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## Article

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Article

# Employees' Innovative Work Behavior and Change Management Phases in Government Institutions: The Mediating Role of Knowledge Sharing

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**Abstract:** The change management process in government institutions includes many challenges that require identifying the factors that may facilitate such a process. This study aims to examine the mediating impact of knowledge sharing (KS) on the relationship between employees' innovative work behavior (EIWB) and change management phases in governmental institutions, based on Lewin's model. The data were collected from 300 employees working in governmental institutions in Saudi Arabia using a structured survey questionnaire method. Structural equation modeling (SEM-PLS) with bootstrap procedures was used to test the research hypotheses. The results of the study demonstrated that KS has a significant mediating impact on the relationship between EIWB and the stages of change management (unfreezing, change process, and refreezing). Additionally, KS had greater mediating effects on the unfreezing and refreezing phases than on the change process phase. These results indicate the importance of promoting EIWB and encouraging a knowledge sharing culture for the successful implementation of change programs in governmental institutions.

**Keywords:** employees' innovative work behavior; knowledge sharing; change management process; Lewin's model; governmental institutions



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## 1. Introduction

Change is a basic requirement for all organizations, including government institutions. It has become normal, expected, and frequent (Coventry and Nutley 2001). Change in governmental institutions is dictated by the continuous changes in the surrounding economic, social, and technological environment, in addition to the ambitious and growing aspirations of the public. Change programs in government institutions target better performance, higher efficiency, and improved service quality (Kuipers et al. 2014; Schmidt et al. 2017). The success of such change programs indicates the prosperity of these government institutions (Salminen 2000). However, unlike private institutions, government institutions face various challenges in implementing change (UNDP 2006). The results of empirical studies have reported a high rate of change program failure in government institutions (Balogun and Hailey 2004; Bielinska-Kwapisz 2014; Raps 2004; Somerville 2008). The inability to implement change programs results in an institution's failure to achieve their developmental goals (Wynen et al. 2020). Therefore, change leaders in government institutions should understand the key factors that might facilitate successful implementation of these change programs.

Researchers have emphasized the role of employees in implementing change in organizations (Shah et al. 2016; Hoover and Harder 2015). According to Fugate et al. (2008), employees' behavior may affect the implementation of the change process. However, the organization's ability to bring about a particular change depends largely on its innovation capabilities (Sung and Kim 2021). Therefore, governmental institutions should encourage their employees to participate in the development and implementation of innovative ideas (Anderson et al. 2004; Zhou and Shalley 2003). Additionally, the literature emphasizes

the importance of knowledge sharing for innovative solutions to organizations' problems (Bubner 2001; Kamaşak and Bulutlar 2010). Knowledge sharing enhances the organization's innovation capabilities (Lin and Lee 2006), promotes employees' creative behavior, and reinforces the employees' cognitive abilities (Kang et al. 2017). Therefore, knowledge sharing among employees may facilitate the implementation of change programs (Leith and Yerbury 2019; Park and Kim 2015). Innovative solutions to organizations' problems entail sharing accumulated knowledge among employees (Kamaşak and Bulutlar 2010; Storey and Kelly 2002). This indicates that knowledge sharing should be considered when addressing the change management phases and employees' innovativeness in government institutions.

Scholars have highlighted the relationship between change management and innovation in government institutions (King et al. 1994; Limba et al. 2019; Ndou 2004). However, there is a dearth of empirical studies focusing on change management and the behavioral dimension of innovation in government institutions. In one of the few examples, Sung and Kim (2021) examined the mediating impact of employees' innovative behavior on the relationship between change management and innovation in the public sector. The scarcity of studies was confirmed by Kuipers et al. (2014), who pointed out that research in relation to change management in governmental institutions, in general, lacks focus, and that the process of implementing change has only been superficially covered. Furthermore, Pettigrew et al. (2001) also argued that studies in the field of change management are always historical and contextual in nature.

The aim of the present study was to examine the relationship between employees' innovative work behavior (EIWB), knowledge sharing (KS), and the phases of change management in governmental institutions in Saudi Arabia, based on the Lewin (1946) model. In addition, I aimed to test the mediating effect of KS on the relationship between the EIWB and the phases of change management. The current research has special importance because it focuses on a vital sector in an emerging economy—that of Saudi Arabia. Saudi Arabia has embarked on the implementation of an ambitious economic plan (Vision 2030) which calls for comprehensive reforms in government institutions to enhance their efficiency and performance. As a result, most public institutions in Saudi Arabia are facing some kind of change, which requires effective management and strenuous efforts to be accompanied by innovation.

