3
16 and years	142	38.8

Source: survey data analysis, 2023

below 0.85 for effective discrimination (extended to 0.90). Convergent validity assesses a concept’s ability to represent shared variance among its elements using the average variance extracted (AVE), with a recommended threshold above 0.5.

For the purpose of this study, PLS-SEM excels, especially in managing complex models with mediation variables. Additionally, the study employed a domain parceling technique to enhance interpretability and simplify the model, leading to increased efficiency and statistical significance in the analysis of items.

PLS-SEM is a widely used model due to its exceptional model handling flexibility, making it useful for analyzing unobservable constructs and adding latent variables [103, 105]. Our study leverages reflective measurement modeling to explore intricate relationships among strategic leadership, knowledge management, and change management. Employing the PLS-SEM 4 model, we conducted a rigorous evaluation of key parameters.

Figure 2 explains the comprehensive analysis of partial least structural modeling. It includes a measurement model identifying connections between observed and latent variables, along with a structural model revealing relationships among them.

In Table 2, construct reliability and validity results are provided. For change management, factor loadings for all items were notably high, ranging from 0.836 to 0.957. Cronbach’s alpha ($\alpha=0.956$) indicated excellent internal consistency and reliability. Composite reliability

(CR=0.957) surpassed the 0.7 threshold, affirming reliability. The average variance extracted (AVE=0.765) exceeded 0.5, showing strong convergent validity. Similarly, for strategic leadership, factor loadings (0.710 to 0.809) indicated a good association. Cronbach’s alpha ($\alpha=0.895$) showed strong internal consistency. CR (0.895) surpassed 0.7, confirming reliability. AVE (0.576) met the convergent validity criterion. Regarding knowledge management, factor loadings ranged from 0.663 to 0.825, showing a satisfactory relationship. Cronbach’s alpha ($\alpha=0.954$) indicated excellent reliability. CR (0.957) exceeded the threshold, supporting reliability. AVE (0.577) met the standard for convergent validity. These findings suggest that the model effectively captures the intended constructs. The current results align with the recommendations of scholars such as Hair et al. [51] who propose a threshold of 0.708 for acceptable item reliability. Notably, composite reliability, considered a more precise measure than Cronbach’s alpha, is deemed satisfactory when exceeding 0.70. The average variance extracted (AVE) metric is used to assess the convergent validity of each construct measure, with a threshold above 0.5 as recommended by Hair (2017).

Table 3 utilizes the heterotrait—monotrait ratio (HTMT) to evaluate discriminant validity among knowledge management (KM), change management (CM), and strategic leadership (SL). The HTMT values for KM \leftrightarrow CM, SL \leftrightarrow CM, and SL \leftrightarrow KM are 0.842, 0.833, and 0.731, respectively, indicating moderate-to-low

