

# Development and Validation of a Readiness for Organizational Change Scale

SAGE Open  
October-December 2023: 1–14  
© The Author(s) 2023  
DOI: 10.1177/21582440231207705  
[journals.sagepub.com/home/sgo](https://journals.sagepub.com/home/sgo)  


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## Abstract

This study develops and validates a comprehensive readiness for organizational change (ROC) scale. The study was conducted based on a three-stage scale development procedure. At the first stage to generate items, a literature review and in-depth interviews with subject matter experts were carried out to conceptualize and define the conceptual model of ROC. Then, an initial item pool consisting of 127 questions was developed to measure ROC and their content validity was confirmed using Delphi survey. At the second stage to develop a scale, a pilot test consisting of 224 survey responses was carried out, and then exploratory structural equation modeling, and reliability testing were conducted. As a result, 28 items with good psychometrics were selected for the final scale. At the last stage of scale evaluation, a main test consisting of 2,410 survey responses was subjected to validity and reliability testing. The newly developed scale reflects multilevel and multidimensional characteristics to allow a holistic judgment and explanation of the ROC. This measurement scale can be used to implement organizational change and future interventions.

## Keywords

readiness for organizational change, organizational change, scale development, change management

## Introduction

Adapting to organizational change has become the new normal in this volatile, uncertain, complexity, and ambiguous world (Ford et al., 2021). Organizational change such as producing new products, improving services, maximizing market share, and improving financial structure is critical to promote the organization's continuous growth and success while gaining a competitive edge (Kotter, 2007). Despite efforts to implement organizational change, however, the majority of companies fail to do so (Beer & Nohria, 2000), thereby threatening their survival (Reichers et al., 1997).

Many organizational change models that explain the acceptance and implementation of organizational change equally emphasize the preparation stage as the key procedure (Armenakis et al., 1993; Choi & Ruona, 2011). Readiness for Organizational Change (ROC) has gained a reputation for being a core factor in guaranteeing the successful and continuous implementation of organizational change (By, 2007). Indeed, organizations with high ROC, which are ready to invest, have higher success rates as they overcome obstacles (Weiner et al., 2008).

On the contrary, in organizations with low ROC, there is strong resistance to change, which eventually leads to the failure to change (Holt et al., 2007).

The efficient development and management of ROC is the most important factor in organizational change success, and one of the strategies that takes precedence is measuring current ROC (Armenakis et al., 1993). To precisely measure and diagnose ROC, a scale that reflects the concept clearly and has excellent psychometric properties is required. Systematically designed questionnaires can measure a number of participants in a relatively short amount of time, which makes them efficient for providing information on organizational change to change managers, organizational development consultants, and

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researchers (Holt et al., 2007). However, there are two limitations to current measurements of ROC.

First, although the concept itself is multilevel and multidimensional by definition (Rusly et al., 2012; Weiner, 2009), existing measures limit the concept to certain levels and dimensions. ROC is influenced by both individuals and context. Regarding Holt and Vardaman's (2013) ROC model, ROC is a multidimensional construct including psychological and structural factors that occur both individual and organizational level. According to Weiner et al. (2008) literature review, however, some prior researches only tend to measure readiness for change elements in the psychological dimension at a personal level or the structural dimension—encompassing the management, information, and technology of an organization—at an organizational level. In order to measure ROC comprehensively, it is necessary to consider not only individual psychological incline and organizational structural state, but also structural aspects at a personal level (e.g., ability for change) and psychological aspects at an organizational level (e.g., perceived group efficacy for change). Thus, it is important to consider both the psychological state and structural capacity of each individual and organizational level to assess ROC effectually.

Second, the existing measures of ROC show low reliability and validity. For example, in Holt et al. (2007), where psychometric evidence of 32 measures of readiness for change is quantitatively analyzed, validity and reliability is low. In Weiner et al. (2008), who analyzed 43 measures of readiness for change, only seven have relevant psychometric evidence, while the remainder show limited evidence for reliability and validity. Similarly, Gagnon et al. (2014), who reviewed 26 readiness for change measures, the measures are shown to have low reliability and validity or lack evidence to prove they have such properties. Likewise, the previous measures of ROC are clearly limited in the measurement scope and psychometrics evidence. The reliable and valid ROC assessments can be efficient means to garner change-related information. For example, it can identify expectation gaps about the change initiative between leader and employee, then to take an action for reducing those gaps and resistance to change (Holt et al., 2007). In contrast, ROC measurements through low reliability and validity scale can lead to defective decision-making on organizational change process.