The significance of the study lies in providing deeper insights into the association between EIWB, KS, and the change management process in governmental institutions, consequently explaining the expected impacts of EIWB and KS on the success of phases of change management. I attempted to develop a theoretical model that integrates the EIWB and change management phases and tests the expected mediating role of KS in the relationship. Therefore, by examining the relationship between EIWB and KS, this study contributes to the behavioral science literature, by seeking to identify possible new consequences for employees' behavior. In addition, this study contributes to the change management literature because it demonstrates the influence of the EIWB and KS on the phases of change management in government institutions.

## 2. Literature Review

### 2.1. Change Management Process

Maleki et al. (2013) defined change management as, "A structured approach to shifting/transitioning individuals, teams, and organizations from a current state to a desired future state." Change management refers to creating the desired qualitative shift in the employees' and organization's current work (Sacheva 2009). Drawing on Moran and Brightman (2001), the concept of change management has been operationalized in the current research to reflect the process of reforming and improving an organization's operations, direction, structures, and capabilities in line with the ongoing aspirations, expectations, and desires of the local and international audience. Changes in organizations are classified based on the management approach into planned and unplanned changes

(Lewin 1946). Planned change is intended and systematic, results from an organized study, and targets specific outputs. Unplanned change is emergent and occurs suddenly as a consequence of internal or external environment circumstances (Bamford and Forrester 2003). An unplanned change management approach is characterized by focusing on a process or stage of implementing the change, in view of the institution's circumstances during the change's implementation period (Elrod and Tippett 2002). The current study focuses on planned change management in government institutions in Saudi Arabia.

The planned change management approach was first introduced by Lewin (1946), by stressing the importance of evicting old behavior, attitudes, and practices before promoting new and desirable ones (Bamford and Forrester 2003). Lewin developed a three-stage model for managing change consisting of unfreezing, changing process, and refreezing. The unfreezing phase is a preparatory stage that includes processes such as an evaluation of the current situation, identification of deficiencies, determination of the changes needed, and elimination of change obstacles that may hinder the implementation of change. This is required to ensure the employees' motivation and enthusiasm for change (Shirey 2013). The change process phase includes actions essential to accomplishing the desired change, such as planning, intensive communications, and employees learning to overcome their worries and uncertainties about the change program (Shirey 2013). The refreezing phase includes ensuring that change is fixed and sustainable in the organization and its components become part of the organization's systems, structures, policies, and work procedures (Shirey 2013).

Following Lewin, a number of scholars tried to come up with similar models that frame the change management in institutions, such as the Kotter (1990) model, the Senge (1990) model, the V. Frank Patrick's TOC Model, the KAIZEN model, and the ADKAR model. However, most of these models are based on Lewin's model. Therefore, Lewin's model remains the most widely used and applied by researchers in the field of organizational development. Researchers have confirmed that Lewin's model has enriched the theoretical and practical research and provided important tools for the process of change (Eisenhardt 1989; Weick 1989; Woodside 2010). Burnes (2004) asserts that Lewin's (1946) model has been adopted as a change implementation approach in a number of institutions. It has been widely used and empirically tested in many studies (e.g., Beaulieu 2013; Burnes 2012; Chaiklin 2011). Thus, the present study is based on Lewin's (1946) model to give further insight into the change management process in government institutions.

## 2.2. Employees' Innovative Work Behavior (EIWB)

EIWB is defined as an organization's employees' creative ideas for solving work-related problems and innovative contributions to the development and implementation of these ideas, which result in upgrading in organization's performance (Akram et al. 2018). The concept of EIWB is used in the current research to indicate employees' behavior directed towards developing, adopting, and implementing new ideas related to products, technologies, and work methods for the sake of enhancing work quality and effectiveness (Yuan and Woodman 2010). This definition implies that EIWB also extends to developing innovative ideas and executing those ideas. The main attribute of EIWB is that the behavior of employees is voluntary, rather than a compulsory response (Dorenbosch et al. 2005).

Research on innovation in public institutions is divided into two diverse streams. The first stream claims that governmental institutions are characterized by poor incentives for innovative behavior from employees due to their mandates from parliament and because they have no need to achieve a competitive advantage, as is sometimes the case with private institutions (Bysted and Jespersen 2014). This argument is supported by the assertion of a number of other authors who stated that innovative initiatives of employees in governmental institutions may not find acceptance and approval unless they support central policies (Pronovost et al. 2009). The second stream states that employees in governmental institutions are characterized by innovative behavior similar to their counterparts in the private sector (Bysted and Jespersen 2014).