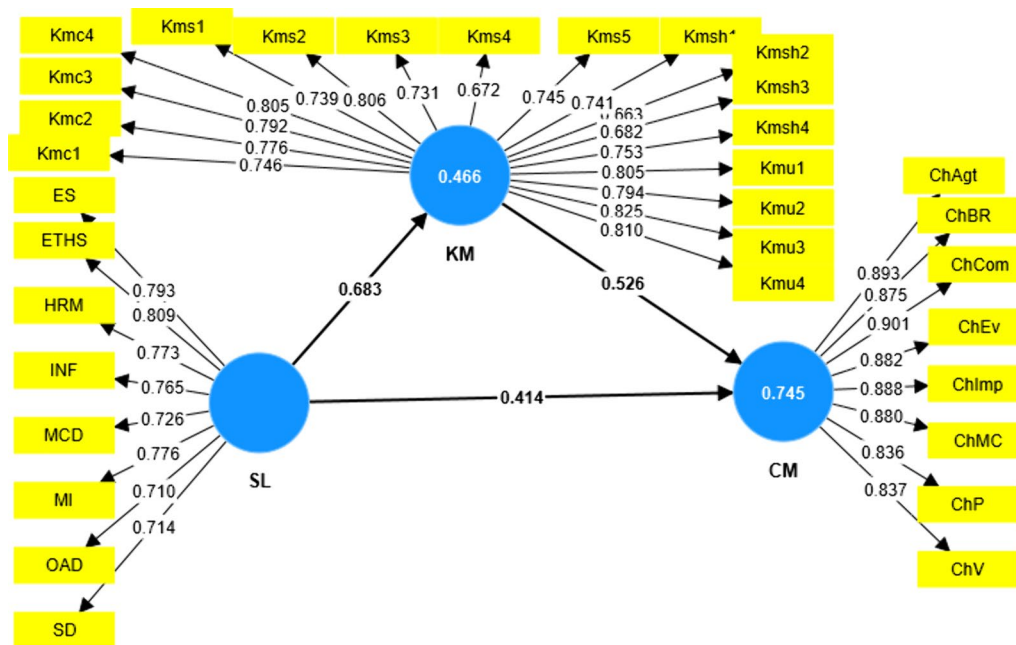


Fig. 2 Partial least squares structural equation modeling

Table 2 Reliability and convergent validity

Construct	Items	Factor loading	Cronbach's	CR	AVE
Change management	ChAgt	0.893	0.956	0.957	0.765
	ChBR	0.875			
	ChCom	0.901			
	ChEv	0.882			
	ChImp	0.888			
	ChMC	0.880			
	ChP	0.836			
	ChV	0.837			
Strategic leadership	ES	0.793	0.895	0.895	0.576
	ETHS	0.809			
	HRM	0.773			
	INF	0.765			
	MCD	0.726			
	MI	0.776			
	OAD	0.710			
	SD	0.714			
Knowledge management	Kmc1	0.746	0.954	0.957	0.577
	Kmc2	0.776			
	Kmc3	0.792			
	Kmc4	0.805			
	Kms1	0.739			
	Kms2	0.806			
	Kms3	0.731			
	Kms4	0.672			
	Kms5	0.745			
	Kmsh1	0.741			
	Kmsh2	0.663			
	Kmsh3	0.682			
	Kmsh4	0.753			
	Kmu1	0.805			
	Kmu2	0.794			
	Kmu3	0.825			
Kmu4	0.810				

Source: Survey data analysis, 2023

Table 3 Heterotrait–Monotrait ratio (HTMT)

construct	HTMT
KM <—> CM	0.842
SL <—> CM	0.833
SL <—> KM	0.731

SL = strategic leadership, CM = change management, KM = knowledge management

Source: survey data analysis, 2023

overlap between the constructs. This suggests that KM, CM, and SL are distinct constructs with minimal shared variance, affirming their discriminant validity in assessing

unique aspects of organizational functioning. Confirming the divergence of variables, the HTMT ratio in Table 3 is below the 0.90 threshold, establishing discriminant validity and reinforcing confidence in the distinctiveness of measured constructs [51]. The study aligns with scholars such as Hair et al. (2023), endorsing the use of HTMT for extracting unique information and preventing construct overlap.

Assessment of structural model

The structural model is a vital component of PLS-SEM, evaluating links between latent variables and observed indicators, validating theoretical assumptions, and

identifying indirect effects using quality criteria and model fit indicators [47, 123]. Standard evaluation criteria include the coefficient of determination (R2), the blindfolding-based cross-validated redundancy measure (Q2), and the statistical significance and relevance of path coefficients [51]. These criteria help determine the strength and validity of the relationships between the latent variables in the model. Additionally, researchers may also consider other factors, such as bootstrapping results and model fit indices, to gain a comprehensive understanding of the model's performance.

