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Organizational change in Saudi healthcare settings: Evaluating organizational and individual readiness for change, and the mediating role of readiness for change between management support and commitment to change.

Sultan Alsaif
University of Louisville

ORGANIZATIONAL CHANGE IN SAUDI HEALTHCARE SETTINGS: EVALUATING ORGANIZATIONAL AND INDIVIDUAL READINESS FOR CHANGE, AND THE MEDIATING ROLE OF READINESS FOR CHANGE BETWEEN MANAGEMENT SUPPORT AND COMMITMENT TO CHANGE

By

Sultan Saleh Alsaif
B.S. University of Evansville, 2014
M.H.S.A. University of Evansville, 2015

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School of Public Health and Information Sciences
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A Dissertation Approved on

November 15th, 2023

By the following Dissertation Committee:

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J'Aime C. Jennings, PhD, Dissertation Chair

_____

Robert M. Carini, PhD Committee member

_____

Liza M. Creel, PhD, Committee member

_____

Andrew L. McCart, PhD, Committee member

DEDICATION

I dedicate this dissertation to my parents and my wife, Alanoud Almushiqah, who have been supportive since the very beginning of my study journey.

I would also like to dedicate this dissertation to healthcare organization leaders and health services researchers who work hard to improve healthcare organizations to meet the needs of all people.

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I would like to thank my family, friends, and classmates for their support and anyone at the University of Louisville who helped me during this journey.

ABSTRACT

ORGANIZATIONAL CHANGE IN SAUDI HEALTHCARE SETTINGS: EVALUATING ORGANIZATIONAL AND INDIVIDUAL READINESS FOR CHANGE, AND THE MEDIATING ROLE OF READINESS FOR CHANGE BETWEEN MANAGEMENT SUPPORT AND COMMITMENT TO CHANGE

Sultan Saleh Alsaif

November 15, 2023

BACKGROUND: To respond to the constantly changing environment and developments of healthcare, leaders of healthcare organizations have been trying to introduce and implement transformations that allow their organizations to be able to operate effectively and efficiently to meet the shifts in healthcare demand and to deal with new patterns of health issues, comply with the new policies, and to enhance their present in the market. Thus, it is important for managers to determine the level of readiness for implementing organizational changes from to perspectives. These perspectives include organizational readiness for change and individual readiness for change.

METHOD: This first manuscript used primary data collected from the employees of a 135-bed hospital in Saudi Arabia to evaluate organizational readiness for change. In the second manuscript, we used primary data collected from healthcare workers in Saudi Arabia to assess readiness for organizational change. The final manuscript used the same data collected for the second paper to evaluate the mediating role of readiness of change

in the relationship between management support for change and commitment to change among healthcare workers in Saudi Arabia.

FINDINGS: In the first manuscript, the findings of the partial least square structural equation model showed that change valence and informational assessment were found statistically significant as they explained 36.3% of variance in organizational readiness for change. In the analysis of individual readiness for change, discrepancy, personal benefits, and self-efficacy had significant contribution to the individual readiness for change. Lastly, in the third manuscript, a complementary mediating role by individual readiness for change was found in the relationship between management support for change and commitment to change of healthcare workers in Saudi Arabia.

CONCLUSION: Our findings suggest that change valence and informational assessment contribute significantly to organizational readiness for change. A more a more comprehensive look at factors affecting organizational readiness and the ability of healthcare organizations to carry out changes is needed to examine what additional factors play important role in enhancing organizational readiness for change. In addition, our findings indicated that workers tend to consider what is in return for them when their organizations a certain change. Individual readiness for change was found as a factor that improve commitment to change among healthcare employees. Further empirical studies are needed to examine possible roles of other factors affecting individual readiness for change and commitment to change.

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INTRODUCTION

BACKGROUND

Transformation of healthcare systems occur in different forms including transformation in strategies of delivery of care, payment mechanisms, market developments, responding to changes in patterns of healthcare issues as well as advances in technologies used in care delivery. Thus, healthcare organizations are always in need to implement new plans and initiatives that involves organizational changes. It was suggested by Armenakis and colleagues (1993) that most change initiatives fail because of managers' inability to ensure that their organization are ready to carry on a specific change by undervaluing the importance of readiness for change. Readiness for change can be evaluated from two perspectives. First, organizational readiness for change, which refers to the collective determination by organizational members to implement a planned change as they have a shared belief in their abilities to achieve the aimed results of the change successfully. Second, individual readiness for organizational change, which is defined as "a mindset that exists among employees during the implementation of organizational changes. It comprises beliefs, attitudes and intentions of change target members regarding the need for and capability of implementing organizational change" (Armenakis & Fredenberger, 1997, p. 144). Thus, it is critical for managers to make certain that their organizations have the capacity and capabilities needed for implementing change and enhance organizational member's readiness for moving their organization from a stage to another.

TRANSFORMATION OF SAUDI HEALTHCARE SYSTEM

In 2016, Saudi Arabia announced a national strategic plan called “Saudi 2030 Vision”. This plan has different goals in economic, social, cultural, and other aspects. It also aims at restructuring several sectors including education, health, tourism and other. To implement this plan and achieve the goals of the Saudi 2030 Vision, several national transformation programs have been introduced. One of the main transformational programs aims to implement a national healthcare reform. This major change in the Saudi healthcare system attempts to enhance quality, effectiveness and efficiency of health services as well as focusing on public health and population health through different initiatives.

Another important objective is to maximize governance in the government-funded healthcare organizations. The structures of the national health system as a whole and the organizations owned by the government will be different than the current ones in which the Ministry of Health (MoH) directly provides health services to Saudi citizens and non-Saudis who are employed by the government. MoH provides about 60 percent of health services in the country through 486 hospitals, 2261 primary care centers, and hundreds of other specialized facilities including but not limited to regional laboratories, diabetes, kidney dialysis, dental, rehabilitation, and oncology centers. Other public providers such as military and teaching hospitals provide 17 percent, and private sector provides 23 percent of the services mainly for Saudis and non-Saudis who work for the private sector and have health insurance (Asmri *et al.*, 2020).

OVERVIEW

Implementing this transformation plan would result in a major change in how healthcare organizations operate in the country. To our knowledge, organizational and individual readiness for change have not been evaluated in the context of Saudi Arabia's healthcare organizations by using Weiner's (2009) and the model developed by Holt and colleagues (2007). The two models were proposed according to the theory developed by Kurt Lewin (1947), which suggests that an organizational change has three stages: Unfreezing, moving, and refreezing and evaluating readiness for change represents the unfreezing stag. Also, the mediating role of readiness for change in the relationship between management support for change and commitment to change has not been examined in the context of Saudi healthcare. Therefore, this dissertation aims at assessing organizational and individual readiness for change by: 1) evaluating the effects of change valence and informational assessment factors on organizational readiness for change, 2) evaluating the individual readiness for organizational change among Saudi healthcare workers, and 3) assessing the mediating role of readiness for organizational change in the relationship between management support for change and commitment to organizational change. The three manuscripts of this dissertation aims to study the two perspectives of organizational change in Saudi healthcare settings (i.e., organizational readiness for change and individual readiness for change).

In the first manuscript, we examined organizational readiness for change among the employees of Bukayriyah General Hospital in Qassim, Saudi Arabia by using a model developed by Weiner (2009). The model proposed that organizational readiness for change is influenced by change valence and informational assessment that is formed by

resource availability and task knowledge. With a sample of 109 hospital employees, we examined the effect of change valence and informational assessment on organizational readiness for change by carrying out the partial least squares structural equation modeling (PLS-SEM), which was suitable for this type of analyses as a non-parametric statistical method. The first manuscripts aimed to answer the first research question: "do change valence and informational assessment have significant influence on organizational readiness for change among the employees of Bukayriyah General Hospital?".

Next, in the second manuscript, we aimed at measuring the effect of management support for change, self-efficacy, personal benefit, discrepancy, and organizational valence on individual readiness for change. A sample of 339 Saudi and non-Saudi healthcare workers, we analyzed data we collected to answer the second research question "do management support for change, self-efficacy, personal benefit, discrepancy, and organizational valence effect individual readiness for change among healthcare workers in Saudi Arabia?".

In the third manuscript, we examined the mediating role of individual readiness for change as a mediating variable in the relationship between management support for change and commitment for change among healthcare workers in Saudi Arabia to answer the question: "does individual readiness for change have a mediating role the affect the relationship between management support for change and commitment to change?".

Together, the three manuscripts represent an attempt to understand what factors play the significant roles in determining the extent to which healthcare organizations and healthcare workers in Saudi Arabia are ready for change plans and initiatives. In addition, the theoretical frameworks employed in the three manuscripts were not intended to be

used in assessing organizational and individual readiness in healthcare settings, which indicates that the three manuscripts aim at testing the three models in the context of healthcare. Moreover, the three manuscripts used partial least square structural equation models to answer the three research questions using primary data collected through two online survey instruments. The survey instruments utilized in the three manuscripts were not developed and validated specifically for assessing organizational and individual readiness in healthcare organization. Thus, this dissertation project shed the light on the validity and applicability of these models and survey instruments for being utilized in analyzing factors that affect organizational and individual readiness for change.

CHAPTER 1: EVALUATING THE EFFECTS OF CHANGE VALENCE AND INFORMATIONAL ASSESSMENT FACTORS ON ORGANIZATIONAL READINESS FOR CHANGE. A CASE OF SAUDI HOSPITAL

INTRODUCTION

In recent decades, healthcare environment has been going through constant transformations caused by several factors including demographic, social, economic, and technological shifts as well as ageing population and prevalence of chronic diseases. The results of these shifts imposed a need for constant and rapid improvements to cope with these developments. In addition, changes in the regulatory environment have another role to play in motivating health organizations to embrace these new situations (Weiner *et al.*, 2008b; Spaulding *et al.*, 2017; Strozzi and Croce, 2021). These multidimensional nature of the macroenvironment encourages healthcare organizations to adapt to these developments at the organizational level by implementing necessary changes. However, to ensure effective and efficient implementation of changes, it is essential for healthcare leaders to assess their employee's readiness for carrying out a specific change.

Creating readiness for organizational change has been a challenge for managers due to different beliefs, commitment, intentions, attitudes towards organizational changes among organizational members (Armenakis, Harris and Mossholder, 1993; Rafferty and Simons, 2006). In addition to their commitment to change, the degree to which

organizational members value change, as well as employees' confidence and belief in their capabilities to adapt to changes play a critical role in achieving successful organizational changes (Armenakis *et al.*, 2007; Holt, Armenakis, Harris, *et al.*, 2007). Researchers have sought to identify the barriers to successful implementation of changes as well as factors that help in achieving desired organizational changes. An example of these attempts is a model developed by Weiner (2009) that aims to guide the efforts towards assessing readiness for organizational change. In his model, Weiner suggests that measuring employees' perception about change, confidence in their capabilities, organizational and personal benefits helps to assess organizational readiness. At the same, Weiner suggests that employees' beliefs in their knowledge about tasks assigned to them and the availability of human, financial, time, and material resources are essential elements when evaluating readiness for change.

In the context of Saudi Arabia's healthcare system, a national transformational plan was developed by the government to modernize and enhance effectiveness and efficiency of the national healthcare system aiming at improvement of access to care and quality of care as well as dealing with public health challenges (Health Sector Transformation Program, Saudi Vision 2030, 2016). For a national health system that is mainly funded by the government, it is important to assess how healthcare organizations are ready to implement this plan. At the organizational level, there has not been much attention to evaluating readiness for organizational change. In this study, we employed a model developed by Weiner (2009) to evaluate organizational readiness for change among the workers of a 135-bed size hospital in the governorate of Bukayriyah, which is located in Qassim province, Saudi Arabia. The purpose of the study is to assess: 1) the

effect of change valence on organizational readiness for change (i.e., how individuals value change and its importance) and 2) employees' knowledge of their tasks and the extent to which they believe that resources needed for change are available. Utilizing Weiner's (2009) model in this study represents an attempt to test applicability of the model in the context of healthcare organizations in Saudi Arabia. Assessing organizational readiness for change helps inform managers and decision makers about beliefs, intentions, attitudes, and behaviors among the employees of the organization about the degree to which organizational change is needed and how they perceive their organization's capability to implement a proposed change successfully (Susanto, 2008; Mekonnen and Bayissa, 2023)

THEORETICAL FRAMEWORK: WEINER THEORY OF ORGANIZATIONAL READINESS FOR CHANGE

Weiner's (2009) framework for organizational readiness for change was used to evaluate the effect of change valence and informational assessment factors on organizational readiness for organizational change as depicted in Figure 1. In his theory, Weiner defined *organizational readiness for change* as the commitment and efficacy members of an organization show in order to implement a desired change. Wiener proposed that the concept of readiness for change represents a multi-level and multi-faceted construct." As a multi-level construct, readiness for change could vary among individuals, units, departments, or organizations while change commitment and change efficacy among employees explain why readiness is a multi-faceted (Weiner *et al.*, 2008a; Weiner, 2009). The model explained *change commitment* as collective resolve among

organizational members to take actions needed in order to create a certain organizational change. In addition, *change efficacy* refers to the conjoined confidence among the employees in their capabilities to carry out the change needed in their organization. As a result, readiness for change refers to employees' psychological and behavioral willingness and ability to take actions needed to make the change successful (Weiner, 2009).

The theory suggested that there are two determinants of organizational readiness for change. First, *change valence*, which reflects how members of an organization value change, the degree to which they believe that a change is needed, to what extent the change will add value to the organization and its operations, how the organization will benefit from such change, and how they will benefit from the change as individuals. Wiener proposed that answering these questions will help in measuring the magnitude of commitment to change. Also, *informational factors* play an important role in how organizational members evaluate their capabilities to implement a change. These factors include, but not limited to, internal and external environments, support from leadership, and time constraints (Weiner, 2009; Shea *et al.*, 2014).

To our knowledge, Weiner's model has not been used in the context of assessing Saudi healthcare organizations. Therefore, we utilized the model to evaluate the effect of change valence and informational assessment factors on readiness for change among the employees of Bukayriyah General Hospital in Qassim, Saudi Arabia.