The literature has shown the positive effect of KS on innovative behavior (Akram et al. 2018; Hawryszkiewicz and Binsawad 2018; Qammach 2016). EIWB helps in stimulating, developing, and transferring knowledge (Bos-Nehles et al. 2017). Empirical research also indicated that all phases of innovation from idea generation up to implementation include the transfer of knowledge (Ologbo and Nor 2015). KS is considered a pillar for EIWB (Storey and Kelly 2002). Therefore, the following hypothesis can be stated:

**Hypothesis 1.** *EIWB in government institutions has an influence on KS.*

### 2.3. Knowledge Sharing (KS)

Drawing on Hoegl et al. (2003), KS is defined in the present research as an organizational culture of exchanging work-related information, experiences, and skills between employees through formal and informal channels and networks designed to facilitate their access to that information with the purpose of arriving at a unified understanding of organizational problems. According to Ahmad (2018), KS includes assisting one's co-workers by providing them with information, advice, and work-related experiences to accomplish work tasks and contribute to problem-solving and the development of new ideas. KS also entails the generation of new knowledge that results from the voluntary exchange of information between individuals in an organization (Van den Hooff and de Leeuw van Weenen 2004).

Government institutions are knowledge-intensive organizations by nature. They are concerned with developing, processing, and transferring knowledge (Richards and Duxbury 2015). Although the bureaucratic system in government institutions supports the systematic development of knowledge, this fact does not receive enough attention and has not been a priority in the sector (Tompang and Yunus 2018). It is argued that the systematic development of knowledge may impede the innovative behavior of employees (Bos-Nehles et al. 2017).

KS among employees is essential to ensure the successful implementation of an organization's change programs (Leith and Yerbury 2019). A review of the organization development literature showed a strong relationship between KS and organizational change management (Park and Kim 2015). Park and Kim (2015) claimed that the positive impacts of KS on individuals, structures, and the change implementation process in an organization outweigh its negative effects on the performance of work and tasks. The results of a study conducted by Price et al. (2009) showed that the KS among employees in Australian local government organizations in relation to experience and skills has a significant influence on organizational change management efforts. Furthermore, Rusly et al. (2014) in qualitative research, revealed that KS facilitates the preparation stages of change. Based on this literature, it could be argued that KS may have a direct impact on the phases of change management, as outlined in the Lewin (1946) model.

Some researchers have confirmed that KS is part of innovation (Storey and Kelly 2002; Tsai 2001). Others have stated that KS assists an organization's change processes (Law and Ngai 2008; Vaccaro et al. 2010). In governmental institutions, innovation often involves using knowledge to come up with effective solutions to an organization's problems (Bos-Nehles et al. 2017). This study proposes that KS helps in implementing change management phases by communicating the impacts of EIWB. As a result, we hypothesized the following:

**Hypothesis 2.** *KS among employees in government institutions has a positive effect on the "unfreezing" phase of the change management process.*

**Hypothesis 3.** *KS among employees in government institutions has a positive effect on the "change process" phase of the change management process.*

**Hypothesis 4.** *KS among employees in government institutions has a positive effect on the "refreezing" phase of the change management process.*

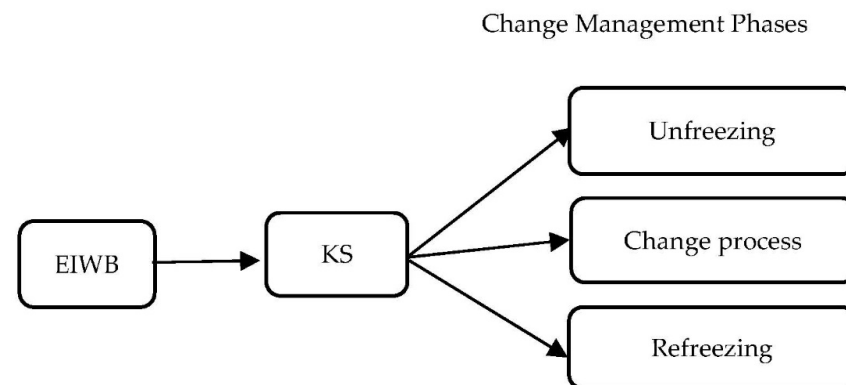
**Hypothesis 5.** *KS among employees in government institutions mediates the relationship between EIWB and the “unfreezing” phase of the change management process.*

**Hypothesis 6.** *KS mediates the relationship between EIWB and the “change process” phase of the change management process.*

**Hypothesis 7.** *KS among employees in government institutions mediates the relationship between EIWB and the “refreezing” phase of the change management process.*

### 3. Research Conceptual Framework

The theoretical framework of the current study was built on previous studies in relation to EIWB, KS, and Lewin’s (1946) organizational change management process model. Lewin’s model suggests three phases (unfreezing/change process/refreezing) for successful change management in organizations. Lewin (1946) is one of the most important models in the field of change management and has been widely used in many empirical studies (e.g., Beaulieu 2013; Burnes 2012; Chaiklin 2011). The research conceptual model shown in Figure 1 demonstrates the direct link between EIWB and KS on the one hand, and KS and change management phases, on the other hand. In addition, the model illustrates the indirect link between EIWB and the change management phases. The model suggests that the relationship between EIWB and change management phases is mediated through KS. Change management phases (dependent variables) shown in the model are based on Lewin’s (1946) organizational change management process model. The dependent variables in the model (EIWB and KS) were derived from the literature.