Table 4 presents collinearity statistics, which reveal that most items exhibit high multicollinearity among them. This issue has sparked debate among scholars. Table 4 illustrates the variance inflation factor (VIF), a measure of collinearity, for items related to change management, strategic leadership, and knowledge management. VIF values ranging [19] from 1.603 to 4.213 fall within an acceptable range (below 5), suggesting low collinearity among variables and no significant issues. The study employs VIF to assess and ensure low correlation between variables, promoting their independence in change management, strategic leadership, and knowledge management. The study's meticulous approach enhances methodological rigor, bolstering the credibility of its empirical findings in line with established literature [19,

103]. To assess multicollinearity, variance inflation factor (VIF) values below five are generally considered acceptable [50].

Table 5 demonstrates that, upon examining the quality criteria and model fit, the R-squared coefficient underscores the substantial influence of knowledge management (KM), explaining approximately 74.4% of the variance. Simultaneously, the model's independent variables collectively clarify 46.5% of the variance in KM. Furthermore, the effect size analysis reveals a moderate to large impact of knowledge management on change management and a significant influence of strategic leadership on knowledge management. These insights are reinforced by the Q-squared predict values, indicating reliable predictions for both change management (0.593) and knowledge management (0.460). The overall model fit is robust, as evidenced by a low standardized root-mean-square residual (SRMR) value of 0.051, reflecting minimal discrepancy between observed and predicted covariance. Additionally, the normed fit index (NFI) value of 0.853 highlights a favorable fit compared to a null model.

Empirical results

Table 6 provides an in-depth analysis of the hypotheses concerning the impact of knowledge management (KM), change management (CM), and strategic leadership (SL)

Table 4 Collinearity statistics value (VIF)

Items	VIF-value	Items	VIF-value	Items	VIF-value	Items	VIF-value
ChAgt	3.976	Kms4	2.275	HRM	1.937	MCD	1.864
ChBR	3.387	Kms5	2.817	INF	2.023	MI	1.936
ChCom	4.213	Kmsh1	2.400	Kmc1	2.425	OAD	1.643
ChEv	3.848	Kmsh2	1.989	Kmc2	3.024	SD	1.603
ChImp	3.843	Kmsh3	1.968	Kmc3	3.582	Kms4	2.275
ChMC	3.775	Kmsh4	2.479	Kmc4	3.195	Kms5	2.817
ChP	3.022	Kmu1	2.817	Kms1	2.257	Kmsh1	2.400
ChV	2.845	Kmu2	2.851	Kms2	2.684	Kmsh2	1.989
ES	2.210	Kmu3	3.639	Kms3	2.151	Kmsh3	1.968
ETHS	2.376	Kmu4	3.249				

Source: Survey data analysis, 2023

Table 5 quality criteria and model fit summery

R ²		f ²		Q ² predict		Model fit	
Construct	Value	Construct	Value	Construct	Value	SRMR	NFI
CM	0.744	KM→CM	0.581	CM	0.593	0.051	0.853
KM	0.465	SL→CM	0.359	KM	0.460		
		SL→KM	0.873				

Source: Survey data analysis, 2023

Table 6 Result of hypotheses

Hypothesis	Path	β	M	SD	T-value	P values	Result
H1	SL→CM	0.414	0.414	0.038	10.815	0.000	Supported
H2	SL→KM	0.683	0.684	0.031	22.356	0.000	Supported
H3	KM→CM	0.526	0.526	0.037	14.232	0.000	Supported
H4	SL→KM→CM	0.359	0.360	0.031	11.558	0.000	Supported

Source: Survey data analysis, 2023

on organizational dynamics within public organizations. Each hypothesis is substantiated by robust statistical evidence.

The analysis uncovers a significant and positive relationship between knowledge management and change management ($\beta=0.526, p=0.000, T=14.232$), supporting Hypothesis 1. Approximately 52.6% of the variation in change management can be attributed to knowledge management, underscoring the influential role of effective knowledge management in driving successful change within public organizations.

Additionally, a strong and significant connection between strategic leadership and change management is evident ($\beta=0.414, p=0.000, T=10.815$), confirming Hypothesis 2. Strategic leadership explains approximately 41.4% of the variance in change management, emphasizing its critical role in steering organizational change effectively within public organizations.