METHODS

Study Design

The main purpose of this study was to evaluate the impact of change valence and informational assessment factors on readiness for organizational change among the employees of Bukayriyah General Hospital in Qassim, Saudi Arabia. This study is cross-sectional and primary data were collected using a survey instrument developed by Shea et al. (2014). Cross-sectional data are suitable for studies aiming at evaluation of prevalence of a disease, knowledge of attitudes among patients, practitioners, and workers in healthcare settings at a certain point of time (Kesmodel, 2018).

Study Setting

The study setting is Bukayriyah General Hospital in Qassim, Kingdom of Saudi Arabia. Bukayriyah General Hospital is 135-bed hospital serving the governorate of Bukayriyah in Qassim province, which is located in the northern central region of Saudi Arabia. The governorate of Bukayriyah has a population of 63,551 (Saudi Census, 2023).

Ethical Considerations

As primary data were utilized in this study, it was required that we submit the study proposal, survey instrument used and other required documents to the University of Louisville Institutional Review Board (IRB) for approval. IRB approval (#758153) was obtained on December 6th, 2022. Furthermore, an approval from the Qassim Regional Research Ethics Committee was obtained in September 2022.

Pilot Study

A pilot study was conducted between December 11th and December 17th, 2022. Participants in the pilot study were a group of healthcare workers who were excluded from the sampling frame for the final version of the survey. It is recommended that subjects recruited in a pilot study do not belong to the population of the main study (Abu Hassan *et al.*, 2006). The survey instrument was sent to healthcare workers not working for Bukayriyah General Hospital through a chatting group on WhatsApp chatting mobile app. This was to ensure that participants in the pilot study do not re-take the survey when it is administered to the employees of Bukayriyah. There were 54 participants in the pilot survey. In addition, 10 respondents were interviewed virtually about the clarity of items and what questions they could suggest to be added or removed from the instrument. The results of the pilot study showed that there was no need to add or remove items. However, some items were re-translated to Arabic language to enhance the clarity of these items. The results of reliability test of the pilot study showed that all constructs had reliability scores of higher than 0.70, which indicated that the survey instrument met the consistency and reliably criteria (Tavakol and Dennick, 2011).

Study Population and Eligibility Criteria

The study population were the employees of Bukayriyah General Hospital. The number of hospital employees is 583 individuals, either employed by the hospital or by contractors. All contractors were excluded from the study and the eligible individuals to participate in this study were 300 full-time employees directly employed by the hospital. This includes physicians, nurses, administrative and management personnel, laboratory

and radiology specialists and technicians, pharmacists, nutritionists, and social workers. Further, participation was limited to those who aged from 18 to 65.

Data Collection and Recruitment Strategy

To distribute the survey to the employees, we contacted the hospital management. Upon their approval, the managers sent the survey via email to employees on December 18, 2022. Two weeks later, we contacted the management of the hospital for a follow-up message to the respondents. The survey was available through Qualtrics until January 31, 2023. The survey instrument was translated to Arabic language to facilitate employee participation in the study as Arabic is their primary language. The Arabic version of the survey was reviewed for accuracy by four individuals, two of whom are healthcare researchers and the other two are healthcare professionals working for two different organizations in Saudi Arabia.

Study Variables

Outcome Variable. The outcome variable in this is study is readiness for organizational change. According to Weiner's organizational for readiness theory, the outcome (dependent) variable readiness for organizational change is the combination of change efficacy and commitment to change (Weiner, 2009; Shea *et al.*, 2014). Change efficacy construct aims to assessing the collective confidence of the organizational members in their capabilities to carry out a planned change. Five items were included in the survey instrument to assess change efficacy (*See Table 1*). Additionally, commitment to change construct measures the extent to which organizational members show collective

determination to carry out a number of actions needed for the implementation of successful organizational change. Five items were included in the survey instrument to assess commitment to change as shown in Table 1 (Weiner, 2009; Holt *et al.*, 2010).

Independent Variables. The following two independent variables were included in this study:

1. Change Valence, which is a measure of change commitment, refers to the degree to which organizational members believe that change is important and beneficial for them (Weiner, 2009; Shea *et al.*, 2014). Change Valence was evaluated by five survey items (*See Table 1*).
2. Informational Assessment, which is a function of change efficacy, refers to the degree to which organizational members believe that they have skills, knowledge, and resources needed to implement an organizational change including, but limited to human resources, financial resources, time, materials, and information (Weiner, 2009; Shea *et al.*, 2014). Three items were included to the survey instrument to assess employees' knowledge about tasks that are assigned to them, and five survey items were utilized to gauge availability of resources employees need to complete their tasks (*See Table 1*).

Demographic variables. Demographic variables in this study were age in years, gender, nationality, educational level, job category i.e., management, physician, nurse, technician, quality staff, of administrative assistant), years of experience in the work force (*See Table 9*).

Survey Instrument

The survey instrument was developed and validated by Shea et al. (2014). In this study, responses were recorded on a 5-point Likert scale to measure level of agreement ranging from “strongly disagree” to “strongly agree” (Joshi *et al.*, 2015). We included 23 items that represent change efficacy, commitment to change, change valence, resource availability, and task knowledge. Items of survey instrument are shown in Table 1.

Sample Size and Missing Data

Sample Size. The total sample size was 200 respondents. However, 91 respondents were excluded from the analysis for several reasons. First, four participants did not agree on taking the survey and three left the consent box unchecked. In addition, 63 respondents were not working for Bukayriyah General Hospital. Eleven respondents did not indicate whether they work for Bukayriyah General Hospital or not. Nine respondents were also excluded as they entered values for their ages less than 18 years old. Finally, one respondent was excluded as he reported his age 18 years old with working experience of more than 10 years, which was considered erroneous entry. Participants who did not consent to take the survey including those who completed the survey were excluded. Those who declared they were not employees of Bukayriyah General Hospital were excluded. Moreover, those who only completed the demographic-related question and did not respond to the remaining survey items were excluded. individuals who did not meet other age criterion were excluded from the study. Finally, individuals who completed less than five percent of the survey items were excluded from

the study. The final sample size came to 109 individuals with a response rate of 36.33 percent.

To calculate the sample size needed for this study and ensure that we had a sufficient number of observations, version 3.1.9.6 of G*power tool was utilized to determine the minimum number of observations must be included in the study. G*power is statistical power analysis software used to decide what sample size is needed for a research based on desired effect size and statistical power entries. A medium effect size of 0.15 and a power of (1 – ß) = 0.80 were selected according to (Cohen's, 1992) criteria of effect size (f^2). Effect sizes of 0.02, 0.15, and 0.35, are considered small, medium, and large, respectively (Cohen, 1992; Faul *et al.*, 2007). The result of calculating the minimum sample size required for this study was 76 as we employed two independent variables (i.e., change valence and informational assessment), and thus the final sample of 109 exceeded the minimum threshold.

Handling Missing Data. To handle missing data, we first explored the types and magnitude of missing data. First, we utilized version 29 of Statistical Package for Social Science (SPSS) to analyze the patterns of missing data. There were missing values in 24 items of the survey. Also, 14 out of the 109 respondents had at least one missing value in their responses representing 12.84 percent of the total number of respondents. The total values missing were 78 out of 2,538 and that represented 2.98 percent of the total values in the survey. It was important to identify the reason why these values were missing.

There are two types of missing values. First, Missing At Random (MAR), which refers to values that are systematically missing while Missing Completely At Random (MCAR) suggests that values are not missing in a systematic manner (i.e., no systematic

difference between subjects with missing data and those with complete data) (Ahrq, 2018). An example of MAR values is when some participants quit the survey prior to completion. An example of MCAR values is when a researcher forgets to collect or enter some values or some respondents forget to enter their age, gender, or any other information. Moreover, in a situation where MAR values are present , there is a systematic difference between the observed and the missing values whereas missing and observed values have the same distribution in a scenario with MCAR values (Kang, 2013; Bhaskaran and Smeeth, 2014). A Little's MCAR test was conducted using SPSS software to determine if the missing values in the study sample were at MAR or MCAR. The results of the test showed a chi-square of 272.47 with 185 degrees of freedom and a p-value < 0.001, which led us to conclude that we failed to reject the null hypothesis of the test and confirm that the missing values in the data collected for this study were missing at random.

There are different strategies and techniques to handle missing values. The most convenient technique is called listwise or case deletion. This technique should be used very carefully as it increases the risk of bias in small samples. In addition, this technique is best applicable if the assumptions of MCAR are met and the sample size is large (Kang, 2013). As the sample size in this study is small, listwise deletion is not applicable. Other alternative techniques include, but not limited to, mean substitution, maximum expectation, maximum likelihood, regression imputation, and multiple imputation were reviewed. The multiple imputation technique was selected and employed to replace missing values as it is one of the highly recommended techniques in the literature (Kang, 2013). In multiple imputation, instead of filling in missing data, five to ten iterations of

imputation are recommended to achieve the most plausible values to replace missing data. Therefore, the imputation process was repeated five times using SPSS to generate best replacements for each missing value (Kang, 2013; Li, Stuart and Allison, 2015).

Statistical Analysis

As the sample size was not large enough to meet the assumptions required to conduct a first-generation multivariate analysis, and the distribution of data was not normal, the best alternative statistical method was the use of partial least squares structural equation modeling (PLS-SEM). The PLS-SEM method represents a non-parametric second generation of the variance-based structural equation modeling as it does not require a large sample size or normally distributed data to be utilized (Hair et al., 2012; Jia & Wu, 2022). To apply PLS-SEM method on Weiner's (2009) model, we used SmartPLS version 4.0.9.2 software package to conduct a two-stage approach analysis. First, we tested the measurement model by assessing the constructs' reliability and validity by measuring composite reliability (i.e., internal consistency), indicator reliability, discriminant validity, and convergent validity of indicators representing lower-order components, and second we evaluated the SEM model (Hair et al., 2017).

Stage 1: Evaluation of Measurement Model

Reliability analysis of lower-order component. In PLS-SEM, composite reliability is used to measure internal consistency. Composite reliability is preferred in PLS-SEM as it is less sensitive to the number of items than Cronbach's alpha (Hair et al., 2017). However, to ensure that both survey items satisfy the criteria for both measurements, we

used both Cronbach's alpha and composite reliability at this stage. For both measures, a value of ≥ 0.70 is considered acceptable (Bujang et al., 2018; Hair et al., 2011). The results of reliability analysis using Cronbach's alpha showed that change valence, resource availability, and task knowledge constructs had scores of 0.63, 0.67, and 0.57 respectively, so one item from each construct was removed to generate better reliability scores. These reliability scores were related to the same items that showed low indicator loadings while the remaining survey items showed high indicator loadings. The negative-direction items generated very low indicator loadings as shown in Table 3. To increase the reliability of each indicator, the reverse-coded items and items that showed low indicator loadings were eliminated.

Additionally, after re-examining factor loading of the indicators three additional indicators were eliminated, and the indicator loadings were improved as exhibited in Table 4. Consequently, Cronbach's alpha, composite reliability scores of the measurement model of the lower order components met the assumptions of PLS-SEM (*See Table 5*). In PLS-SEM, convergent validity criteria should be met. Average Variance Extracted (AVE) is a measure of convergent validity, which is an indicator of how a single measure correlates positively to another alternative measure. The AVE score for reflective construct should be higher than 0.50 (Hair et al., 2017) and the AVE scores are shown in Table 6.

Lastly, we tested for discriminant validity to assess how each construct is different from other constructs (Hair et al., 2019). First, we examined the cross loadings of the indicators to ensure that each indicator has the highest score with the construct it belongs to. Second, we utilized the Fornell-Larcker criterion which suggests that the square root

of AVE of a construct is greater than the highest correlation with any other construct in the correlation matrix (Benitez et al., 2020; Hair et al., 2017). The results of discriminant validity assessment are exhibited in Table 6. Finally, an assessment of multicollinearity was performed to make certain that indicators in the model are not highly correlated. Variance Inflation Factor (VIF) was utilized to gauge multicollinearity and to meet this PLS-SEM assumption. It is important that VIF values do not exceed a value of 5 (Hair et al., 2017; Hair et al., 2012) The highest VIF value was 3.09.

Stage 2: Evaluation of Higher-Order Measurement Model

In the second stage of the two-stage approach, we evaluated the reliability of the two higher-order constructs informational assessment and organizational readiness (*See Figure 2*). In the informational assessment latent variable, resource availability and task knowledge served as manifest variables. Likewise, change efficacy and change commitment served as manifest variables for the latent variable organizational readiness for change (Hair et al., 2017). Reliability and validity tests were conducted, and the results of the tests showed high reliability and validity (*See Table 7*).

RESULTS

Descriptive Statistics

The study examined data from 109 employees of Bukayriyah General Hospital in Qassim, Saudi Arabi. Individuals included in the final sample were on average 42.4 (Standard Deviations (SD) = 7.68) years old and 27.5% were female. Moreover, 57.8% of participants were Saudis and 42.2% worked as clinicians (nurse or other). Most

individuals had 10 years of experience or more (63.3%) and those who hold bachelor's degree were 45.0% of the study sample (*See Table 2*).

Structural Model and Hypothesis Testing

The next step was to examine the effects of change valence and informational assessment as predictors of readiness for organizational change using the structural model. This includes the evaluation of collinearity among constructs, significance of path coefficients, t-statistics, coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2) (Hair et al., 2017; Pirouz, 2012). The direct relationship between change valance and readiness was significant with a path coefficient of 0.408 (t=4.673, p = < 0.001). Thus, the null hypothesis stating that there is no association between change valence and organizational readiness for change was rejected. In addition, the effect of informational assessment as a higher order component formed by resource availability and task knowledge was statistically significant with a path coefficient of 0.292 (t= *3.694, p* =< 0.001) as shown in Figure 2. Similarly, the null hypothesis stating that informational assessment (i.e., resource availability and task knowledge) has no influence on organizational readiness for change was rejected. The coefficient of determination (R^2) was 0.363 and this value shows that change valence and informational assessment explain 36.3% of variance in organizational readiness for change. An R^2 that falls between 0.25 and 0.50 is deemed weak. In general, to determine goodness of fit states that R^2 values of 0.75, 0.50 and 0.25 are considered substantial, moderate, and weak respectively while an R^2 of 0.90 and higher that that values represents an overfit (Hair et al., 2019).