Therefore, this study aims to develop a new scale based on the recently discussed comprehensive readiness for organizational change model (Holt & Vardaman, 2013), that could reflect the multi-dimensional characteristics of the model as well as provide clear psychometric evidence. Through the newly developed scale of ROC in this study, it will be possible to support rigorous diagnosis and decision-making for successful organizational change.

## Conceptual Framework and Literature Review

### *Conceptualization of ROC*

ROC, even in its early stages, was considered as an important concept when discussing whether an organization can react adequately to environmental pressures and introducing relevant organizational changes. It shows distinctive characteristics depending on the types of organizational change paradigms used (see Table 1). In paradigms that discuss organizational change from a macro or systems-oriented perspective, organizational change is regarded as happening at an organizational level (Judge et al., 1999). From this perspective, the inability to change is attributed to organizational factors, including institutionalized routines, organizational structures, and culture (Hannan & Freeman, 1984). Therefore, ROC is also understood as a structural term, defined as the status or ability of an organizational factor that allows for the successful introduction and implementation of organizational change. Indeed, Beer and Walton (1987) defined ROC as an organization's social, technological, and systematic ability to implement new changes, which emphasizes the change implementation ability at the organizational level.

By contrast, based on the criticisms that a macro perspective unnecessarily minimizes the role of humans in organizational change and that the long-term momentum of an organization leads to the failure to adapt to change, a micro- or person-oriented perspective based on the fundamental changes that organizational members pass through came into fashion (Colarelli, 1998). Consequently, the focus of ROC also shifted toward emphasizing the psychological dimension of organizational members. This was shown in Armenakis et al. (1993), who defined ROC as the beliefs, attitudes, and intentions of organizational members about the extent of change required and the organization's capacity to successfully complete those changes, thus emphasizing the role of the individual (Cinite et al., 2009). Later research defined ROC as an attitude that precedes the acceptance of or resistance to change based on trust, personality, and history (Powelson, 1995) or the degree to which individuals are mentally, psychologically, or physically inclined, prepared, or primed to take part in activities that result in organizational development (Hanpachern, 1997).

Recently, a new perspective has emerged, which does not categorize ROC in terms of the individual and organizational level or the psychological and structural dimensions, but views the concept from a holistic perspective (Rusly et al., 2012; Shahrabi & Rohani, 2018) to understand its multilevel, multidimensional characteristic. In this case, ROC is viewed as the combination of

**Table 1.** Definition of Readiness for Organizational Change.

Author(s)	Glossary	Definition
Beer and Walton (1987)	Readiness	The social, technological, or systemic ability of a group or organization to change or try new things (p. 360)
Armenakis et al. (1993)	Readiness for change	The cognitive precursor to the resistance to or support for a change effort (pp. 681–682)
Eby et al. (2000)	Organization's readiness for change	Conceptualized in terms of an individual's perception of a specific facet of his/her work environment: the extent to which the organization is perceived to be ready to take on large-scale change (p. 422)
Weiner et al. (2008)	Organizational readiness for change	The extent to which organizational members are psychologically and behaviorally prepared to implement organizational change (p. 381)
Rusly et al. (2012)	Change readiness	The psychological dimension represents the individual's willingness to embark on organizational change initiatives, triggered by beliefs that the proposed change is necessary to overcome the identified discrepancy and that is suitable and sensible to implement with essential support and capacity to embrace the change. The structural dimension focuses on the organization's capability to provide the necessary resources such as employees sufficiently competent to support the accomplishment of the change initiatives (p. 336)
Holt and Vardaman (2013)	Readiness for change	Readiness for change comprises both individual difference and structural factors, reflecting the extent to which the organization and its members are inclined to accept, embrace, and adopt a plan to purposefully alter the status quo (p. 10)
Hannon et al. (2017)	Organizational readiness for change	The degree to which those involved in a change initiative are individually and collectively primed, motivated, and technically capable of executing the change (p. 67)

psychological and structural factors at both an individual and an organizational level. For example, Holt and Vardaman (2013) defined the concept as comprising both individual difference and structural factors. Hannon et al. (2017) also explained that the relevant personnel are primed, motivated, and technically capable of implementing change, both individually and collectively. Expanding the conceptual understanding of ROC allows us to appreciate comprehensively the characteristics and functions of the concept, in contrast to understanding it from psychological or structural one-sided viewpoints.