**Figure 1.** Conceptual model of the research.

### 4. Methodology

#### 4.1. Data Collection and Sample

An online questionnaire was used to collect the data from employees of 10 governmental organizations in Riyadh city in Saudi Arabia. An online questionnaire helps to obtain a large amount of data at the lowest possible cost (Bryman and Bell 2014). First, the questionnaire was translated into Arabic to be properly understood and filled out by the participants. Then, emails, including the questionnaire link, were sent to the targeted participants, including an explanation of the study’s purpose and the data privacy policy. The participants were asked to give responses to the questionnaire within 7 days.

The online survey was conducted between February and March 2021. The questionnaire was sent to 400 employees in government institutions in Saudi Arabia (in Riyadh city). Three-hundred and twenty were completed, a response rate of 80%. Among those questionnaires, 20 were excluded from the analysis as a result of the screening process. The number of complete responses was considered representative of the employees working in the government sector (Sekaran and Bougie 2003), and sufficient to perform the SEM-PLS analysis.

Therefore, the research sample included 300 employees selected randomly using the convenience sampling technique. The descriptive statistics illustrated that the majority of respondents were females (82.3%). A large proportion of participants who filled in the questionnaires (29.3%) were over 40, and most of them had bachelor's degrees (59%).

#### 4.2. Measures

The questionnaire's content validity was examined and revised for question formulation and wording problems by three colleagues specializing in human resource management. Then, the questionnaire was piloted by 20 employees randomly selected from a different government institution, and it was revised based on their feedback and comments by making minor modifications to the words of the sentences.

The constructs used to measure the research variables were extracted from the literature. All construct items were measured using a five-point Likert scale (ranging from strongly disagree to strongly agree). The definition of the structures, the number of items included in each construct, and the sources from which they were derived are shown in Table 1.

**Table 1.** Definitions of constructs and items.

Construct	Definition	Number of Items
Unfreezing	Measures the institution's need for change and employees' readiness to implement such a change (Lewin 1946)	8
Change process	Assesses employees' willingness and organization competencies to implement change (Lewin 1946).	6
Refreezing	Ensures that the change has been reinforced and become a part of the organization's systems and procedures (Lewin 1946).	6
KS	Include written contribution (five scale-items), organization communications (seven item-scale), personal interaction (eight items-scale), and community in practice (seven item-scale), (Edwards 2016).	4
EIWB	Includes opportunity exploration (four- item scale), idea generation (four- item scale), champion (five-item scale), and implementation (four-item scale), (De Jong and Den Hartog 2008).	4

## 5. Data Analysis

Partial least squares structural equation modeling (PLS-SEM) was exploited to examine the research hypotheses through SmartPLS 3.2.9 software (Ringle et al. 2005). SmartPLS is a widely used package used in SEM-based analysis and multi-group analysis that uses partial least squares (Qureshi and Mian 2012). The SEM method is characterized by its aptitude for measuring weak and strong path coefficients; and its effectiveness in testing complex and structural variables' relationships and clarifying their theoretical soundness, for which it provides values for the path coefficients and an analysis of the direct and indirect effects of mediation on the underlying variables (Qureshi and Mian 2012). PLS-SEM has been used in business research to test theories represented in the form of complex models (Hair et al. 2012). SmartPLS software was used in the present research in two phases. First, it was used to estimate the measurement model (inner model), and second to examine the structural model (outer) by establishing the linkage relationship between the latent variables in the research model (Hair et al. 2016).

### 5.1. Measurement Model

The measurement model consisted of reflective variables and latent variables. Construct indicators in the measurement model should demonstrate their convergent and discriminant validity in order for constructs to be valid. In order to assess the constructs' convergent validity, factor loadings, composite reliability (CR), and average variance extracted (AVE) were calculated (Hair et al. 2006). Table 2 shows items with their loadings/weights, and the CR and AVE of the constructs. As shown in the table, all scales

had weights greater than 0.60 (Bagozzi and Yi 1988). Two items (UNF3, UNF4) from the unfreezing construct with a factor loading less than 0.50 were deleted. The CR of constructs values ranged from 0.88 to 0.97 (greater than 0.70). All AVE measures were greater than 0.50, ranging from 0.56 to 0.85 (Hair and Lukas 2014). As shown in Table 3, the discriminant validity was confirmed (Fornell and Larcker 1981), where the square root of the AVE of each construct exceeded its correlations with other constructs in the model.