Furthermore, effect size (f^2) constitutes the contribution of an independent variable to R^2. In other words, f^2 measures how much of variance in the dependent variable (exogenous construct) would exist if an independent variable (endogenous construct) was removed. Effect sizes of 0.02, 0.15, and 0.35, are considered small, medium, and large, respectively. Accordingly, change valence showed a medium effect size of 0.205 while informational assessment contributed to the R^2 with a small effect size of 0.105. Finally, we performed a PLSpredict procedure on SmartPLS software to determine the predictive relevance value (Q^2). A predictive relevance value larger than zero indicates that the predictive relevance in the model is established. The result of the PLSpredict procedure showed a Q^2 of 0.316 for the endogenous construct organizational readiness for change which allowed us to conclude that the change valence and informational assessment could predict organizational readiness for change as Q^2 was above zero (Hair et al., 2011).

DISCUSSION

Organizational readiness for change among Bukayriyah General Hospital in Qassim, Saudi Arabia was evaluated using a model developed by Weiner (2009). The model proposed that organizational readiness for change is influenced by change valence and informational assessment that is formed by resource availability and task knowledge. With a sample of 109 hospital employees, we examined the effect of change valence and informational assessment on organizational readiness for change by carrying out the partial least squares structural equation modeling (PLS-SEM), which was suitable for this type of analyses as a non-parametric statistical method. The results of this study revealed

that change valence and informational assessment contributed significantly to organizational readiness for change. Change valence had a greater influence on readiness for change than informational assessment. As the two predictors explained 0.363 of variance in organizational readiness for change, other factors could play significant roles in determining organizational readiness for change such as geographical location, number of patients served, financial resources allocated for operating the hospital as it is located in a relatively small town in Qassim province. Also, Bukayriyah General Hospital is not a referral hospital in Qassim area, which could limit the hospital capabilities.

Despite the fact Weiner's model had not been widely evaluated, the results of this study are supported by another study that used stepwise multiple regression. Phillips (2017)reported that change valence and informational assessment had significant influence on organizational readiness for change in a sample of 70 individuals working for a 92-employee organization. Although Phillips (2017) stated that his study was conducted at an organization going through an operation-related software change, the study did not specify the field to which the organization belongs. Our findings align with a study conducted by (Sharma *et al.*, 2018), which was conducted in acute care organization in Switzerland. This study aimed at assessing nurses' readiness for organizational change since a diagnosis- related groups policy was implemented. The study found that staffing and resource adequacy was positively associated only with change efficacy, which is, according to wiener (2009), a function of individuals' beliefs about task demands and resource availability.

To our knowledge, this study is the only study that utilized Wiener's model in the context of Saudi health healthcare organizations. Therefore, it is important to point out

that there is a need for further studies to evaluate the model, especially in the field of healthcare organizations. For example, it is important to evaluate the factor of resource availability in details to determine what specific type of resources (i.e., financial, human, infrastructure, or technological) that has significant impact on change efficacy. In addition, it is important to consider that organizational readiness for change in healthcare settings may vary among departments as people in these organizations perform medical, financial, administrative, logistics, and other health-related tasks.

Limitations and Future Research

Several limitations in this study should be considered. First, there were some limitations in the data collection process including a relatively low response rate and a number of respondents who were excluded from survey as they entered invalid values, which affected the final sample size. Second, individuals with certain demographic characteristics such as age, gender, educational level might have been overrepresented or underrepresented. Also, as in many cross-sectional studies, the issues of recall bias and self-reporting could be limitations of this study in a sense that participants could have overestimated or underestimated their capabilities, skills, confidence, and commitment. The use of English and Arabic languages could have limited access to the survey instrument for those who do not speak either of these languages. Lastly, these are several factors that could have an impact on the extent to which this study is generalizable. First, this is a cross-sectional study that measures employees' perspective at a certain point of time. In healthcare, organizations are susceptible to internal developments including changes in objectives, operations, or structures. Also, external factors such as new

policies, changes in market environment, or technological advances could have influence on how employees are ready to implement changes. Therefore, to enhance generalizability of this type of studies, there is a need for collecting data at different points of time to assess the magnitude of these factor on organizational readiness for change.

CONCLUSION

In healthcare settings, organizational changes are expected to be implemented periodically due to external and internal reasons such as social, economic, financial, political and technological reasons that have impact on how these entities operate (Spaulding *et al.*, 2017; Fiorio, Gorli and Verzillo, 2018). The term organizational readiness for change refers to the commitment and efficacy that members of an organization show in order to implement a desired change (Weiner *et al.*, 2008b; Weiner, 2009). In this study, we examined how employees see their capabilities, and how confident they are that they could implement an organizational change. The role of the employee's knowledge about tasks and adequate resources needed to execute an organizational change were assessed. Similar to previous research Phillips (2017), our findings suggest that change valence and informational assessment contribute significantly to organizational readiness for change.

Prior literature and our study findings suggest that there is a need to take a more comprehensive look at factors affecting organizational readiness and the ability of healthcare organizations to carry out changes. This includes examining variations in readiness for change among organizations as they are different in size, structure, types of

services provided, and the availability of adequate human and financial resources. It is also important to point out that other factors such as geographical locations could contribute to these variations. Furthermore, it is worth to mention the need to examine variation in readiness for change in these organization at the department level as each department has different responsibilities and objectives that are different from another.

Figure 1. Weiner's Organizational Readiness for Change Model (Weiner, 2009)

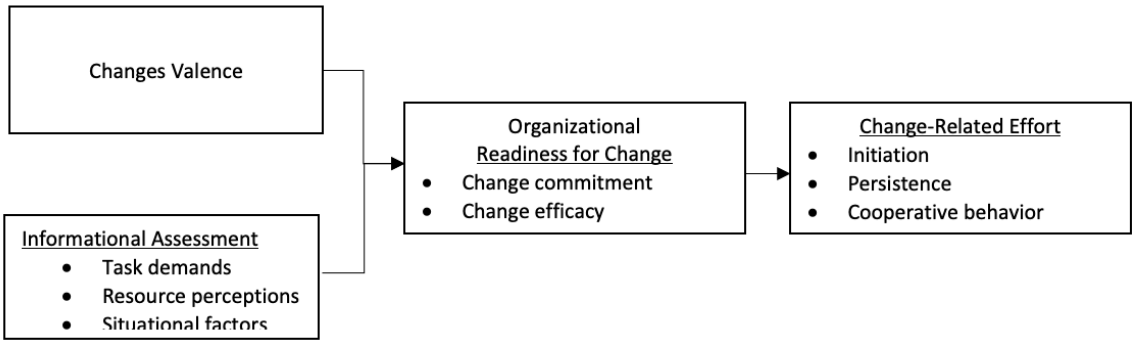


Table 1. Survey Instrument (English Version)

Construct	Item	Mean	SD
Change Efficacy	1. We feel confident that we can manage the politics of implementing changes in our organization	3.982	0.635
	2. We feel confident that our organization can support people as they adjust to this change.	3.945	0.833
	3. We feel confident that we can coordinate tasks so that implementation goes smoothly.	4.092	0.671
	4. We feel confident that we can keep track of progress in implementing changes in our organization.	4.018	0.649
	5. We feel confident that we can handle the challenges that might arise in implementing this change.	4.018	0.649
Change Commitment	1. People who work here are committed to implementing changes in our organization.	3.917	0.718
	2. People who work here are determined to implement changes in our organization.	3.936	0.694
	3. People who work here are not motivated to implement changes in our organization.	3.321	1.124
	4. People who work here will do whatever it takes to implement changes in our organization.	3.963	0.634
	5. People who work here want to implement changes in our organization.	3.899	0.716
change valence	1. People who work here believe changes in our organization benefit our community.	3.917	0.756
	2. People who work here believe changes in our organization do not make things better.	3.22	1.103
	3. People who work here feel we need to implement changes in our organization.	3.752	0.744
	4. People who work here believe changes in our organization result from good ideas.	3.972	0.598
	5. People who work here value changes in our organization.	3.936	0.639
	1. We have the equipment we need to implement changes in our organization.	3.495	0.853

Resource Availability	2. We do not have the expertise needed to implement changes in our organization.	3.156	1.024
	3. We have the time we need to implement changes in our organization.	3.725	0.715
	4. We have the skills to implement changes in our organization.	3.908	0.643
	5. We have the resources needed to implement changes in our organization.	3.651	0.839
Task Knowledge	1. We do not know what each of us has to do to implement changes in our organization.	3.202	1.039
	2. We know what resources are needed to implement changes in our organization.	3.716	0.767
	3. We know how much time it takes to implement changes in our organization	3.587	0.769

Table 2. Demographic characteristics of the study sample

Variable	Mean	SD
Age	42.41	7.68
	Frequency	Percentage
Gender		
Male	79	72.5
Female	30	27.5
Nationality		
Saudi	63	57.8
Non-Saudi	46	42.2
Educational level		
High school or less	2	1.8
Associate degree	28	25.7
Bachelor's degree	49	45.0
Master's degree	20	18.3
PhD	3	2.8
MD	4	3.7
Other	3	2.8
Job Category		
Management	16	14.7
Physician	28	25.7
Clinical	46	42.2
Office staff/ Other administrative	7	6.4
Other	12	11.0
Work Experience		
Less than a year	3	2.8
1-2 years	4	3.7
3-5 years	17	15.6
6-9 years	16	14.7
10 years or more	69	63.6

Table 3. Items and Indicator Loadings at First Stage

Survey Item	Indicator Loading
Change Valence 1- People who work here believe changes in our organization benefit our community.	0.677
Change Valence 2- People who work here believe changes in our organization do not make things better (reversed coded).	0.057
Change Valence 3- People who work here feel we need to implement changes in our organization.	0.745
Change Valence 4- People who work here believe changes in our organization result from good ideas.	0.753
Change Valence 5- People who work here value changes in our organization.	0.846
Resource Availability 1- We have the equipment we need to implement changes in our organization.	0.862
Resource Availability 2- We do not have the expertise needed to implement changes in our organization (reversed coded).	0.137
Resource Availability 3- We have the time we need to implement changes in our organization.	0.702
Resource Availability 4- We have the skills to implement changes in our organization.	0.653
Resource Availability 5- We have the resources needed to implement changes in our organization.	0.838
Task Knowledge 1- We do not know what each of us has to do to implement changes in our organization (reversed coded).	0.272
Task Knowledge 2- We know what resources are needed to implement changes in our organization.	0.900
Task Knowledge 3- We know how much time it takes to implement changes in our organization.	0.923
Change Efficacy 1- We feel confident that we can manage the politics of implementing changes in our organization.	0.786
Change Efficacy 2- We feel confident that our organization can support people as they adjust to this change.	0.852
Change Efficacy 3- We feel confident that we can coordinate tasks so that implementation goes smoothly.	0.848
Change Efficacy 4- We feel confident that we can keep track of progress in implementing changes in our organization.	0.866

Change Efficacy 5- We feel confident that we can handle the challenges that might arise in implementing this change.	0.855
Change Commitment 1- People who work here are committed to implementing changes in our organization.	0.891
Change Commitment 2- People who work here are determined to implement changes in our organization.	0.839
Change Commitment 3- People who work here are not motivated to implement changes in our organization (reversed coded).	0.196
Change Commitment 4- People who work here will do whatever it takes to implement changes in our organization.	0.854
Change Commitment 5- We feel confident that we can handle the challenges that might arise in implementing this change.	0.691

Table 4. Indicator Loadings of items included in the model after removing items with low reliability values

Survey Item	Indicator Loading
Change Valence 3- People who work here feel we need to implement changes in our organization.	0.785
Change Valence 4- People who work here believe changes in our organization result from good ideas.	0.821
Change Valence 5- People who work here value changes in our organization.	0.887
Resource Availability 1- We have the equipment we need to implement changes in our organization.	0.928
Resource Availability 5- We have the resources needed to implement changes in our organization.	0.938
Task Knowledge 2- We know what resources are needed to implement changes in our organization.	0.923
Task Knowledge 3- We know how much time it takes to implement changes in our organization.	0.922
Change Efficacy 1- We feel confident that we can manage the politics of implementing changes in our organization.	0.786
Change Efficacy 2- We feel confident that our organization can support people as they adjust to this change.	0.852
Change Efficacy 3- We feel confident that we can coordinate tasks so that implementation goes smoothly.	0.848
Change Efficacy 4- We feel confident that we can keep track of progress in implementing changes in our organization.	0.866
Change Efficacy 5- We feel confident that we can handle the challenges that might arise in implementing this change.	0.855
Change Commitment - We feel confident that we can handle the challenges that might arise in implementing this change.	0.906
Change Commitment 1- People who work here are determined to implement changes in our organization.	0.886
Change Commitment 2- People who work here want to implement changes in our organization.	0.862

Table 5. Cronbach's alpha, composite reliability scores of measurement model of the lower order component

	Cronbach's alpha	Composite reliability
Change Commitment	0.86	0.86
Change Efficacy	0.90	0.90
Change Valence	0.78	0.81
Resource Availability	0.85	0.85
Task Knowledge	0.83	0.83

Table 6. Discriminant Validity Assessment: Fornell-Larcker criterion

	Change Commitment	Change Efficacy	Change Valence	Informational Assessment	Readiness	Resource Availability	Task Knowledge	Average Variance Extracted (AVE)
Change Commitment	0.885							0.78
Change Efficacy	0.776	0.842						0.71
Change Valence	0.472	0.499	0.832					0.69
Informational Assessment	0.463	0.4	0.466	0.850				0.87
Readiness	0.914	0.958	0.544	0.482	0.789			0.85
Resource Availability	0.462	0.415	0.498	0.921	0.49	0.933		
Task Knowledge	0.384	0.316	0.353	0.912	0.391	0.68	0.923	