Furthermore, a significant and positive relationship between strategic leadership and knowledge management is established ($\beta=0.683, p=0.000, T=22.356$), supporting Hypothesis 3. Strategic leadership accounts for approximately 68.3% of the variance in knowledge management, highlighting its pivotal role in fostering effective knowledge management practices within public organizations.

Moreover, the analysis of the indirect path coefficient estimates for Hypothesis 4 confirms a substantial indirect effect ($\beta=0.359, p=0.000, T=11.558$), endorsing Hypothesis 4. This indicates that strategic leadership significantly shapes change management indirectly through its influence on knowledge management.

The robust statistical support for each hypothesis offers quantitative insights into the relationships between knowledge management, change management, and strategic leadership. The findings suggest that organizations can enhance their strategic leadership capabilities by leveraging KM and CM strategies. This research provides a strong foundation for future studies exploring the intersection of these three key components of organizational success. Public organizations seeking to improve their change management and knowledge management strategies can benefit from these findings, which emphasize the

crucial role of effective strategic leadership. Understanding the interconnectedness of KM, CM, and SL enables organizations to navigate challenges and drive innovation. Implementing integrated approaches to these areas can lead to improved decision-making and sustainable growth in today’s dynamic business environment.

Discussions

In the discussion section, the study highlighted significant theoretical advancements, practical implications, valuable insights from readers, and identified potential areas for future research. The current study asserts that strategic leadership significantly influences change management and knowledge management, with all results meeting statistical significance. The findings of this study align with previous research conducted by [62, 106, 116]. These studies demonstrated a robust and persistent pattern across various research contexts, highlighting the impact of strategic leadership on change management. Additionally, [70, 96, 119] underscore the diverse impact of strategic leadership, influencing leadership capabilities, fostering innovation, and contributing to overall organizational success.

The study draws support from organizational learning theory [36] and planned change theory, agency theory [106], providing a solid foundation for exploring the relationship between strategic leadership and change management and shaping various aspects of organizational dynamics.

The above argument support that organizations can derive actionable insights from these results by investing in leadership development and aligning leadership practices with the strategic goals of the organization [58].

In addition, the current study’s statistics validate the conclusion that strategic leadership and knowledge management in the public sector exhibit a significant positive correlation. This finding aligns with previous research. [86], found that wise leadership positively influences organizational effectiveness, emphasizing the crucial role of effective leadership in knowledge management contexts. Similar study observed a parallel in their study, highlighting the importance of knowledge management in driving change initiatives within the public sector

[99]. The present study delves into the impact of strategic leadership on knowledge management practices within organizations, particularly emphasizing the cultivation of a culture of knowledge sharing and collaboration among employees. Our findings validate that this leadership approach indeed exerts a positive influence on several dimensions of KM behavior, including knowledge creation, sharing, and utilization [10, 45, 108]. This implies that the study recommends that organizations prioritize the development of strategic leadership skills to proficiently execute knowledge management initiatives and foster innovation. Enriching the theoretical perspective, organizational learning theory [91], highlights the role of strategic leaders in minimizing agency costs and aligning knowledge management with stakeholder interests.

When taken as a whole, these theories and empirical data improve our comprehension of the ways in which strategic leadership affects knowledge management. They highlight the importance of coordinating strategic leadership and knowledge management with stakeholder interests and promoting a continuous learning culture in an organizational setting. Strategic leaders must adeptly manage knowledge, engage with stakeholders, and cultivate a culture of ongoing learning by encouraging employee sharing and viewing mistakes as opportunities for growth.

The study explores the correlation between knowledge management and change management in the public sector, finding a strong positive correlation. It suggests that improving knowledge management practices leads to improved change management processes, indicating a positive relationship. Our findings resonate with previous empirical studies emphasizing the impact of knowledge management on organizational change management outcomes. Scholars revealed that organizations with effective knowledge management practices are better equipped to adapt to change and innovate [68].