**Table 2.** Internal consistency, convergent validity, composite reliability, and AVE.

Construct	Items	Loading	Cronbach's Alpha	CR	AVE	Construct	Items	Loading	Cronbach's Alpha	CR	AVE				
Championing	Cham1	0.91	0.94	0.96	0.85	Personal Interactions	PerI1	0.81	0.93	0.95	0.69				
	Cham2	0.92					PerI2	0.84							
	Cham3	0.94					PerI3	0.83							
	Cham4	0.92					PerI4	0.90							
Change Process	ChP1	0.81	0.94	0.95	0.76		PerI5	0.87							
	ChP2	0.91					PerI6	0.86							
	ChP3	0.90					PerI7	0.76							
	ChP4	0.87					PerI8	0.74							
	ChP5	0.86				Ref1	0.79								
	ChP6	0.87				Ref2	0.79								
Communities of practice	ComP1	0.89	0.97	0.97	0.84	Refreezing	Ref3	0.85	0.94	0.95	0.68				
	ComP2	0.91					Ref4	0.87							
	ComP3	0.92					Ref5	0.89							
	ComP4	0.94					Ref6	0.85							
	ComP5	0.93					Ref7	0.89							
	ComP6	0.89					Ref8	0.80							
	ComP7	0.92					Ref9	0.79							
Idea Generation	IdG1	0.90	0.93	0.95	0.83		Unfreezing	Ref10				0.79	0.84	0.88	0.56
	IdG2	0.93						UNF1				0.67			
	IdG3	0.92						UNF2				0.76			
	IdG4	0.90				UNF5		0.69							
Opportunity Exploration	OpEx1	0.69	0.85	0.90	0.69	UNF6		0.81							
	OpEx2	0.88				UNF7		0.80							
	OpEx3	0.87				UNF8		0.76							
	OpEx4	0.86				WrC1		0.75							
Organizational Communications	OrgC1	0.89	0.96	0.96	0.79	Written contributions	WrC2	0.81	0.89	0.92	0.69				
	OrgC2	0.90					WrC3	0.86							
	OrgC3	0.89					WrC4	0.88							
	OrgC4	0.90					WrC5	0.86							
	OrgC5	0.92													
	OrgC6	0.87													
	OrgC7	0.85													
Implementation	Imp1	0.90	0.93	0.95	0.82										
	Imp2	0.90													
	Imp3	0.90													
	Imp4	0.92													



**Table 3.** Discriminant validity.

Construct	Cham	ChP	ComP	IdG	Imp	OpEx	OrgC	PerI	Ref	UNF	WrC
Championing (Cham)	0.92										
Change process (ChP)	0.23	0.87									
Communities of practice (ComP)	0.47	0.36	0.91								
Idea generation (IdG)	0.80	0.10	0.44	0.91							
Implementation (Imp)	0.84	0.26	0.49	0.81	0.91						
Opportunity Exploration (OpEx)	0.67	0.21	0.42	0.70	0.67	0.83					
Organizational commun. (OrgC)	0.37	0.47	0.54	0.33	0.42	0.37	0.89				
Personal interactions (PerI)	0.42	0.44	0.47	0.36	0.43	0.37	0.63	0.83			
Refreezing (Ref)	0.34	0.64	0.40	0.22	0.36	0.27	0.45	0.50	0.82		
Unfreezing (UNF)	0.40	0.58	0.36	0.29	0.46	0.42	0.49	0.51	0.55	0.75	
Written contributions (WrC)	0.33	0.47	0.47	0.27	0.35	0.32	0.59	0.55	0.54	0.46	0.83

### 5.2. Structural Model

After examining the measurement model, PLS-SEM was utilized to test the hypothetical structural model. Bootstrapping t-statistics (Hair et al. 2011) were used to detect the associations between constructs. The path coefficients and coefficients of determination ( $R^2$ ), the effect size ( $f^2$ ), predictive relevance ( $Q^2$ ), and goodness of fit (GoF) (Memon and Rahman 2014) were also scrutinized in the structural model. Lastly, the direct and indirect effects were also determined as part of the mediation analysis.

As a proactive step for preparing the structural model, multicollinearity was tested. The statistical analysis results showed normal collinearity, where the variance inflation factors' (VIF) values for independent variables were less than 5 (Hair et al. 2016). The results of the structural model examination in Table 4 and Figure 2 show that the  $R^2$  value for unfreezing was 0.386, that for the change process it was 0.311, and that for refreezing it was 0.363, which indicates the moderate predictive power of the research model (Chin 1998). The  $R^2$  value represents the extent to which endogenous constructs explain the variance in exogenous constructs connected to it (Hair et al. 2014). According to Chin (1998),  $R^2$  values for endogenous latent variables can be evaluated as 0.67 (substantial), 0.33 (moderate), and 0.19 (weak). According to Chuan and Penyelidikan (2006), for good models, the  $R^2$  values of dependent variables should not be below 0.26. Therefore, the model's endogenous constructs explained variance sufficiently.