Figure 2. Higher-order component measurement model showing path coefficients

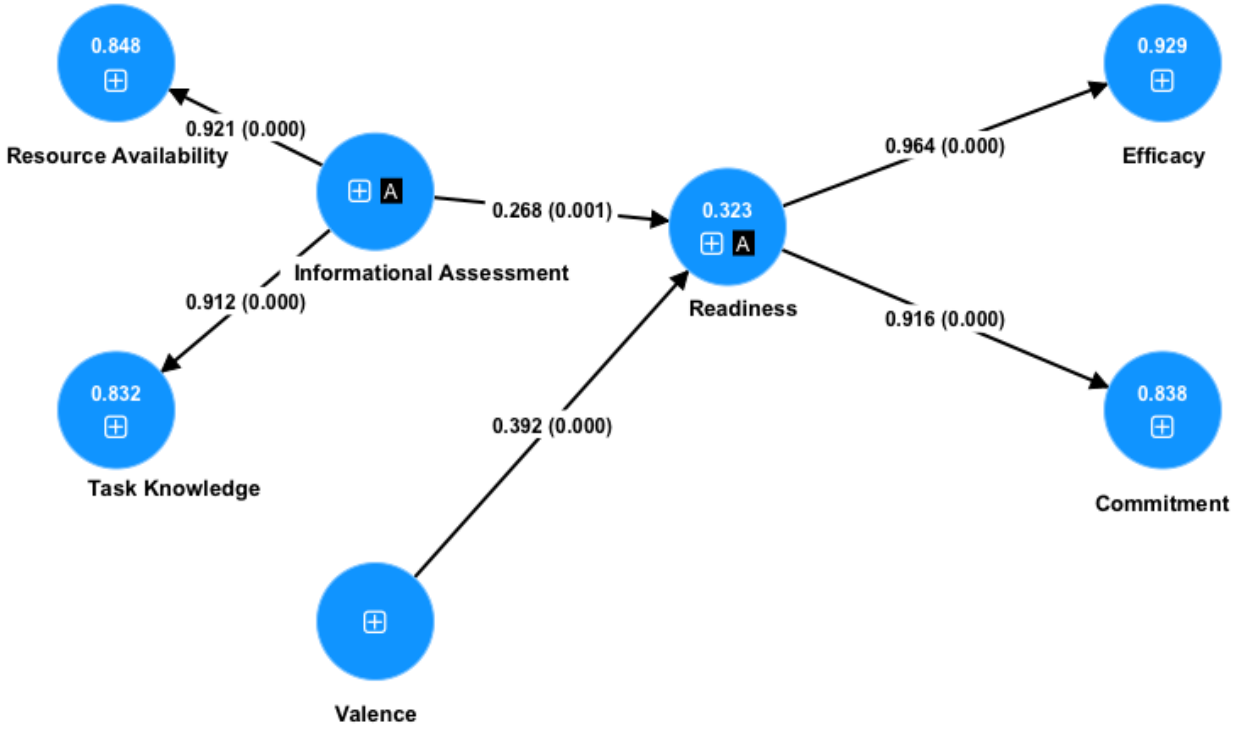


Table 7. Cronbach's alpha, composite reliability, and average variance extracted scores of measurement model of the higher order components

	Cronbach's alpha	Composite reliability	Average Variance Extracted (AVE)
Informational Assessment	0.87	0.87	0.72
Readiness	0.92	0.93	0.62

CHAPTER 2: EVALUATION OF INDIVIDUAL READINESS FOR CHANGE: A CASE OF HEALTHCARE WORKERS IN SAUDI ARABIA

INTRODUCTION

Transformations in healthcare organizations are essential to improving health services as population health needs, economic and social changes, technological advances, and implementing new policies can have a considerable impact on how health services are provided (Vaishnavi, Suresh and Dutta, 2019). Healthcare leaders try to promote change in their organizations as it is critical to create readiness for change among their employees. As healthcare organizations experience constant changes imposed by developments and new trends that affect the external environment, leaders of healthcare institutions attempt to identify factors that help them ensure the success of the transformation process (Kash *et al.*, 2014). as health care settings have their own social, cultural, geographic, and economic characteristics, it is important to take into consideration these factors as they constitute a unique context for each healthcare settings.

In Saudi Arabia, similar to other countries, the healthcare sector has been going through a national transformational process to enhance quality of care and efficiency as well as improving health outcomes (Rahman and Qattan, 2021). To ensure that this transformation is implemented successfully, healthcare organizations should be able to

implement change plans and address any issues that could obstruct the change efforts. Creating readiness for organizational change has been a factor that healthcare managers consider before introducing change efforts as employees are different in their skills, experiences, beliefs, commitment, intentions, attitudes towards organizational change. The importance of workers' role in any change process arises from the notion that they are the ones who initiate and implement a planned change (Jennifer and Jones, 2001; Santhidran, Chandran and Borromeo, 2013).

It is also suggested that workers are inclined to implement change when they believe that change serves their interest and change is supported by organizational leaders (Siddiqui, 2011). Therefore, it is recommended that managers assess readiness for change among the employees in their organizations. This study aims to assess the factors that affect readiness for change among workers of healthcare organizations in Saudi Arabia using a model developed by Holt and colleagues (2007). Although this model was not designed specifically for healthcare organizational change efforts, we used the model in this study to determine how useful and applicable this model is in measuring individual readiness for organizational change in Saudi healthcare settings.

THEORETICAL FRAMEWORK

A model of organizational change developed by Kurt Lewin (1947) states that there are three stages organizations undergo when they implement a change, which are unfreezing, moving, and refreezing (Armenakis et al., 1993; Hussain et al., 2018). The first stage of change is *unfreezing*, which suggests that change agents should introduce and communicate change to the employees to ensure a successful change by limiting

change resistance among employees (Armenakis, Harris and Mossholder, 1993). That is, leaders should gauge how "ready" employees are to partake in the change. *Readiness for change* refers to "a mindset that exists among employees during the implementation of organizational changes. It comprises beliefs, attitudes and intentions of change target members regarding the need for and capability of implementing organizational change" (Armenakis & Fredenberger, 1997, p. 144). Employees should also believe in their organization's capabilities to attain its goals from a planned change. Readiness for change is usually reflected in the behaviors and attitudes of the employees towards a planned change (Holt, Armenakis, Feild, *et al.*, 2007; Weiner, 2009; Shea *et al.*, 2014). Therefore, the more positive behaviors and attitudes employees show, the more readiness for change is expected.

Armenakis et al. (1993) suggested that the degree to which employees are ready for change determines the level of resistance or adoption. Armenakis et al. (1993) proposed a model to evaluate readiness for change through qualitative and quantitative assessments. The model considers contextual factors as the most important aspect in creating readiness for change. The contextual factors are explained by the external environment in which an organization operates. In addition, contextual factors take into accounts internal environment. The model developed by Armenakis and colleagues (1993) proposed that change message, change agent attributes and credibility, interpersonal and social dynamics, and influence strategies play a significant role in creating readiness for change *(see Figure 3)*. The model provides a conceptual framework that allowed Holt and colleagues (2007) to develop another model and a scale that

evaluate the effects of change process, change content, change context, and individual attributes on individual readiness for change.

The first component of the scale is called *change process*, which refers to steps that organization takes during it is carrying out a change. Change process is represented by how the management of an organization supports change and creates the environment that helps in making a change successful. Second, *change content*, is explained by the nature, details, and characteristics of a planned change. Change content is measured by organizational valence (i.e., the degree to which employees believe that a certain change will benefit their organization). Third, *change context* is concerned with the organizational environment while implementing a change. Change context covers three organizational climate dimensions that are relationship climate, task climate, and the comprehensive climate in the organization during the move from one state to another. Fourth, is *the individual attributes* of employees which acknowledge that individuals have different attitudes and behaviors when they are faced with a change in their organizations. Individual attributes are measured by self-efficacy (i.e., the degree to which workers have conjoined confidence in their capabilities to execute the change planned in their organization) and personal valence (i.e., belief among workers that they will benefit from the planned change). In this study, we employed the model proposed by Holt et al., 2007 to assess the effect of management support (change process), self-efficacy (change content, discrepancy (change context), and organizational valence and personal benefits (individual attributes) on readiness for change among Saudi healthcare workers *(See figure 4)*. The use of Holt et al., (2007) model represents an attempt to test the model in the context of healthcare organizations.

METHODS

Study Design

This study aims to assess the effects of self-efficacy, personal valence, discrepancy, personal benefits, management support on individual readiness for change among Saudi healthcare workers. We used a cross-sectional design to collect data as it is an appropriate design to measure the key variables at a single point of time. A cross-sectional study is a type of observational study that can be used to evaluate prevalence of a certain health issue, knowledge, or behavioral factors among in a defined population (Kesmodel, 2018; Wang and Cheng, 2020). A web-based survey was delivered to the workers in healthcare organizations in Saudi Arabia through two social media platforms: X (previously Twitter), WhatsApp Messenger, and LinkedIn. The use of social media to collect data from users is considered an effective tool as it is faster and an inexpensive way to reach out to participants (Buntain *et al.*, 2016). The use of social media platforms to collect data has been a popular approach particularly in countries such as Saudi Arabia as 88.6 percent of its population who age 15 and older have access and utilize internet (General Authority for Statistics, 2019). According to a report published by Datareportal, there are 29.1 million social media users in Saudi Arabia, which is equivalent to 82.3 percent of the country's population (Datareportal, 2022).

Ethical Considerations

As we utilized primary data in this study, we submitted the study proposal, survey instrument and social media posts as well as other documents to the University of

Louisville Institutional Review Board (IRB) for approval. The final IRB approval (#758153) was obtained on January 23rd, 2023.

Pilot Study

After receiving the IRB approval on the first version of the survey instrument on December 6th, we conducted a pilot study was between December 11th and December 17th, 2022. Participants in the pilot study were a group of healthcare workers and were excluded from participation in the final version of the survey used for data collection. It is recommended that subjects recruited in a pilot study do not belong to the population of the main study (Abu Hassan *et al.*, 2006). The survey instrument was sent to healthcare workers through a chatting group on the WhatsApp mobile application. English and Arabic versions of the survey were available for the participants. The number of participants in the pilot study was 40. In addition, five respondents were interviewed and asked about the clarity of items, clarity of translation from English to Arabic, and what questions they could suggest being added to, or removed from the instrument. The results of the pilot study showed that there was a need to add more items to the readiness for change, self-efficacy, discrepancy, organizational valence, and personal benefits constructs as they showed relatively low Cronbach's alpha scores of reliability.

Study Population and Eligibility Criteria

The study population were healthcare workers in Saudi Arabia. Healthcare workers currently working for government, private, and non-for-profit healthcare organizations and aged between 18 and 65 years old were eligible. The study population includes those who work as physicians, nurses, pharmacists, laboratory technicians and

specialists, radiologists, nutritionists, and individuals working in any other clinical positions. In addition, individuals working in healthcare management, administrative, and quality positions are among the targeted population. Individuals not meeting the eligibility criteria were excluded from the study. For instance, individuals who work for contractors such as catering, or maintenance services were not included in the study.

Data Collection and Recruitment Strategy

To deliver the survey to the employees, we utilized social media platforms including WhatsApp, X (previously Twitter), and LinkedIn by posting invitations on these platforms. We reached WhatsApp users by sending messages to WhatsApp groups where members of these groups are healthcare workers from different organizations around the country. For example, we sent the invitation to a group called Health Management Society, which its members are individuals who hold management and administrative positions as they share the same interests. We also reached out to groups in which their members work in different clinical positions. The survey was available in both English and Arabic languages.

Study Variables

Outcome Variable.

Readiness for change: The outcome (dependent) variable in this is study is individual readiness for organizational change. Readiness for organizational change is defined as the "cognitive precursor to the behavior of either resistance to, or support for, a

change effort" (Armenakis, Harris and Mossholder, 1993; Vakola, 2014). Readiness for change was assessed using a six-item scale validated and utilized by Vakola (2014).

Independent Variables. The following independent variables were included in this study and they were assessed using a survey instrument developed and validated by (Holt, Armenakis, Feild, *et al.*, 2007).

3. *Management Support*, which represents change process, is a measure of change context. Management support refers to the extent to which management of the organization is supportive and committed to a planned organizational change. Four survey items were utilized to assess management support using 5-point-likeret scale.
4. *Discrepancy* represents the degree to which an employee believes that the planned change is needed and reasonable. Discrepancy was evaluated using five survey items.
5. *Self-Efficacy* refers to how an employee believes that he/she has the skills needed to execute assigned tasks. Five survey items were employed to gauge self-efficacy among the participants in the study.
6. *Organizational Valence* reflects the belief of the employee that a planned change will benefit the organizations. To measure organizational valence among employees of Saudi healthcare workers, we utilized five survey items.
7. *Personal Benefit*s a measure of how an employee believes that he/she will benefit from implementing a prospective change. A scale of five items was employed to assess personal benefit.

Survey Instrument

The survey instrument was developed and validated by Holt et al. (2007). Thirty survey items were included in the online survey. Responses were recorded on a 5-point Likert scale to measure level of agreement ranging from “strongly disagree” to “strongly agree” (Joshi *et al.*, 2015). We utilized Qualtrics online survey platform to deliver the survey instrument to the invited individuals. To calculate the sample size needed for this study and ensure that we had a sufficient number of observations, version 3.1.9.6 of G*power software was used to calculate the minimum number of observations needed in this study. A medium effect size of 0.15 and a power of (1 – ß) = 0.80 were selected according to (Cohen's, 1992) criteria of effect size (f^2). The minimum sample size required for this study was 135 individuals. Table 8 shows the survey items utilized in this study.

Data Analysis

Sample Size. A total of 502 responses were recorded between February 15th and May 15th, 2023. There were 10 participants who did not consent to take the survey and quit the survey. After excluding those who did not agree to take the survey, 55 participants were excluded due to working for non-healthcare organizations and an additional 11 participants were excluded due to not reporting whether they work for healthcare organizations. Another 35 individuals were excluded as they agreed to take the survey but did not take it and eight participants who reported their ages younger than 18 were excluded. One individual was excluded from the study for reporting their age was 91, which was outside of the eligibility criteria. Lastly, 43 individuals were not included

in the study as they quit the survey after entering their demographic information only without filling in the remaining survey items. The final sample size was 339 participants.