In conclusion, ROC expresses the cognitive assessment and emotional reaction of organizational members to the necessity, relevance, and success of organizational change, which is shared and formed in a group through social interactions within the organization. In addition, the organizational structure, system, culture, resources, and other factors that allow the acceptance and smooth implementation of organizational change are crucial to forming ROC (Benzer et al., 2017). Reflecting such holistic views of the concept, this study defines ROC as the degree of the satisfaction of the psychological and structural requirements and elements required for individuals and the organization to efficiently accept and implement organizational change.

### Characteristics of ROC

*Multilevel Characteristics of ROC.* An organizational change initiative encompasses changes at the personal as well as the group level, which means that an organizational-level change, by definition, includes both group- and personal-level changes (Whelan-Barry et al., 2003). Likewise, understanding organizational change processes as holistic, where personal, group, and organizational change influence each other, leads to a discussion that such multilevel views must be implemented when considering ROC (Rafferty et al., 2013; Vakola, 2013).

ROC, from the personal level, is understood as a precursor for employees to either participate in or resist change initiatives (Armenakis et al., 1993). This means that if an employee is ready for change, he/she has a proactive and positive attitude toward organizational change, which translates into having confidence in its success and the willingness to support the process (Vakola, 2013). However, ROC, from the organizational level, is understood in similar ways to the unfreezing step of Lewin's three-stage model of change. Lewin (1947) argued that in the unfreezing stage, it is important to secure an organizational mechanism that can maximize efforts and organizational change, such as promoting

communication and certain organizational cultures, and can recognize the need to change to successfully implement organizational change. In this case, ROC from an organizational perspective can be understood in relation to organizational mechanisms, processes, and policies (e.g., structure, culture, customs, and leadership), which can either hinder or promote change (Vakola, 2013).

**Multidimensional Characteristics of ROC.** The argument that ROC is a multidimensional concept began from discussions that explained the concept from various perspectives, including efficacy for change, the cognitive understanding of readiness for change, and the reality of organizational capabilities (Vakola, 2013). Understanding ROC as a psychological state can be subdivided into cognitive precursors, commitment to change, and openness to change (Stevens, 2013).

The approach that views ROC as a cognitive precursor to change activities accepts that the change message can decrease employees' resistance to change and foster proactive and positive actions toward change. This approach emphasizes that the cognitive assessment and judgment of individuals are fundamental to initiating these actions (Armenakis et al., 1993). The approach that views ROC as employees' commitment to change defines such commitment as a force that propels individuals to carry out the actions required to successfully implement a change initiative (Herscovitch & Meyer, 2002). The last approach focuses on the multidimensional nature of change by understanding ROC in terms of openness to change (Frahm & Brown, 2007). The response to organizational change can be categorized into cognitive, emotional, and intentional aspects, which can then be used to identify the ambivalence of employees to certain organizational changes (Piderit, 2000).

The structural aspect of ROC refers to the resources and capabilities required to realize organizational change. A resource-based approach to ROC focuses on the resources that could hinder and promote change, including financial resources, human resources, policies and procedures, organizational structure, market share, organizational culture, and climate. For example, Molla and Licker (2005) considered human resources, technological resources, management resources, market power, and governance as the key factors in measuring ROC. A capability-based view of ROC argues that change within an organization, be it a change in the way things are done or the introduction of a new procedure, has a huge impact. This means that the capabilities to receive and respond to such change need to precede the change itself (Stevens, 2013). According to Worley and Lawler (2009), having a future focus, flexible organizational design, and change capabilities are considered as relevant to this view.