Furthermore,  $Q^2$  for endogenous latent variables was obtained using blindfolding. The results in Table 4 show positive  $Q^2$  values, as suggested by Tenenhaus (1999). Consequently, the predictive relevance of the path model is confirmed (Hair et al. 2012). Cohen (1988) suggested effect sizes (Cohen's  $f^2$ ) with certain values: from 0.02 to 0.15 indicates a small effect, from 0.15 to 0.35 represents a medium effect, and above 0.35 indicates a large effect. The results of assessing the model's exogenous variables'  $f^2$  on endogenous latent variables showed that KS has large effects on unfreezing, change process, and unfreezing ( $>0.35$ ). EIWB showed no direct effect on the change process components.

**Table 4.**  $R^2$ ,  $Q^2$ ,  $f^2$ , and VIF values.

Construct	$R^2$	$Q^2$	$f^2$	Variance Inflation Factors (VIF)
EIWB		0.647	-> KS = 0.004	-> Knowledge Sharing = 1.452
KS		0.490	-> Unfreezing = 0.460 -> Change Process = 0.395 -> Refreezing = 0.497	-> Unfreezing = 1.000 -> Change Process = 1.000 -> Refreezing = 1.000
Unfreezing	0.386 (0.000)	0.167		
Change Process	0.311 (0.000)	0.208		
Refreezing	0.363 (0.000)	0.216		

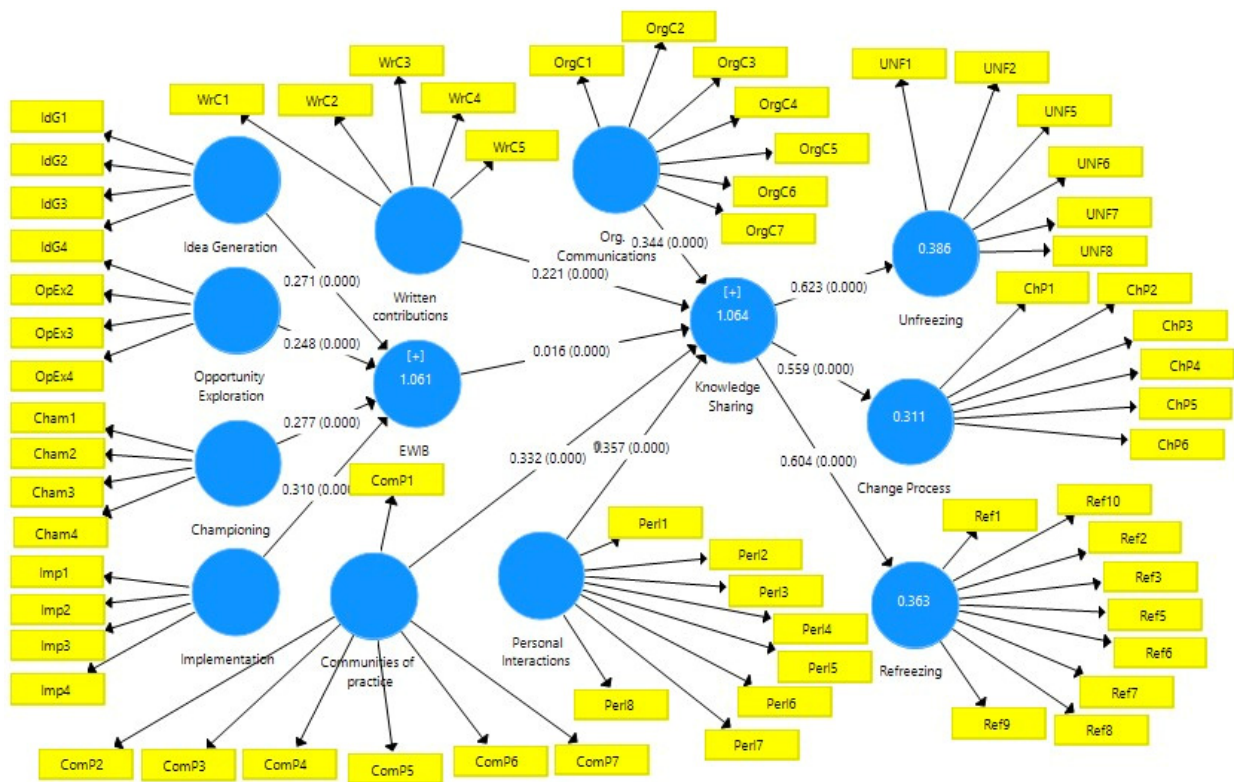


Figure 2. Structural model.