Handling Missing Data. To handle missing data, we first explored the patterns and magnitude of missing data. First, we utilized version 29. of Statistical Package for Social Science (SPSS) to analyze the patterns of missing data. There were 24 survey items that had at least one missing value. Twenty-eight cases out of 339 had missing values. A total of 504 missing values were found in the data representing 3.8 percent of all values in the data. A Little's Test was performed using SPSS to determine whether missing values were missing at random (MAR) or missing completely at random (MCAR) (Little, 1998). The results of Little's MCAR test was not significant $X^2(42, N = 339) = 37.32$, $p = 0.68$, which suggests that missing values were missing completely at random. To replace the missing values, we used a multiple imputation technique to achieve the most plausible values. When using multiple imputation, the recommended iteration number of imputation process is between five to ten iterations. The imputation process was repeated five times using SPSS to generate best replacements for all missing values (Kang, 2013; Li, Stuart and Allison, 2015).

As data used in this study did not meet the assumptions of a parametric test such as multiple regression, the alternative was to choose a non-parametric method. We utilized partial least square structural equation modeling (PLS-SEM) as it is an appropriate method when dealing with non-normally distributed data and small sample size (Goodhue, Lewis and Thompson, 2012). After uploading data to SmartPLS version 4.0.9.2 software package, we evaluated the reflective model by assessing indicator loadings. In PLS-SEM, it is recommended to include items that have loadings of 0.708 or

higher in the model (Hair *et al.*, 2019). The indicator loadings showed that five survey items had indicator loadings lower than 0.708. Due to generating extremely low indicator loading scores, three items measuring personal benefit were removed from the model, one item measuring readiness was removed, and an item that measures self-efficacy was also excluded from the model *(see Figure 5).*

Evaluation of Measurement Model

Reliability analysis. The second step is assessing internal consistency reliability using composite reliability. In PLS-SEM, composite reliability is the appropriate measure of internal consistency reliability compared to Cronbach's alpha that does not measure weighted items precisely. It is minimal that each scale shows an internal consistency reliability of 0.60 which is acceptable in PLS-SEM models (Hair *et al.*, 2017, 2019). The results of internal consistency reliability showed that all constructs had composite reliability scores higher than 0.60 *(See table 10).* Then, an assessment of multicollinearity was performed to ensure that there is no high correlation among using the variance inflation factor (VIF). The VIF value below 5 is considered acceptable and values below 3 are considered ideal in PLS-SEM (Hair *et al.*, 2019). Next, we evaluated convergent validity of each construct measure. Measuring convergent validity allowed us to determine how each measure correlates positively to another alternative measure of the same construct (Hair *et al.*, 2019; Rady *et al.*, 2023). Average variance extracted (AVE) is used to assess convergent validity. Values above 0.5 are considered acceptable to conclude that the construct explains more than 0.50 percent of the variance of its items. Table 10 shows that all AVE scores were above 0.50 which meets another requirement of

PLS-SEM. Furthermore, we assessed discriminant validity of each construct. Discriminant validity is a measure of how a construct is distinct from other constructs in the model (Hair *et al.*, 2019). According to (Fornell & Larcker, 1981), average variance extracted is sensitive to a lack of convergent validity and can be used to assess discriminant validity. We used the Fornell-Larcker criterion which suggests that the square root of average variance extracted score (AVE) of a construct should be above the highest correlation with any other construct in the correlation matrix (Benitez *et al.*, 2020). The results of discriminant validity assessment are shown in Table 11.

RESULTS

Descriptive Statistics

The descriptive statistics were used to understand the demographic characteristics of the study sample across key variables; age, gender, nationality, the highest level of education attained, sector the employee works in, type of health organization, province, job category, years of experience in current position, and whether the employee holds a management/ leadership position *(See Table 9).* The study examined data from 339 healthcare workers in Saudi Arabi. Individuals included in the final sample were on average 39.6 (Standard Deviations (SD) = 7.45) years old and 23.6% were female. In addition, 92.3% of participants were Saudis and those who work as physicians were 32.4%. Moreover, 85% of participants were working for government healthcare organizations and 34.5% were ministry of health workers. 39.2% of individuals participated in the study hold bachelor's degree and most participants are based in the central regions representing 36.9% of the sample. Finally, 49% of individuals who

participated in the study had 10 years of experience or more and 51.3% were working in leadership/management positions.

Structural Model and Hypothesis Testing

To assess the structural model and test the hypothesis of this study, there are four model assessment criteria. First, coefficient of determination (R^2), which explains model explanatory and predictive power (Hair *et al.*, 2019). Second, path coefficient which explains the hypothesized relationships among the constructs. The path coefficients usually have standardized values approximately between –1 and 1 and the closer path coefficient to 1 the stronger relationship among constructs. Third, effect size (f^2), which represents contribution of an independent variable to R^2. Specifically, f^2 measures how much of variance in the dependent variable would exist if an independent variable was eliminated. Effect sizes of 0.02, 0.15, and 0.35, are considered small, medium, and large, respectively (Cohen, 1992). Finally, the predictive relevance value (Q^2) measures the predictive accuracy of the model. To measure Q^2, blindfolding procedure is used in SmartPLS software to determine model's predictive capability (Hair *et al.*, 2019).

The coefficient of determination (R^2) was 0.51, which indicates that management support, discrepancy, self-efficacy, organizational valence, and personal benefit collectively explain 51% of variance in individual readiness for change among healthcare workers in Saudi Arabia. The R^2 value of 51% represents a moderate fit of the model (Hair, Ringle and Sarstedt, 2011). The results of path coefficient evaluation showed that discrepancy had a significant effect on readiness for change with a path coefficient of 0.287 ($t= 4.917$, $p = < 0.001$). We also found the effect of personal benefit on readiness

for change was statistically significant with a path coefficient of 0.258 ($t= 4.522$, $p = < 0.001$). Self-efficacy was also statistically significant with a path coefficient value of 0.324 ($t= 4.851$, $p = < 0.001$) as shown in Table 12. The effect sizes of discrepancy, personal benefit, and self-efficacy were 0.12, 0.08, and 0.14, respectively, which indicate that these variables had small effects on readiness for change among healthcare workers in Saudi Arabia. Furthermore, the predictive relevance of the model (Q^2) was calculated, and it showed that our model had a predictive power of 0.486. A predictive relevance of greater than zero indicates that the model is capable to predict readiness for organizational change.

DISCUSSION

Individual readiness for change is one of main factors that have substantial effect on the degree to which organizational change efforts are expected to succeed due to the important role of the employees in initiating and implementing such change. Individual readiness for organizational change among healthcare workers in Saudi Arabia was evaluated using a model developed by Armenakis et al. (1993), which suggests that individual readiness for change is determined by change process, change content, change context, and individual attributes. We utilized a survey instrument that was developed by Holt et al. (2007) to measure management support of change, discrepancy, self-efficacy, organizational valence, and personal benefit. Readiness for change was measured using a survey instrument utilized by Vakola (2014). The PLS-SEM showed that discrepancy, personal benefit, and self-efficacy had statistically significant effect on individual

readiness for change. The model explained 51% of variance in individual readiness for change and the model showed its capability to predict individual readiness for change with a small effect size according the Cohen's (1992) criteria of statistical power. This indicates that there are other factors not included in the model would have potential effects on individuals' readiness for change.

Our findings reveal that leaders of health organizations should work carefully when introducing organizational change as the results of this study showed that personal benefit, discrepancy, and self-efficacy have the significant effect on workers' readiness for organizational change. These three factors exhibit that workers tend to consider what is in return for them when introducing change. In other words, change agents should consider that individuals are more interested in change when these changes are communicated effectively in terms of how they would benefit from change and how such change would help them evolve in their career.

Our findings align with what was recommended by Oreg and colleagues (2011) that managers should explain what benefits employees would gain from implementing change. This implies that leaders of health organization need to focus on communicating change effectively to enhance individual readiness by explaining how the planned change would benefit the organizations and its members. Similar to personal benefit, discrepancy, which is perceived as the extent to which organizational members believe that change is needed. The importance of discrepancy was also supported by (Oreg, Vakola and Armenakis, 2011; Nilsen *et al.*, 2020). Consequently, managers are expected to put efforts to convince the employee about the importance of change they plan to implement. Also, in the present study, self-efficacy was found a significant factor that

contributes positively to individual readiness for change. This finding is consistent with what was found by (Armenakis, Harris and Mossholder, 1993; Cunningham *et al.*, 2002). Thus, our findings reaffirm that individual readiness for change has a critical influence on the success of organizational change efforts. It is surprising that management support for change had no significant influence on readiness for change, which is in contrast with some published works such as (Von Treuer *et al.*, 2018). With regard to organizational valence, some works in the literature found that organizational valence is a significant factor affecting organizational readiness for change nor individual readiness for change, which is consistent with our findings. More empirical work is needed in terms of developing specific models that are more suitable for healthcare organizations as they have their own nature and characteristics related to size, type of services they provide, whether they are public or private organizations, number of employees and geographical location and other factors could influence individual readiness for change in these entities.

Limitations and Future Research

This study has its limitation given the use of PLS-SEM. First, the sample size was relatively small considering the number of healthcare workers in the entire country. Also, PLS-SEM is a nonparametric statistical method, which lacks statistical power compared to parametric tests. Additionally, the use of PLS-SEM limited the measurement of variation among workers based on their demographic and career-related characteristics such as job category and whether they have management or leadership positions. Moreover, since the study was cross-sectional, there is the chance of a recall bias by study participants as they answered the survey question by trying to recall their past

experiences with organizational changes. Survey instruments used in this study have also some limitations, for example discrepancy constructs was incorrectly worded in Holt., (2007) by using "*the change"* instead of using *"a change",* which could have limited the validity of this construct although we used term "*changes"* in the instrument we utilized. More constructs and dimensions should have been added to the survey instrument. These suggested constructs should cover some dimensions such as organizational culture, and the context of Saudi healthcare system. Also, the use of social media platforms could have a negative impact on the degree to which data used in this study is representative of healthcare workers in Saudi Arabia as some individuals do not use social media platforms, which could lead to selection bias. (Buntain *et al.*, 2016). Individuals with certain demographic characteristics such as age, gender, educational level, job category, and years of experience might have been overrepresented or underrepresented in this study. In addition, we used English and Arabic languages to deliver the survey instrument, which could limit the participation of those who do not speak either language. These limitations make it clear that the results cannot easily be generalized. Therefore, further empirical research is needed to measure individual readiness for organizational change in the context of Saudi healthcare organizations taking into accounts differences among health organizations in terms of types of organizations, sizes, geographical locations, and number of employees.

CONCLUSION

In conclusion, this study is the first study of individual readiness for organizational change in Saudi healthcare organizations that utilized the model developed

by Holt and colleagues (2007). We assessed the effect of change process, change content, change context, and individual attributes on individual readiness for change among workers in Saudi Arabia's healthcare organization. In managing and implementing change initiatives, evaluating how individual accept change and the degree to which they are willing and ready for change is a pivotal in any journey of change. We used a partial least square structural equation modeling (PLS-SEM) analysis to determine the effect of management support of change, discrepancy, self-efficacy, organizational valence, and personal benefit. Our findings indicate that variables related to personal interest (i.e., discrepancy, personal benefit, and self-efficacy) had a significant impact on individual readiness for change. The model explained 51% of variance in individual readiness for change and the model showed its capability to predict individual readiness for change with a small effect size.

Our findings suggest that managers of healthcare organizations should pay close attention to how communicating change effectively by explaining organizational benefits that would result from implementing an organizational change as the results of the PLS-SEM suggest that employees are more interested in what is there for them when implementing change. Moreover, managers and change agents in Saudi healthcare organizations need to consider that when employee show low readiness for change, it could be attributed to their lack of understanding of how change will be implemented. It could also be attributed to the absence of incentives that encourage employees to accept, support, and ultimately show higher readiness for change. The results of this study exhibit the importance of employees showing high readiness for organizational change as lack of readiness could lead to failed implementation of change plans. Although, our

study has several limits, it could represent a base for further studies in individual readiness for change in the context of Saudi Arabia's healthcare system. More studies are needed at the national and regional levels to explore sources of variance in individual readiness for change in Saudi healthcare organizations as healthcare settings have their own characteristics socially, culturally, geographically, and economically.

Figure 3. Armenakis' Model of creating readiness for change

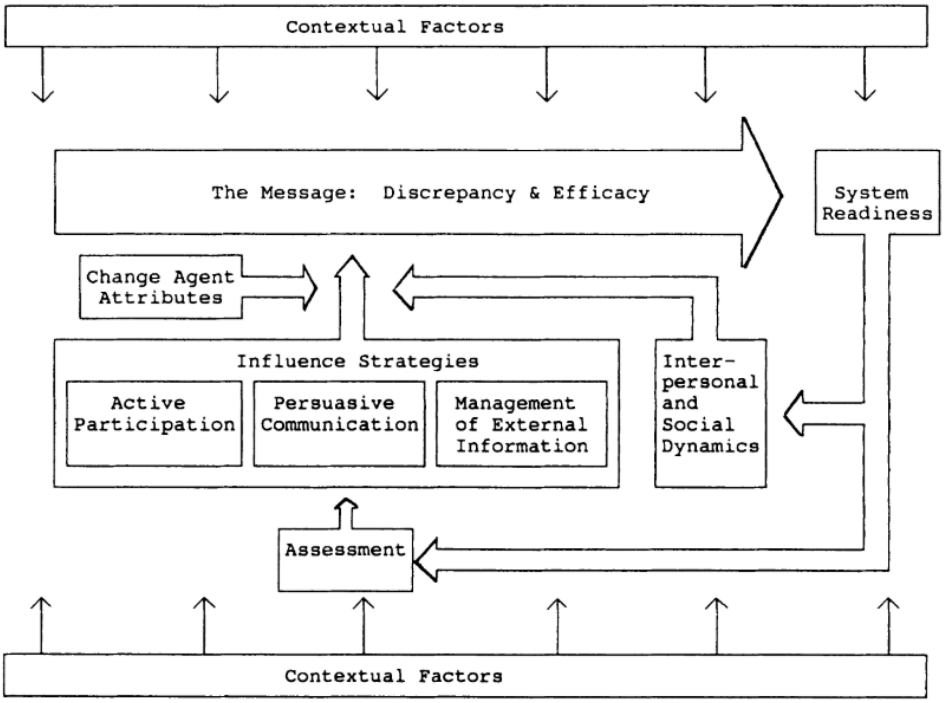


Figure 4. Model of determinants of individual readiness for organizational change (Holt et al., 2007).