## Method

To develop the scale that measure for readiness for organizational change, we followed the methodology used by the Hinkin (1995) and Netemeyer et al. (2003). The procedures of the scale development were three-step; item generation, scale development, and scale evaluation.

At an item generation stage, a literature review and in-depth interview with relevant individuals were conducted to identify the construct definition of ROC and its content domain. Next, the initial item pool was generated to assess that domain. To judge the content validity of the items in an initial pool, the Delphi survey was conducted with multiple expert panels. The panels were asked to identify elements of the items that need to be refined, changed, or deleted via both qualitative (writing comments) ways and quantitative (5-point categorization ratings) means.

At a scale development stage, Hinkin (1998) suggested that a potential set of items for the construct or constructs under consideration should be identified. Exploratory Factor Analysis (EFA) can not only reduce the number of items in a scale so that the remaining items maximize the explained variance and reliability, but also identify potential underlying dimensions in a scale (Netemeyer et al., 2003, p. 121). Therefore, EFA is the most commonly used analytic technique for developing scale. We conducted a pilot survey to carry out EFA and test reliability on individual items.

Lastly, at a scale evaluation stage, Hinkin (1998) contended that construct validity (discriminant and convergent), criterion validity (concurrent and predictive), and reliability of a new scale can be examined through another independent sample. Therefore, we conducted a survey with a large sample to review overall psychometric properties of the new scale. Quantitative approaches such as item analysis, confirmatory factor analysis (CFA), correlation analysis, least squares regression analysis, and reliability analysis were used in the evaluation and finalization of scale.

## Stage I: Item Generation

### *Participants and Procedure*

To ensure that the measure of a construct is valid, the content domain and concept itself should be clearly defined (Netemeyer et al., 2003). This study systematically explored the concepts relating to ROC as well as systematic reviews and the scale development literature. Aside from the literature search, professionals and related individuals helped define the construct and its content domains. In-depth interviews with professionals were conducted to review and supplement the concept and content domains of ROC confirmed through the

literature review. The participants of the in-depth interview included eight professionals who had rich experience of ROC and could provide meaningful contributions. The average age of interviewees was 45 years, with 20.4 years of experience on average. Based on the literature review and interviews, this study developed a prototype model consisting of four personal psychological dimensions, four personal structural dimensions, three organizational psychological dimensions, and five organizational structural dimensions.

A Delphi survey was then conducted to modify and supplement the ROC model and definition. Typically, 10 to 15 specimens are accepted as providing adequate results and validity (Skulmoski et al., 2007). Based on such evidence, this study constructed a Delphi expert panel consisting of 18 people who had professional knowledge of organizational change and practical experience as well as indicated their willingness to participate in the survey. The average age of the panel was 41.9 years and their average number of working years was 15.1. The research team developed several questions to evaluate the appropriateness of the operational definition of ROC and sub-dimensions (e.g., "Is the following operational definition of ROC appropriate?," "Is the operational definition of each sub-dimensional of the ROC appropriate?"), and the possibility of conceptual overlap between sub-dimensions (e.g., "Is the classification of the four ROC sub-dimensions as follows appropriate?"). To decide whether modification and supplementation was needed from the Delphi survey analysis, this study used the content validity ratio (CVR). According to Lawshe (1975), an adequate CVR value is .45 for 18 panels, and modification and supplementation were thus made when the value was below this level.

## Result

The results of the Delphi analysis brought about a refinement of the concept of ROC as well as an addition of eight factors into the model. Further, three factors were modified and moved to a different subcategory, four factors changed their names, and five factors remained as they were. The definition of ROC and dimensional characteristics and factors included in the model are as follows.

ROC expresses the degree of the satisfaction of the psychological and structural requirements and elements required for individuals and the organization to accept and implement organizational changes. The ROC model was developed as a  $2 \times 2$  model (personal/organizational level and psychological/structural dimension) to allow a holistic judgment and explanation of the concept. The personal psychological dimension was named *individual change motivation* (ICM), defined as "one's psychological

intention to cause and sustain intentions and actions to accept and implement organizational changes." Factors such as confidence, optimism, relaxation, appropriateness, efficacy, and valence were included in this dimension. In the case of the personal structural dimension, which was named *individual change capacity* (ICC), the concept was defined as "the personal-level knowledge, skill, attitudes, and capabilities needed to accept and implement organizational changes." Content knowledge, implementation knowledge, content skill, implementation skill, initiative, predisposition toward learning, and devotion to change were included here.