The results of the GoF test showed that the model is feasible and valid for testing hypotheses. The standardized root means square residual (SRMR) value was 0.099, which is less than the cut-off value for the model fit (0.10) proposed by Hair et al. (2014). In addition, the general adjustment index of the model GoF was evaluated by determining the square root of the product of the average R<sup>2</sup> of inner constructs and average AVE of outer constructs (Fornell and Larcker 1981). According to Wetzels et al. (2009), the fit of the model is sufficient if it achieves a value higher than 0.36. The value of the GoF was 0.513, indicating that the model had an adequate fit.

### 5.3. Hypothesis Testing

The hypothesized relationships among variables were assessed using SEM-PLS. The path coefficients and corresponding significance levels were determined for examining the strength of the structural relationships among model variables using *t*-values. The analysis results for hypotheses testing are summarized in Figure 2 and Table 5. Hypotheses 1 stated that EIWB is significantly influenced by the dependent variable KS. The results are statistically significant and indicate that this hypothesis is supported (beta = -0.016; *t* = 4.387; *p* < 0.001). Similarly, the relationship between KS and unfreezing is also significant according to the results (beta = 0.623; *t* = 11.639; *p* < 0.001), indicating that the second hypothesis (H2), which states the effect of KS on unfreezing, can be confirmed. The relationship between KS and the change process (H3) is also supported (beta = 0.559; *t* = 10.124; *p* < 0.001). The last direct path, which concerns the impact of KS on the refreezing phase of the change management process (H4) is also confirmed by the results (beta = 0.604; *t* = 10.161; *p* < 0.001).

**Table 5.** Hypotheses testing results.

Hypothesis	Structural Path	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ( O/STDEV )	p Values	
H1	EIWB -> KS	-0.016	-0.017	0.004	4.387	0.000	Supported
H2	KS -> Unfreezing	0.623	0.627	0.054	11.639	0.000	Supported
H3	KS -> Change Process	0.559	0.562	0.055	10.124	0.000	Supported
H4	KS -> Refreezing	0.604	0.605	0.059	10.161	0.000	Supported
	EIWB -> Change Process	-0.009	-0.009	0.002	4.137	0.000	
	EIWB -> Refreezing	-0.010	-0.010	0.003	3.852	0.000	
	EIWB -> Unfreezing	-0.010	-0.010	0.003	3.716	0.000	

#### 5.4. Mediating Relationship

The mediation was tested using PLS-SEM bootstrapping (Preacher et al. 2007) to examine whether KS has the ability to convey the impact of the EIWB on the change management phases. This mediating role has been validated by calculating the indirect effects of EIWB (independent variable) on the unfreezing, change process, and refreezing phases (dependent variables), through a mediator variable (KS). The total and specific indirect effects of 1000 sub-samples results (in Table 6) indicate that KS mediates the relationship between EIWB and unfreezing (beta = -0.010;  $t = -3.323$ ;  $p < 0.001$ ); thus, H5 is accepted. Similarly, mediation test results in Table 6 indicated that H6 (beta = -0.009;  $t = -4.472$ ;  $p < 0.001$ ) and H7 (beta = -0.010;  $t = -3.221$ ;  $p < 0.001$ ) are supported. As there is no zero between LL and UL in Table 6, the mediating effect of KS in the relationship between EIWB and unfreezing, the change process, and refreezing is confirmed. Partial mediation is also approved due to the significance of both the direct effect and the indirect effect (Hair et al. 2016).

**Table 6.** Mediation relationship.

Hypothesis	Path	Path a	Path b	Indirect Effect	SE	t-Value	p-Value	95% LL	95% UL	Result
H5	EIWB → KS → Unfreezing	-0.016	0.623	-0.010	0.003	-3.323	0.000	-0.016	-0.004	Accepted
H6	EIWB → KS → change process	-0.016	0.559	-0.009	0.002	-4.472	0.000	-0.013	-0.005	Accepted
H7	EIWB → KS → refreezing	-0.016	0.604	-0.010	0.003	-3.221	0.000	-0.016	-0.004	Accepted

## 6. Discussion

The main purpose of this study was to highlight the significance of KS in the relationship between EIWB and phases of change management in government institutions. Previous studies have indicated the importance of EIWB in change management in government institutions (Sung and Kim 2021). The research also addressed the link between change management and KS (Leith and Yerbury 2019; Park and Kim 2015), and the link between KS and EIWB (Kamaşak and Bulutlar 2010; Storey and Kelly 2002). However, the mediating effect of KS on the relationship between EIWB and change management in government institutions was not uncovered.

The findings of the current research indicated that EIWB has a significant effect on stages of the change management process (Lewin 1946) mediated through KS. These results imply that EIWB facilitates the change management processes of unfreezing, change process, and refreezing through a KS culture among employees in government institutions.

In other words, employees' knowledge sharing, whether through direct personal contact or through other organizational communication channels, allows their various innovative behaviors to have a positive impact on the phases of the change management process.