The empirical evidence presented in this study supports the conclusion that there exists a positive correlation between knowledge management and change management in the public sector. Studies show that effective knowledge management and change management are crucial for organizational success, emphasizing the importance of integrating these disciplines [96, 102].

Moreover, our results are firmly grounded in the resource-based view (RBV) theory, which asserts that organizational resources, particularly knowledge, hold value, are rare, and are difficult to replicate [66, 101]. In our study, effective knowledge management is recognized as a valuable resource. The RBV theory supports that skillful implementation contributes to the competitive advantage of public sector organizations in managing

change, aligning with the perspectives of organizational sustainability and resource optimization [13].

The comprehensive triangulation of the debate concerning the current study, previous research, and theoretical suggestions emphasizes the reliability and depth of the conclusions. This is further reinforced by a meticulous examination of the data from various perspectives. By incorporating diverse viewpoints, the study offers a nuanced understanding of change management through strategic leadership, particularly within the context of northwest Ethiopian public organizations. These insights hold substantial implications for practitioners and policymakers, underscoring the importance of integrating knowledge management strategies into change management initiatives to enhance organizational growth and effectiveness.

It endorses that organizations place emphasis on these aspects within their strategic framework, adopting effective practices that align with their organizational goals. Furthermore, the study emphasizes the importance of continuously evaluating and improving these initiatives to maximize their benefits. By doing so, public sector organizations can enhance their competitive position and successfully navigate the challenges of change management.

Conclusions

The current study delved into the intricacies of change management through strategic leadership, focusing specifically on the mediating role of knowledge management within northwest Ethiopian public organizations. Employing PLS-SEM, we found that both measurement and structural models met the established cutoff criteria, affirming the robustness of our analytical framework.

Throughout our investigation, we rigorously tested all research hypotheses in accordance with our research questions. Our findings elucidate the direct influences of strategic leadership and knowledge management on change management within the studied context. Notably, we observed that knowledge management acts as a partial mediator in the relationship between strategic leadership and change management, illuminating the nuanced pathways through which organizational change unfolds.

Furthermore, the thorough triangulation method used in this study, which combined knowledge from the current investigation with insights from earlier studies and pertinent theory, strengthens the validity and nuance of the findings. A more thorough understanding of the intricate relationships between organizational change dynamics, knowledge management, and strategic leadership was made possible by this holistic viewpoint. Through the integration of various data sources, research findings, and theoretical frameworks, the study yielded a complex

and multidimensional understanding of the phenomenon. The conclusions can be highly trusted because of this thorough, multilayered analysis, which ensures that the relationships between organizational change, knowledge management, and strategic leadership are accurately captured.

The implications of our findings are twofold. Theoretically, our study advances understanding by elucidating the mechanisms underpinning organizational change processes, particularly within the framework of strategic leadership and knowledge management. From a practical standpoint, our research underscores the imperative of integrating effective knowledge management strategies alongside strategic leadership initiatives to facilitate successful organizational change within northwest Ethiopian public organizations.

Overall, our study contributes both theoretically and practically by providing actionable insights into the effective management of organizational change processes in real-world settings. By offering a cohesive blend of academic rigor and practical relevance, we aim to guide future research endeavors and support managerial decision-making in navigating the complexities of change within organizational contexts.

Implications

Theoretical implications

The study contextualizes knowledge-based approaches within the unique challenges and opportunities of a developing nation, enhancing the generalizability of these perspectives in diverse organizational contexts. A key theoretical contribution arises from the identified positive mediating relationship between knowledge management practices, organizational culture, and performance in public organizations. This insight highlights the intricate interplay between knowledge management, organizational culture, and accountability—a foundation for further theoretical exploration of organizational change effectiveness.

The research does not merely validate existing theories; it challenges common understandings, particularly regarding traditional strategic leadership roles. By doing so, it injects nuance into the discourse on leadership theories, shedding light on complexities and nuances that may deviate from conventional wisdom.