The organizational psychological dimension was named *organizational change motivation* (OCM) and defined as "the psychological intention that causes and sustains actions and intentions that accept and implement organizational changes based on a shared meaning and shared values of the relevant change." Group confidence, group optimism, group relaxation, shared appropriateness, group efficacy, and organizational valence were some of the factors included in this dimension. Lastly, the organizational structure dimension was named *organizational change implementation capacity* (OCIC) and defined as "the organizational structure, strategy, culture, and system required to accept and implement organizational change." This dimension was categorized into structure (organizational structure, R&R), strategy (change vision, change objective, resource supply), process (communication, leadership), and culture (open-mindedness, cooperation) with the factors included under various categories.

Next, we developed initial items for each of the four dimensions of ROC. The resources for the item development can be acquired in two ways: (i) through a literature review and (ii) through the utilization of a relevant population such as practitioners (Netemeyer et al., 2003). If the literature search proves that a previous scale measures the same or a similar concept to that measured in the study, the items in the previous scale can be included in the item pool. Therefore, this study selected items relevant for this ROC conceptual model, modified them, and included them in the scale item pool. Moreover, to generate items from relevant populations, a content analysis of the in-depth interview transcription was performed. Through this process, an initial pool with 127 items was developed.

To review the content validity of these 127 items and refine, a Delphi survey was performed with the panels consisting of 11 experts. The research team developed and presented questions to evaluate the essentiality, redundancy, ambiguity, and usefulness of the initial items to the panels (e.g., "Is this item appropriate for measuring ICM/ICC/OCM/OCIC?"). Based on these questions, the panels reviewed reliability of an

assessment instrument and of the adequacy the targeted construct for a particular assessment purpose. The panels were required to indicate their agreement on a 5-point Likert scale. To ensure that the validity of the initial items, the Content Validity Ratio (CVR) was deemed as relevant indices (Lawshe, 1975). The thresholds for the validity of each item were above 0.59. In addition to considering empirical evidence in the selection of items, it was necessary to select appropriate items from a content and face validity perspective (Netemeyer et al., 2003). Therefore, we comprehensively considered the adjustments raised in the open-ended question included in the Delphi survey. Next, we discussed contents of items, duplicated meanings, proper reading level and clarity. This process yielded 35 items.

## Stage 2: Scale Development

### *Participants and Procedure*

Scale development includes conducting a pilot test on relevant populations to remove items that do not meet a certain threshold of reliability and validity in the initial item pool (Netemeyer et al., 2003). This study conducted a pilot test to develop a scale by selecting items in the initial item pool. We collected survey data from a wide variety of business units in Korea. A total of 216 survey responses were collected and distribution of respondents was as follows: Out of 216 respondents, 81.9% were male. The average age of the total respondents was 34.2 years ( $SD = 6.75$ ). In terms of job category, 4.5% were in sales/marketing, 8.4% were in accounting/finance, 12.4% were in planning/strategy, 51.5% were in production, 20.8% were in human resource management and development, and 2.5% were in other job categories.

We applied an EFA using exploratory structural equation modelling (Schmitt, 2011), and a maximum likelihood factor analysis was used to extract factors. Considering factor rotation, Geomin rotation was used. We employed MPLUS (Version 8.5) for the exploratory structural equation modelling. To determine the optimal number of factors, parallel analysis and the cumulative variance results were incorporated into the overall judgment. The parallel analysis was tested using R factor (Version 2.4) for SPSS (Ruscio & Roche, 2012). Next, factor loadings in the range of  $\pm 0.40$  were considered to meet the minimal level for interpretation of structure (Hair et al., 2018). Thus, to interpret the significant item cluster in the data structure, if items were loaded equally highly onto more than one factor or if their loadings were below 0.40, they were discarded and EFA was carried out again. Such thresholds were continuously applied until all the items in the analysis showed primary loadings of at least 0.40 and no further items could be removed.