Interestingly, despite the significance of EIWB and KS for all of the change management processes, their joint effect on change management phases occurred in varying degrees. EIWB has a mediating effect on the unfreezing and refreezing phases that outweighed that of the change process phase. Our results showed that EIWB and KS explain 38.6% of the variation in unfreezing, 36.3% of the variation in refreezing, and 31.1% of the variation in the change process. KS had significant and positive effects on the unfreezing ( $\beta = 0.623$ ;  $p < 0.001$ ) and refreezing phases ( $\beta = 0.604$ ;  $p < 0.001$ ), more than on the change process phase ( $\beta = 0.559$ ;  $p < 0.001$ ). These results indicate that EIWB and KS are crucial for the change management and implementation process in government institutions. This may highlight the significance of enhancing EIWB and encouraging KS for effective change management in government institutions, especially in the preliminary stage and the last stage of its implementation. These results partially align with [Park and Kim's \(2015\)](#) findings, who stated that KS stimulates innovation and helps in managing change, and are also consistent with [Poole and Van de Ven \(1989\)](#), who pointed to the strong relationship between innovation and change management.

The research findings proved that EIWB has a significant influence on employees' KS. This indicates that employees who tend to explore new ideas and assist in developing and implementing them are more likely to share their knowledge than those who do not have innovative behavior at work. Previous studies have suggested the impact of KS on EIWB (e.g., [Akram et al. 2018](#); [Hawryszkiewicz and Binsawad 2018](#); [Qammach 2016](#)). Our findings shift the attention to the individual level of analysis by focusing on employee initiatives and knowledge-sharing practices.

The results of the present research contribute to the enterprise development literature. They emphasize the importance of EIWB and KS for successful change management. This study tried to elaborate on the role of KS in communicating the impacts of EIWB in the implementation of change management phases in government institutions. Thus, I added an assistant factor to activate the relationship between the EIWB and change management, as described by [Sung and Kim \(2021\)](#). Therefore, I proposed an additional important precedent for the process of change management, which is KS. This study also adds to [Leith and Yerbury's \(2019\)](#) findings regarding the relationship between KS and organizational change in government institutions by adding the administrative dimension of change. Moreover, the study provides more details on the nature of the relationship between EIWB and KS in government institutions. I have provided empirical evidence demonstrating that when the employees in government institutions are proactive in providing creative and innovative ideas to enhance work and solve the problems of the institution, they tend to voluntarily share their knowledge with their co-workers. Furthermore, this study responds to [Kuipers et al. \(2014\)](#) call for more studies focusing on change management issues in government institutions, such as the implementation phases of change management.

For managers in government institutions, promoting change management remains a major challenge. Therefore, I suggest encouraging employees in government institutions to share knowledge with their co-workers, in order to facilitate the process of change management in their organization. In addition, managers in government institutions should support employees' innovative behavior by encouraging them to contribute to their initiatives and express their creative ideas. As a result, I expect more knowledge sharing among employees, and the successful implementation of all phases of change management in the government institution.

## 7. Conclusions

This research was performed to shed light on the nature of the associations between EIWB, KS, and the phases of change management, based on [Lewin \(1946\)](#), in government institutions using the PLS-SEM algorithm. The study was based on the main hypothesis

that KS has a mediating effect on the relationships between the EIWB and the components of change management (unfreezing, change process, and refreezing).

The main findings from this study suggest that KS has significant mediating impacts on the relationships between EIWB and the change management stages of unfreezing, change process, and refreezing. The results of the study also confirm the direct and significant impact of EIWB on KS. In addition, I proved the significant positive effects of KS on change management phases (unfreezing, change process, and refreezing).

Therefore, this study has both theoretical and practical implications. It provides new insight for managers in government institutions into the significance of the association between EIWB and KS for effective change management. Given that change is recurrent and expected in government institutions, this requires that managers in these institutions prepare for it in advance and create a change-conducive environment by encouraging innovative behavior and by promoting a culture of knowledge sharing between employees. This study's findings could serve as an input for change management programs based on Lewin's (1946) model. Hence, the findings of this study represent a significant addition to the government organizational development literature dealing with the relationship between EIWB and the management of change in an organization.

However, this study has some limitations that will hopefully be covered by future research. First, I examined the mediating effects of KS in the relationships between EIWB and change management phases in government institutions based on Lewin's (1946) model. For the purpose of generalization, future studies should use other models of change management, such as the McKinsey 7-S model, nudge theory, and the ADKAR change management model, to examine the effects of EIWB and KS on the change management phases and steps accounted for by such models. Second, the sample included in this study included employees at all management levels in government institutions. Future research could use a larger sample to conduct a comparison between employees at different levels or to focus mainly on managers. Third, this study used a survey to gather the data from government institutions in Saudi Arabia, and because change management is contextual in nature (Pettigrew et al. 2001), future research should address the relationships between change management and KS and EIWB in other countries.

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