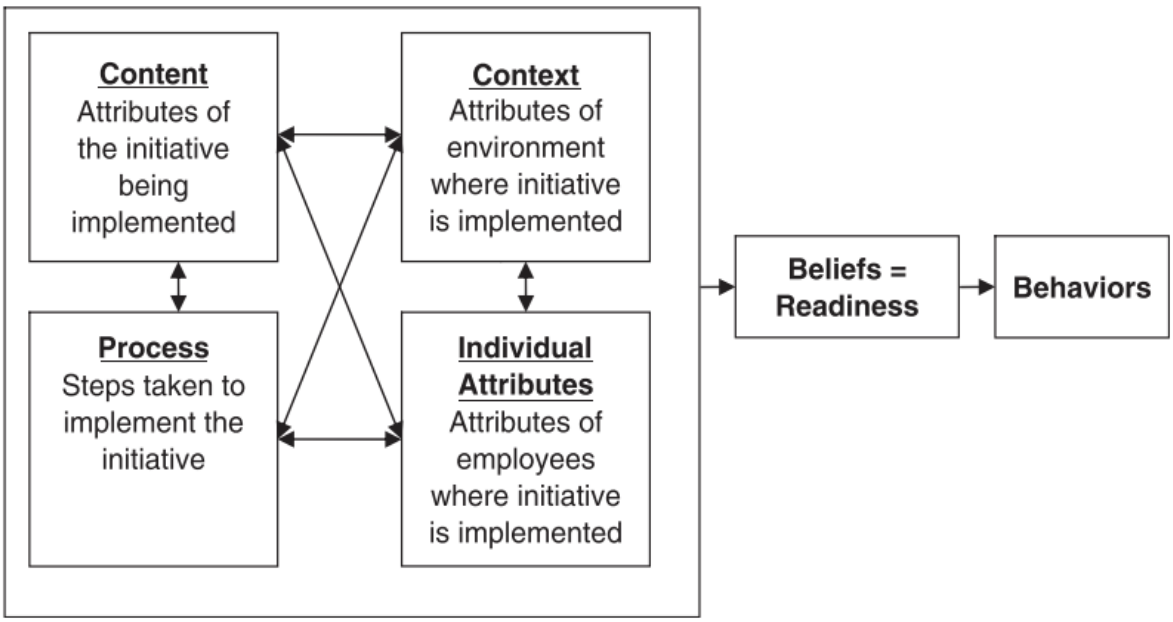


Table 8. Survey Instrument (English Version)

Variable	Statement
Management Support	Our senior leaders encourage all employees to embrace changes
	Our organization's top decision makers put all their support behind change efforts
	Our organization's senior leaders are committed to change
	Management sends a clear signal when our organization is going to change
Self-Efficacy	I find it difficult to do some new tasks after changes are made
	I have skills needed to make a change work
	I usually try to convince people in my organization to accept change
	My past experiences make me less confident I will be able to perform successfully after a change is made
Personal Benefit	I am worried I will lose some of my status in the organization when changes are implemented.
	Changes in my organization disrupt many of the personal relationships I have developed
	My future in this job will be limited because of changes in my organization
Readiness for Change	When changes occur in my organization, I am ready to cope with them.
	When changes occur in my organization, I tend to complain about them rather than deal with them
	I believe I am more ready to accept change than my colleagues
	I do not worry about changes in my organization because there is always a way to cope with them
	When changes occur in my organization, I have always the intention to support them
Discrepancy	We need to change the way we did some things in my organization
	There are legitimate reasons for me to make changes in my organization
	It doesn't make much sense for me to initiate changes in my organization
	We needed to improve the way we operate in my organization
	Changes are needed to improve our operation

Organizational Valence	People who work here feel changes in our organization are compatible with our values
	People who work here feel we do not need to implement changes in our organization
	People who work here believe changes in our organization benefit our community
	People who work here believe changes in our organization do not make things better
	People who work here believe changes in our organization result from good ideas
	People who work here value change in our organization

Table 9. Description of Demographic Variables

Demographic Variable	Definition
Age	Age of the participant in years
Gender	Gender of the participant (Male, Female)
Nationality	Nationality of the participant (Saudi, Non-Saudi)
Educational Level	1. High school or less 2. Associate degree 3. Bachelor's degree 4. Master's Degree 5. PhD 6. MD 7. Other
Sector	1. Government (Ministry of Health, Holding Company, or Health cluster) 2. Government (Military or Teaching health Organization) 3. Private sector 4. Other (ex. non-for-profit organization)
Type of Organization	1. Holding Company or Ministry of Health (MOH) 2. Hospital smaller than 200 beds 3. 200 bed hospital or larger 4. Primary care center 5. Specialized health center 6. Other
Geographical Region	1. Central Region 2. Western Region 3. North Region 4. Eastern Region 5. Southern Region
Job Category	1. Management 2. Physician 3. Clinical position (nurse or other) 4. Office staff / other administrative position 5. Quality 6. Other
Years of Experience	1. Less than a year 2. One to two years

	3. Three to five years 4. Six to nine years 5. 10 years or more

Figure 5. PLS-SEM Model

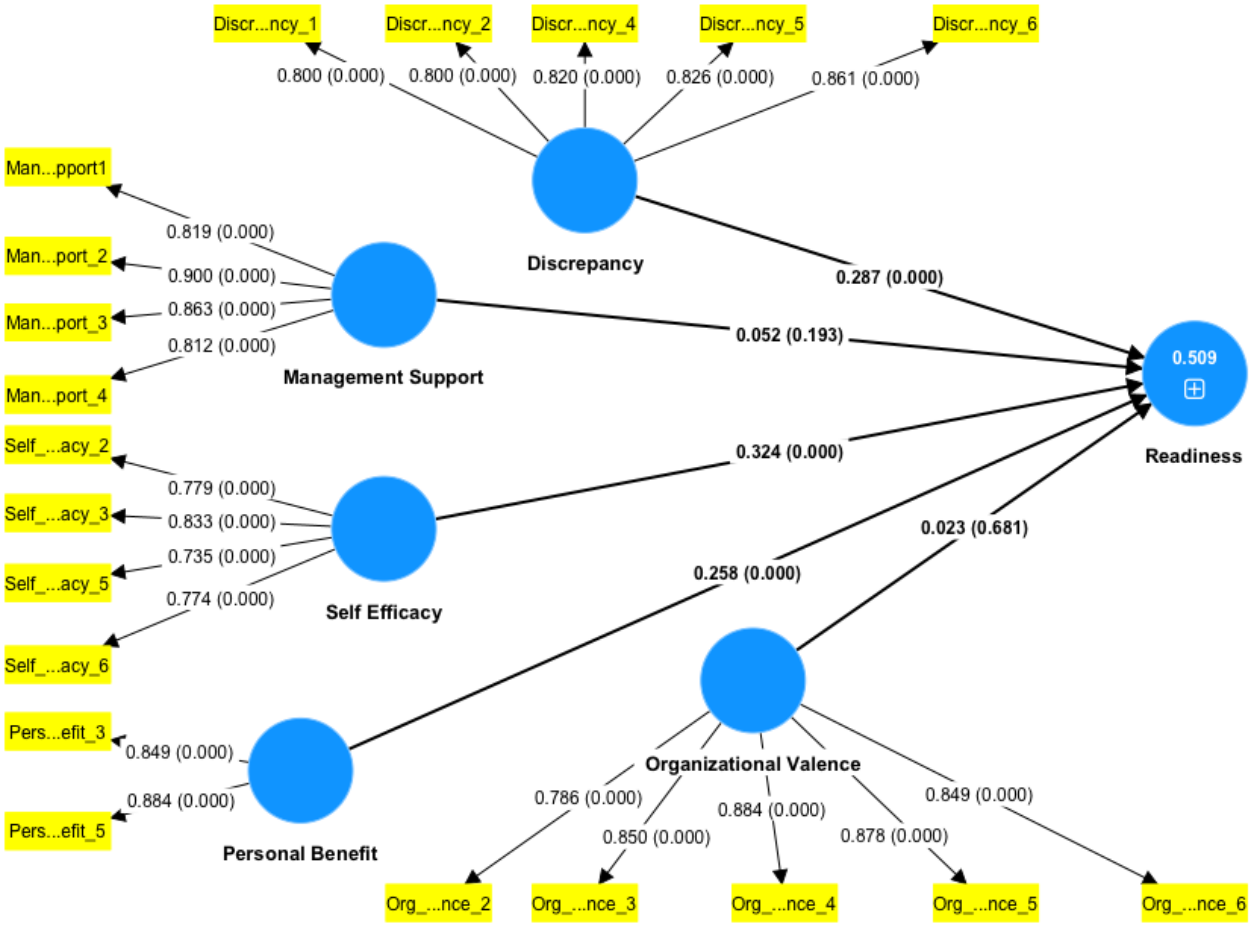


Table 10. Composite Reliability and average variance extracted (AVE)

Construct	Composite reliability	Average variance extracted (AVE)
Discrepancy	0.88	0.68
Management Support_	0.88	0.72
Organizational Valence	0.90	0.72
Personal Benefit_	0.68	0.76
Readiness	0.85	0.62
Self-Efficacy	0.79	0.61

Table 11. Discriminant Validity Assessment: Fornell-Larcker criterion

	Discrepancy	Management Support	Organizational Valence	Personal Benefit	Readiness	Self-Efficacy
Discrepancy	0.822					
Management Support	-0.02	0.85				
Organizational Valence	0.33	0.32	0.85			
Personal Benefit	0.43	0.26	0.43	0.88		
Readiness	0.52	0.20	0.39	0.58	0.79	
Self-Efficacy	0.37	0.26	0.44	0.53	0.59	0.78

Table 12. Results of path coefficient and hypothesis testing

Column1	Path Coefficient	Sample mean (M)	Standard deviation	T statistics	P values
Discrepancy -> Readiness	0.287	0.285	0.058	4.917	< 0.001
Management Support_ -> Readiness	0.052	0.057	0.04	1.301	0.193
Organizational Valence -> Readiness	0.023	0.019	0.055	0.411	0.681
Personal Benefit_ -> Readiness	0.258	0.259	0.057	4.522	< 0.001
Self-Efficacy -> Readiness	0.324	0.328	0.067	4.851	< 0.001

CHAPTER 3: AN ASSESSMENT OF THE MEDIATING ROLE OF READINESS FOR CHANGE IN THE RELATIONSHIP BETWEEN MANAGEMENT SUPPORT AND COMMITMENT TO CHANGE AMONG WORKERS IN SAUDI HEALTHCARE ORGANIZATIONS

INTRODUCTION

In healthcare settings, transformation is imperative to respond to continuous developments in a dynamic health services environment. However, there are several challenges facing managers who want to introduce and implement a change that aims to add value to the organization and the services it provides. For instance, limited employee readiness and commitment to change have been deemed major obstacles to implement changes successfully (Herscovitch and Meyer, 2002). Individual readiness for change represents a major factor considered by managers as it determines the degree to which organizational members believe in the value and benefits of a proposed change and the extent which they show a positive attitude towards change (Armenakis, Harris and Mossholder, 1993). On the other hand, commitment to change reflects a collective determination by the employees that they have the intention to implement a planned change (Spaulding *et al.*, 2017). Readiness for change and commitment to change have been assessed by several scholars. However, there has been a lack of empirical studies investigating the interrelationship among management or leadership support for change,

readiness for change, and commitment to change. A model by Santhidran and colleagues (2013) suggests that readiness for change plays a possible mediating role in the relationship between management support for change and employees commitment to change.

In Saudi Arabia, a national transformation plan has been implemented to modernize the healthcare system through a new model of care that aims to improve quality of care and health outcomes in conjunction with improving efficiency and keeping the cost of care at low levels (Rahman and Qattan, 2021; Rahman and Salam, 2021). Such transformation represents a major development in the healthcare environment, which would motivate healthcare organizations to adapt to this development and to other economic, technological, and social that affect how a healthcare organization operates. Therefore, the purpose of this study is to examine the hypothesized mediating role of readiness for organizational change in the relationship between management support for change and employees' commitment to change.

THEORETICAL FRAMEWORK

Referring to the Kurt Lewin's model of change that suggests that change process begins with unfreezing stage, creating readiness for change represents an essential element of unfreezing efforts (Armenakis, Harris and Mossholder, 1993). Creating readiness for organizational change helps increase organizational members' commitment to change. *Readiness for change* is defined as a combination of set of beliefs, intentions, attitudes, and behaviors among the employees of the organization about the degree to which organizational change is needed and how they perceive their organization's

capability to implement a proposed change successfully (Susanto, 2008; Mekonnen and Bayissa, 2023). On the other hand, *management support for change* is defined as the extent to which members of the organizations believe that the management of the organization is supportive and committed to a planned organizational change (Holt, Armenakis, Feild, *et al.*, 2007). Furthermore, *commitment to change* was described by Meyer & Herscovitch (2001) as a "force (mindset) that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative." Thus, it is important to assess the level of commitment among individual to determine the degree to which they support organizational change. On the other hand, lack of commitment leads to uncertainty of how a change project will end up (Armenakis, Harris and Mossholder, 1993; Herscovitch and Meyer, 2002). This exhibits how the role of leadership and manager is crucial to enhance the change of organizational change initiatives to succeed. A model proposed and tested by Santhidran et al. (2013) aimed at evaluating the role of readiness for organizational change as a mediating variable between leadership (i.e., management support for change) and commitment to change *(See Figure 6)*. In this study, we utilized Santhidran et al.'s (2013) model to assess the mediating role if readiness for organizational change beween management support for change and employees' commitment to change.

METHODS

Study Design

The purpose of this study was to assess the mediating role of readiness for change in the relationship between management support for change and commitment to change among workers in Saudi healthcare organizations. The study is cross-sectional and

primary data were collected through survey instruments developed and validated from prior studies (Holt et al., 2007; Santhidran et al., 2013). A web-based survey was administered to the workers in healthcare organizations in Saudi Arabia via social media platforms: X (previously Twitter), WhatsApp Messenger and LinkedIn. The utilization of social media in data collection has been used widely as it is an effective, low-cost data collection tool that facilitate access to a targeted population (Topolovec-Vranic and Natarajan, 2016; Bour *et al.*, 2021).