The theoretical depth is enhanced by a thorough examination of the influence of strategic leadership, organizational culture, knowledge management, and accountability on organizational change and management in public organizations. This holistic perspective fills a theoretical gap in understanding change dynamics, providing nuanced insights into effective change management strategies, especially within the public sector.

Analytical rigor is paramount, with the study offering insights into model quality and cross-validation. This methodical evaluation ensures the reliability and robustness of the theoretical foundations, reinforcing the study's contribution to theoretical advancement.

Finally, the research advocates for a holistic theoretical approach to organizational management by underscoring the crucial role of employees' organizational culture and creativity development for effective knowledge management practices and accountability. This emphasis aligns with a growing understanding of the intricate links between human factors and organizational effectiveness, providing a holistic lens for future theoretical considerations in organizational management and change.

Practical Implications

Ethiopian leaders and managers can enhance the success of public organizations through various strategic initiatives. These include investing in employee training, devising customized strategies, establishing clear accountability structures, fostering a positive organizational culture, implementing efficient knowledge management practices, emphasizing effective leadership, and refining leadership skills. Investing in staff training is pivotal for improving service quality, ensuring customer satisfaction, and fostering loyalty. Retaining institutional knowledge through staff memories contributes to organizational performance by facilitating smoother transitions.

Facilitating knowledge transfer and fostering continuous learning are essential components for skill development and overall productivity. Effective change management in public organizations necessitates a comprehensive understanding of strategic leadership, organizational culture, knowledge management, and accountability. The text underscores the significance of implementing strategies such as knowledge management, cultivating a positive culture, and ensuring accountability to effectively navigate change in public organizations.

The integration of knowledge management, organizational culture practices substantially enhances service quality and overall service delivery. Recognizing and addressing overlooked challenges in the change process is crucial for the successful and sustainable transformation of public organizations. Maintaining quality in public organizations involves ensuring operational effectiveness and promoting efficient and reliable public services.

Limitations and suggestions for future research

The study provides valuable insights, but it also has flaws that could be addressed for future research. The first is geographic specificity, which may constrain the generalizability of findings beyond this region. Second, the focus

on the public sector raises questions about the applicability of the results to private industries.

Third, the study's cross-sectional design may require longitudinal analysis for better understanding and identifying trends, as it only provides a snapshot of causal relationships at a specific point in time. Fourth, reliance on self-reported data introduces a potential limitation due to triangulations of the findings. Finally, the study suggests the following for future studies: conduct comparative studies in diverse geographic regions, extend research to private industries for sector-specific investigations, implement longitudinal research designs to capture changes over time, integrate an analysis of external factors such as economic conditions and political changes, incorporate diverse data sources beyond self-reported measures, and capture the dynamic nature of organizational processes through qualitative methods.

Abbreviations

AVE	Average variance extracted
CEO	Chief executive officer
CMB	Common method bias
CM	Change management
HTMT	Heterotrait–monotrait ratio
IRB	Institutional review board
KM	Knowledge management
OL	Organizational learning
PLS-SEM	Partial least squares structural equation modeling
RBV	Resource-based view
SL	Strategic leadership
TMT	Top management team
VIF	Variance inflation factor

Supplementary Information

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Additional file 1.
Additional file 2.
Additional file 3.
Additional file 4.
Additional file 5.

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Author contributions

WLF contributed to the theoretical foundation, research design, survey execution, data evaluation, and discussion. WLF also authored the initial manuscript draft. YEM and GTS provided critical review and editing of the manuscript. Both YEM and GTS have given written consent for the submission of the manuscript in its current form. The final manuscript was read and approved by all authors.

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Availability of data and materials

Data and materials from the study are available upon request. Please contact the corresponding author for access.

Declarations

Ethics approval and consent to participate

The author obtained confirmation from the Institutional Review Board (IRB) and secured participant consent before collecting any data.

Consent for publication

We confirm that all participants have provided explicit consent for the publication of their data and findings. Measures have been taken to ensure anonymity and confidentiality, as necessary.

Competing Interests

The authors declare that they have no competing interests.

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