Ethical Considerations

As we utilized primary data in this study, we submitted the study proposal, preamble consent, survey instrument used and social media posts as well as other documents to the University of Louisville Institutional Review Board (IRB) for approval. IRB approval (#758153) was obtained on December 6th, 2022.

Pilot Study

A pilot study was conducted between December 11th and December 17th, 2022. Participants in the pilot study were a group of healthcare workers from different specialties and were not allowed to participate in the final version of the survey as recommended by (Abu Hassan *et al.*, 2006). The survey instrument was sent to healthcare workers through a chatting group on the WhatsApp mobile application. From 40 participants in the pilot study, we asked five respondents about the clarity of survey items and what questions they suggest we could add to the survey instrument. The results of the

pilot study showed that there was a need to add more items to the readiness for change and commitment to change constructs.

Study Population and Eligibility Criteria

The study population was healthcare workers in Saudi Arabia. The eligibility criteria included individuals currently working for government, private, and not-for-profit healthcare organizations and aged between 18 and 65 years old. The study population includes those who work as physicians, nurses, pharmacists, laboratory technicians and specialists, radiologists, nutritionists, and individuals working in any other clinical positions. In addition, individuals working in healthcare management, administrative, and quality positions are among the targeted population. Individuals not meeting the eligibility criteria were excluded from the study. For example, individuals who work for contractors such as catering, or maintenance services were not included in the study.

Data Collection and Recruitment Strategy

To deliver the survey to the employees, we utilized social media platforms: WhatsApp, X (previously Twitter), and LinkedIn by posting invitations on these platforms. We reached WhatsApp users by sending messages to WhatsApp groups where members of these groups are healthcare workers from different organizations around the country. For example, we sent the invitation to a group of individuals who hold management and administrative positions as they share the same interests. We also reached out to groups in which their members work in different clinical positions. The survey was available in both English and Arabic languages on Qualtrics survey platform.

Study Variables

Outcome Variable. The outcome variable was *commitment to change*, which is defined, according to Meyer & Herscovitch, (2001) as "force (mindset) that binds an individual to a course of action deemed necessary for the successful implementation of a change initiative." Commitment to change was assessed using the five-item scale of Affective Commitment to Organizational Change Scale developed by Herscovitch & Meyer (2002) and validated by Santhidran et al. (2013).

Mediating variable. The mediating variable was *individual readiness for change*, which refers to a mindset that exists among employees during the process of carrying out organizational changes, which is constituted by employee attitudes, belief of the employees in their organization's capability to implement a planned change as well as the degree to which they have the intention to support change (Armenakis and Fredenberger, 1997; Vakola, 2014). We utilized a five-item scale to evaluate readiness for change among healthcare workers in Saudi Arabia. These items were developed and validated by Vakola (2014).

Independent variable. The independent variable in this study was management support for change, which represents the leadership variable in Santhidran et al.'s (2013) model. Management support for change is perceived as the degree to which managers of the organization are supportive and committed to implement a planned organizational change (Holt, Armenakis, Feild, *et al.*, 2007). Four survey items were employed to measure management support for change.

Survey Instrument

In this study, we utilized two survey instruments that were developed by Holt et al. (2007) and Vakola (2014). The 14 survey items were included in an online survey. Items of the survey are shown in Table 13. Respondents were allowed to determine their level of agreement using a 5-point Likert scale ranging from "strongly disagree" to "strongly agree" (Joshi *et al.*, 2015). Qualtrics online survey platform was employed to administer the survey instrument to the participants. Further, to decide what sample size was needed to conduct this study, we utilized version 3.1.9.6 of G*power software to determine the minimum required number of individuals to take part in this study. Based on Cohen's (1992) statistical power criteria, a medium effect size of 0.15 and a power of $(1 - ß) = 0.80$ were used to calculate the minimum required number of participants. The result of sample size calculation was 135 observations.

Data Analysis

Sample Size. 502 individuals participated in the survey between February 15th and May 15th, 2023. There were 10 participants excluded from the study as they did not consent to take the survey and quit the survey. Then, 55 participants were removed due to working for non-healthcare organizations and another 11 participants were excluded due to not reporting whether they work for healthcare organizations. In addition, 35 participants were not included in the study as they agreed to take the survey but did not take it. Moreover, eight participants who reported their age as younger than 18 were excluded. One person was removed from the study due to being older than 65 years old.

Finally, 43 individuals were excluded because they only filled in their demographic items and quit the survey.

Handling Missing Data. To handle missing data, we first investigated the patterns and amount of missing data. We utilized version 29. of Statistical Package for Social Science (SPSS) to analyze the patterns of missing data. There were 24 survey items that had at least one missing value. Twenty-eight cases out of 339 had missing values. A total of 504 missing values were detected in the data, which represents 3.8 percent of all values in the dataset. A Little's Test was employed using SPSS to decide whether missing values were missing at random (MAR) or missing completely at random (MCAR) (Little, 1988). The results of Little's MCAR test was not significant $X^2(42, N = 339) = 37.32$, $p = 0.68$, which indicates that missing values were missing completely at random. To replace the missing values, we utilized a multiple imputation method to achieve the most plausible values. The imputation process was repeated five times using SPSS to generate best replacements for all missing values (Kang, 2013; Li, Stuart and Allison, 2015).

Evaluation of The Mediation Model

An assessment of internal consistency reliability using composite reliability was performed. In PLS-SEM, composite reliability is a preferred measure of internal consistency reliability compared to Cronbach's alpha that does not measure weighted items precisely. It is also preferred that each scale shows an internal consistency reliability of at least 0.60 which is the minimum acceptable value as suggested by (Hair *et al.*, 2017, 2019). The results of reliability analysis indicated that all constructs had composite reliability values higher than 0.60 *(See Table 15).* Next, we assessed

convergent validity of each construct measure. Assessing convergent validity allowed us to determine how each measure correlates positively to another alternative measure of the same construct (Hair *et al.*, 2019; Rady *et al.*, 2023). Average variance extracted (AVE) is used to assess convergent validity. Values that are higher than 0.5 are considered acceptable to conclude that the construct explains more than 0.50 percent of the variance of its items. Table 15 exhibits that all AVE scores were above 0.50 which meets another requirement of PLS-SEM. Also, we evaluated discriminant validity of each construct. Discriminant validity is a measure of how a construct is distinct from other constructs in the model (Hair *et al.*, 2019). Average variance extracted is sensitive to a lack of convergent validity and can be used to assess discriminant validity (Fornell & Larcker, 1981). We utilized the Fornell-Larcker criterion which suggests that the square root of the AVE average variance extracted score of a construct should be higher than the highest correlation with any other construct in the correlation matrix (Benitez *et al.*, 2020). The results of the discriminant validity assessment are exhibited in Table 16. Lastly, an assessment of multicollinearity was performed to ensure that there is no high correlation among using the variance inflation factor (VIF). The VIF value below 5 is considered acceptable and values lower than 3 are deemed ideal in PLS-SEM (Hair *et al.*, 2019). Table 17 shows the results of the multicollinearity analysis.

RESULTS

Descriptive Statistics

The descriptive statistics were used to understand the patterns of demographic characteristics of the study sample across key variables; age, gender, nationality, the

highest level of education attained, sector the employee works in, type of health organization, province, job category, years of experience in current position, and whether the employee holds a management or leadership position *(See Table 14).* The study utilized data from 339 healthcare workers in Saudi Arabi. Individuals who met the study eligibility criteria were on average 39.6 (Standard Deviations (SD) = 7.45) years old and 23.6% were female. In addition, 92.3% of participants were Saudis and those who work as physicians were 32.4%. Further, 85% of participants were working for government healthcare organizations and 34.5% were ministry of health workers. 39.2% of individuals participated in the study hold a bachelor's degree and most participants are based in the central regions representing 36.9% of the sample. Lastly, 49% of the participants had 10 years of experience or more and 51.3% were working in leadership or management positions.

As data used in this study did not satisfy the assumptions of parametric tests, the suitable alternative method was partial least square structural equation modeling (PLS-SEM). After uploading data to SmartPLS version 4.0.9.2 software package, we evaluated the reflective model by assessing indicator loadings. In PLS-SEM, it is recommended to include items that have loadings of 0.708 or higher in the model (Hair *et al.*, 2019). The indicator loadings showed that one survey item belonging to the readiness for change construct had an indicator loading lower than 0.708. Therefore, this item was removed.

Mediation Model and Hypothesis Testing

To evaluate the interrelationship between management support, readiness, and commitment to change and test the hypothesis of this study, there are two model

assessment criteria. The first criterion was coefficient of determination (R^2), which shows the model explanatory and predictive power (Hair *et al.*, 2019). The results showed that readiness had an R^2 value of 0.04 and commitment to change had an R^2 value of 0.46. This indicates that 46% of variance in commitment to change is explained by management support for change and readiness for change. Second, we looked at path coefficients which explain the hypothesized relationships among the constructs. The path coefficients usually have standardized values approximately between –1 and 1 and the closer a path coefficient to 1 the stronger relationship among constructs. The results of path coefficient assessment showed that management support for change had a significant direct effect on readiness for change with a path coefficient value of 0.21 ($t= 3.752$, $p = < 0.001$). In addition, as shown in Table 18, readiness for change had a significant effect on commitment to change with a path coefficient value of 0.62 ($t= 15.443$, $p = < 0.001$). The indirect effect of management support for change on commitment to change was statistically significant with a path coefficient of 0.130 ($t= 3.598$, $p = < 0.001$). Also, management support for change had a direct effect on commitment to change with a path coefficient of 0.174 ($t= 4.06$, $p = < 0.001$). Figure 7 depicts the interrelationship between study variables.

DISCUSSION

Encouraging employees to be committed to organizational-level changes has been a major challenge for managers as they need to ensure that organizational members are supporting such initiatives (Herscovitch and Meyer, 2002). Additionally, creating readiness for change by ensuring that individuals are prepared embrace a planned change

represents a critical component of unfreezing efforts by organizational leaders to prepare their organizations to implement a planned change. The aim of this study was to investigate the role of readiness for change as a mediating variable between management support for change and employees' commitment to organizational change. The results of the PLS-SEM analysis showed that the indirect effect of readiness for change on commitment to change was significant. According to Hair et al. (2017), when the relationship between the exogenous variable and the mediating variable is significant, we move to the next step, which is examining the relationship between the mediating variable (i.e., readiness for change) and the exogenous variable commitment to change. The findings of our analysis showed that both relationships were statistically significant. Moreover, as the values of path coefficients were both positive, there was a complementary partial mediating role of readiness for change. A complementary mediation occurs when the indirect effect and the direct effect are both significant and have a path to the same direction, which is in this case a positive direction. Although the relationship between management support for change and commitment to change was statistically significant, adding readiness for change to the model showed a more powerful relationship. This is in line with prior literature indicating that readiness for change plays a significant role in strengthening commitment to change (Mangundjaya, 2013).

The findings of this study align with what was suggested by Armenakis et al. (1993) that creating readiness for change is a critical step towards achieving the goals of a proposed change. Also, the results of this study are consistent with the findings of Santhidran et al. (2013); that is, readiness for change has a significant mediating role of

readiness for change in the relationship between leadership/ management support and commitment to change. However, Santhidran et al.'s (2013) study showed that the direct relationship between leadership (i.e., management support for change) and commitment to change was not significant, which contrasts with our findings. This implies that management support for change is not always the only factor that helps in maximizing employees' commitment to change. For example, it was shown that effective communication enhances individual readiness for change as it make employees well informed about the nature of change and how it adds positively to both the organization and workers (Nafei, 2014; Vakola, 2014). Creating readiness for change by showing the appropriateness, need, and urgency, change would give managers considerable assistance in their effort to implement a planned organizational change (Trisnawati *et al.*, 2020). This exhibits the importance of how organizational members perceive the importance and benefits of change, which would help in minimizing resistance to change.

Limitations and Future Research

Several limitations of the present study need to be considered when interpreting its results. First, the sample size was relatively small compared to the number of healthcare workers in the Saudi Arabia. Second, as a cross-sectional study, data were recorded at a single point of time. Therefore, repeated measures are recommended to determine if there would be any changes in the results. Third, PLS-SEM is a nonparametric statistical method, which lacks statistical power compared to parametric tests. Thus, further studies are recommended using a parametric test to capture any difference in the results that could be attributed to the type of the statistical test.

Moreover, limitations of this study include the sole use of self-reported data. Recall bias may present in this study as participants may have overrated or underrated their abilities and capabilities when they were asked about their readiness for change and commitment to change. Lastly, the use of social media networks could have a negative impact on the degree to which data used in this study is representative of healthcare workers in Saudi Arabia as some individuals do not use social media platforms, which could lead to selection bias (Buntain *et al.*, 2016). Individuals with certain demographic characteristics such as gender, educational level, job category, and years of experience might have been overrepresented or underrepresented in this study. In addition, we used English and Arabic languages to deliver the survey instrument, which could limit the participation of those who do not speak either language. These limitations need to be taken into accounts when considering generalizability of this study. Thus, future empirical studies are needed to assess the mediating role of individual readiness for organizational change in the relationship between management support for change and commitment to change within the context of Saudi healthcare organizations with consideration of differences among healthcare organizations with regard to sizes of organizations, type of services provided, geographical location, number of employees when studying the interrelationship between these variables.

CONCLUSION

The present study aimed at evaluating the mediating role of readiness for change in the relationship between management support for change and commitment to change. The importance of this study arose from the need to determine what factors could

contribute to commitment to change among workers in Saudi healthcare organizations as individual readiness and commitment to change has not been studied at the national level. We used a partial least square structural equation modeling (PLS-SEM) analysis to assess whether readiness for change influences the relationship between management support for change and commitment to change among workers in healthcare organizations in Saudi Arabia. The findings of this study indicated that readiness for change had a statistically significant partial mediating role that enhanced commitment to change. Both management support and readiness to change contribute to commitment to change. Our findings align with previous literature with regard to the significant role of readiness for change in enhancing commitment to change. However, the significant direct relationship between readiness and commitment in our study contrasts with what is in the literature. Also, there is a lack of empirical studies that assess the role or readiness as a mediating variable between management support for change and commitment to change. Based on our findings and the prior literature, managers should carefully cope with the process of change implementation by making certain that the organizational members maintain a high level of readiness for a planned change. In addition, study showed that management support for change cannot be the only factor that contributes to a successful implementation of a proposed change. Although our study had its limitations, it could represent a base for further studies evaluating determinants of commitment to change including the role individual readiness for change as a mediating variable in the context of healthcare organizations. This includes studying the role of readiness as a mediating variable between management support and commitment to change based on types of the

organizations such as hospitals, primary care centers, acute care centers and other types of healthcare settings.

Figure 6. Santhidran et al.'s (2013) model of mediating role of readiness for organizational change

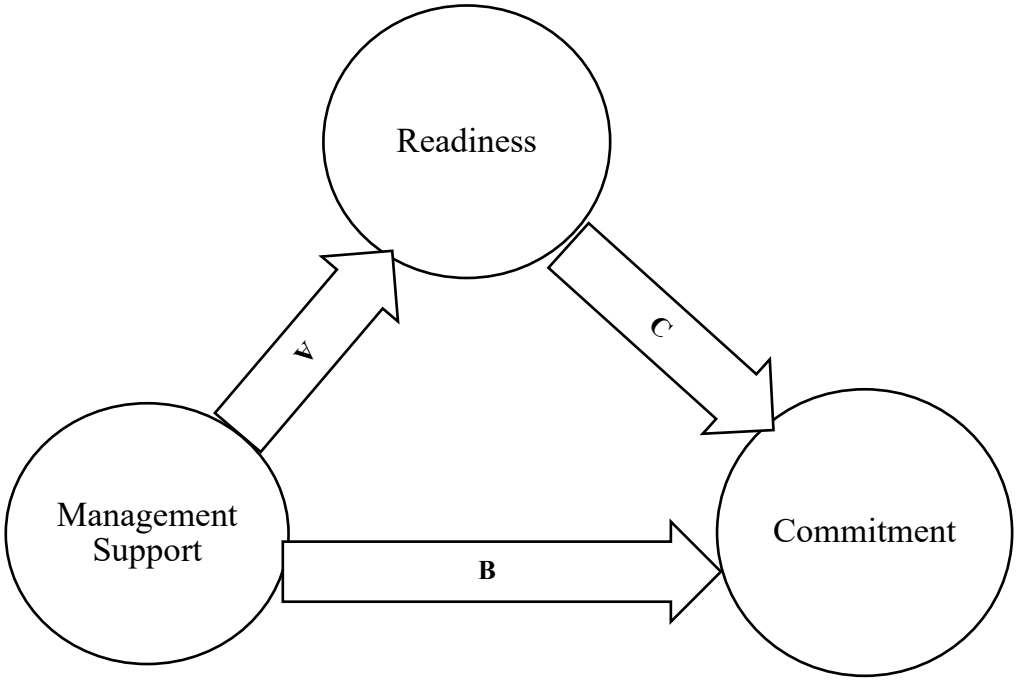


Table 13. Survey Instrument (English Version)

Variable	Statement
Management Support	Our senior leaders encourage all employees to embrace changes
	Our organization's top decision makers put all their support behind change efforts
	Our organization's senior leaders are committed to change
	Management sends a clear signal when our organization is going to change
Readiness for Change	When changes occur in my organization, I am ready to cope with them.
	When changes occur in my organization, I tend to complain about them rather than deal with them
	I believe I am more ready to accept change than my colleagues
	I do not worry about changes in my organization because there is always a way to cope with them
	When changes occur in my organization, I have always the intention to support them
Commitment to Change	I believe in the value of changes made in our organization
	I think that management makes mistakes by introducing the changes
	Changes in our organization serve important purposes
	I support the change in our organization
	Changes are necessary for our organization
	Changes are good strategy for our organization

Table 14. Description of Demographic Variables

Variable	Definition
Age	Age of the participant in years
Gender	Gender of the participant (Male, Female)
Nationality	Nationality of the participant (Saudi, Non-Saudi)
Educational Level	8. High school or less 9. Associate degree 10. Bachelor's degree 11. Master's Degree 12. PhD 13. MD 14. Other
Sector	5. Government (Ministry of Health, Holding Company, or Health Cluster) 6. Government (Military or Teaching health Organization) 7. Private sector 8. Other (ex. non-for-profit organization)
Type of Organization	7. Holding Company or Ministry of Health (MOH) 8. Hospital smaller than 200 beds 9. 200 bed hospital or larger 10. Primary care center 11. Specialized health center

Geographical Region	6. Central Region 7. Western Region 8. North Region 9. Eastern Region 10. Southern Region
Job Category	7. Management 8. Physician 9. Clinical position (nurse or other) 10. Office staff / other administrative position 11. Quality 12. Other
Years of Experience	1. Less than a year 2. One to two years 3. Three to five years 4. Six to nine years 5. 10 years or more

Table 15. Composite Reliability and average variance extracted (AVE)

	Composite reliability	Average variance extracted (AVE)
Commitment	0.896	0.688
Management Support	0.882	0.723
Readiness	0.852	0.619

Table 16. Discriminant Validity Assessment: Fornell-Larcker criterion

Column1	Commitment	Management Support	Readiness
Commitment	0.83		
Management Support	0.30	0.85	
Readiness	0.66	0.21	0.79

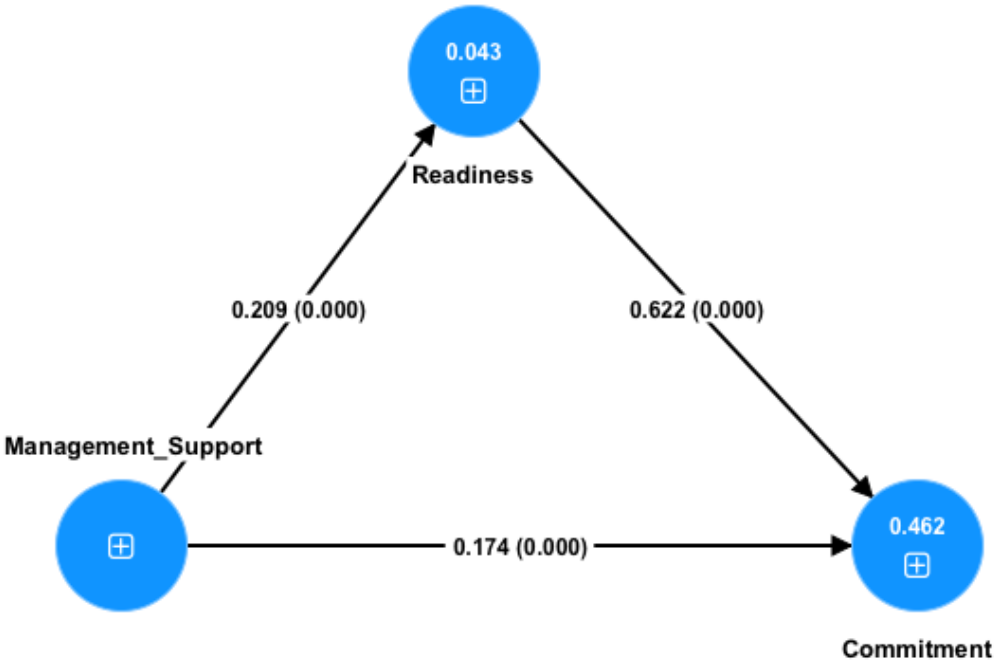
Table 17. Results of Multicollinearity Test

Variable	Statement	VIF
Management Support	Our senior leaders encourage all employees to embrace changes	2.09
	Our organization's top decision makers put all their support behind change efforts	3.122
	Our organization's senior leaders are committed to change	2.695
	Management sends a clear signal when our organization is going to change	1.653
Readiness for Change	When changes occur in my organization, I am ready to cope with them.	1.792
	When changes occur in my organization, I tend to complain about them rather than deal with them	1.859
	I believe I am more ready to accept change than my colleagues	1.741
	I do not worry about changes in my organization because there is always a way to cope with them	1.88
	When changes occur in my organization, I have always the intention to support them	1.678
Commitment to Change	I believe in the value of changes made in our organization	2.1
	Changes in our organization serve important purposes	2.16
	I support the change in our organization	3.38
	Changes are necessary for our organization	2.83
	Changes are good strategy for our organization	3.18

Table 18. Results of path coefficient and hypothesis testing

	Path Coefficient	Sample mean (M)	Standard deviation (SD)	T statistics	P value
Management Support -> Commitment	0.174	0.175	0.043	4.06	< 0.001
Management Support -> Readiness	0.209	0.213	0.056	3.752	< 0.001
Readiness -> Commitment	0.622	0.623	0.04	15.443	< 0.001
Management Support -> Readiness -> Commitment	0.130	0.133	0.036	3.598	< 0.001

Figure 7. The interrelationship between study variables.



CONCLUSION

In healthcare settings, transformation is vitally important to respond to the constant developments in a dynamic health services environment. However, there are several challenges facing leaders who seek to introduce and implement a change that aims to add value to the organization and services it offers. This includes lack of organizational readiness for change and limited employee readiness and commitment to change. The three manuscripts of this dissertation project attempted to identify factors that play important roles in determining organizational and individual readiness for change. First, we inspected the effect of organizational valence and informational assessment factor on organizational readiness for change among the employees of Bukayriyah General Hospital in Qassim, Saudi Arabia by using a model developed by Weiner (2009). Our findings indicated that both change valence and informational assessment contributed significantly to organizational readiness for change. Change valence had a higher effect on readiness for change than informational assessment. As the two predictors explained 0.363 of variance in organizational readiness for change, other factors could play significant roles in determining organizational readiness for change such as geographical location, number of patients served, financial resources allocated for operating the hospital as it is located in a relatively small town in Qassim province.

In the second analysis, we used a sample of 339 healthcare workers in Saudi Arabia to gauge the effect of effect of management support for change, self-efficacy, personal benefit, discrepancy, and organizational valence on individual readiness for change. The PLS-SEM showed that discrepancy, personal benefit, and self-efficacy had statistically significant effect on individual readiness for change. The model explained 51% of variance in individual readiness for change and the model showed some capability to predict individual readiness for change with a small effect size. This suggest that leaders of healthcare organizations need to work carefully when introducing a change in their organizations as the results of the second study revealed that personal benefit, discrepancy, and self-efficacy have the significant effect on workers' readiness for organizational change. Also, managers should make the necessary efforts to convince the employee about the importance of change they plan to implement as our findings, which are in line with the findings of prior literature, indicate that factors related to personal benefits are the major determinants of individual readiness for change.

The third manuscript of this dissertation provides an assessment of how individual readiness for change plays a mediating role in the relationship between management support for change and commitment to change by the employees of healthcare organizations in Saudi Arabia. The importance of this study arose from the need to identify factors that contribute to commitment to change among workers in Saudi healthcare organizations as individual readiness and commitment to change has not been studied at the national level. Both management support and readiness to change contribute to commitment to change. Our findings align with previous literature in terms of the significant role of readiness for change in enhancing commitment to change. the

significant direct relationship between readiness and commitment in our study contrasts with what is in the literature. In addition, the significant direct relationship between readiness and commitment in our study contrasts with what is in the literature. Thus, there was a complementary partial mediating role of readiness for change.

Although the three manuscripts had their limitation, they could provide the base for further studies focusing on organizational and individual readiness for change in Saudi Arabia and in other countries. It is worth to mention that there is a lack of studies that evaluate organizational and individual readiness for change. In addition, the mediating role of readiness for change has not been examined in healthcare context. The models employed in the three manuscripts could be improved to align with the nature of healthcare organization by including several variables such as organizational culture, the role of communication, autonomy of departments and divisions as well as the availability of new technologies.

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CURRICULUM VITA

Sultan Alsaif, MHSA, BSC
Mobile: +966 50 314 1240
E-mail: sultan.s.alsaif@gmail.com

EDUCATION

Present December 2023 Kentucky, United States	University of Louisville, PhD in Health Management and Policy (School of Public Health and Information Sciences)
Dec 2015 Indiana, United States	University of Evansville, Master of Science in Health Services Administration GPA: 3.89 out of 4
Dec 2014 Indiana, United States	University of Evansville, Bachelor of Science in Health Services Administration and minor in Business Management GPA: 3.49 out of 4
June 2010 Buraydah, Saudi Arabia	College of Technology, Associate Degree in Management GPA: 3.75 out of 5

Related Courses

Health Economics	Business Organizational Behavior	Marketing
Population Health	Public Health	Business Communications
Strategic Management	Health Services Ethics	Healthcare Systems
Managed Care	Decision Making	Healthcare Finance
Project Management	Global Health	
Healthcare Research	Health Promotion	

PRACTICAL EXPERIENCE

Sep 2016 – Present Riyadh, Saudi Arabia	Institute of Public Administration Department of Management and Public Policy Programs
Apr 2016- Aug 2018 Riyadh, Saudi Arabia	Dr. Sulaiman Alhabib Medical Group Business Office Supervisor
May 2015- July 2015 Buraydah, Saudi Arabia	Buraydah Central Hospital

PROJECTS

Ministry of Health Organizational Structure Consulting Team member, Saudi Arabia
Ministry of Health Development of Primary Care Centers' Mangers, (Implemented by IPA), Saudi Arabia
Global Marketing, United States
Strategic Management in Healthcare, United States
Designing Recognition programs at Healthcare Settings, United states
Designing Wellness Programs at Healthcare Settings, United States
Preparing capital Purchase requests, United States
Population-health-related proposal for State of Kentucky, United States
Ministry of National Guard, King Abdullah Medical Research Center organizing project, Saudi Arabia

AWARDS & CERTIFICATIONS

Human Resources Workshop, Lawrence Technological University, United States
Project Management Workshop, Lawrence Technological University, United States
Conducting Studies, Learning Tree Institute, London
ROI Methodology Workshop, Return on Investment Institute, Saudi Arabia
Leadership & Communication Skills Workshop, Louisville, KY.

SKILLS

Languages:
Arabic – Mother tongue
English – Fluent

Computer Skills:
Microsoft Office
SAS
STATA
SPSS

Personal Skills:
Excellent interpersonal communication skills
Excellent data management and statistical skills
Problem solver, thinking outside the box and coming up with valuable and innovative ideas
Ability to work under pressure and meet predefined timelines
Detailed oriented
“Can Do” attitude

REFERENCES

Available upon request.