## Result

The parallel analysis showed that starting from a four-factor model, the eigenvalue for random data became higher than the eigenvalue of the actual data.

Additionally, the cumulative variance test established that the explained variance of the four-factor model was 84%, which exceeded the minimum requirement for total variance for significance of 60% which is the appropriateness standard (Hair et al., 2018).

Through EFA, seven incompatible items were removed, retaining 28 items. Table 2 shows the breakdown of these 28 items, with 6 items in the individual change motivation factor, six in individual change capacity, six in organizational change motivation, and 10 in organizational change implementation capacity. The reliability test showed Cronbach  $\alpha$  values range from .92 to .95. These values were all above the compatibility threshold of 0.7.

## Stage 3: Scale Evaluation

### *Participants and Procedure*

In the scale evaluation stage, we carried out a main test with large sample survey for analyzing the final validity and reliability of the scale. The sample for scale evaluation was found using the convenience sampling of Korean company employees. The total number of completed sample responses from both online and offline surveys was 2,410 and their responses were considered for further analysis. Out of 2,410 respondents, 71.5% were male. The average age of the total respondents was 36.9 years ( $SD = 7.81$ ). In terms of job category, 22.5% were in sales/marketing, 15.4% were in accounting/finance, 15.6% were in human resource management and development, 19.6% were in management support, 9.5% were in production, 11.4% were in planning/strategy, and 5.8% were in other job categories. The response format for the items was a 6-point Likert-type scale because this type of scale has a higher level of reliability and discriminative ability than does the 5-point Likert-type scale (Chomeya, 2010). CFA was carried out to test discriminant validity and convergent validity. To investigate concurrent validity, we analyzed correlations between a measure of the newly developed scale and other change readiness scale measures. Also, predictive validity of the new scale was examined by testing the ability of the ROC to predict two behavioral outcomes; change support behavior and behavioral resistance to change. Finally, to test reliability of the finalized new scale, Cronbach  $\alpha$  and composite reliability were confirmed. Data analyses were conducted using IBM SPSS Statistics (Version. 25) and MPLUS (Version. 8.5).

**Table 2.** Final Factor Structure of the Domain Items (EFA).

Factor	F1	F2	F3	F4	Cronbach $\alpha$
Factor 1: individual change motivation					.92
1. Even when the organizational change requires me to complete new tasks, I am confident that I will do this well.	0.86	0.12	0.02	0.12	
2. I have a positive feeling about new organizational changes being implemented.	0.90	0.04	0.07	0.05	
3. I don't feel scared or alarmed by new organizational change.	0.54	0.25	0.04	-0.05	
4. I believe that this organizational change is needed for our organization.	0.75	0.16	0.10	-0.12	
5. I have the capacity to efficiently carry out the organizational change tasks given.	0.77	0.15	0.11	-0.08	
6. The organizational change in our organization leads to an increase in my individual job performance.	0.54	0.05	0.21	-0.05	
Factor 2: individual change capacity					.94
7. I know what is needed to prepare for the relevant organizational change.	0.24	0.72	-0.02	0.07	
8. I have the content-specific knowledge required for the relevant organizational change	0.01	0.89	0.00	-0.02	
9. I have the specific technology required for this organizational change.	0.02	0.95	0.00	0.00	
10. I have the typical set of skills needed to implement this organizational change.	0.00	0.97	-0.05	-0.01	
11. I daringly invest resources and time in the new organizational change.	0.33	0.64	-0.03	-0.02	
12. When required for the success of the organizational change, I can undertake personal sacrifices.	0.20	0.46	0.25	0.02	
Factor 3: organizational change motivation					.93
13. The members of our organization have collectively developed the confidence that our organization is capable of such changes.	0.10	-0.03	0.86	-0.06	
14. The members of our organization share and interpret the organizational change in a positive manner.	0.07	-0.02	0.87	0.02	
15. The members of our organization do not fear the planned organizational change.	-0.24	0.13	0.77	0.01	
16. The members of our organization believe that the new organizational change is optimal for improving the current situation.	0.00	0.02	0.84	-0.07	
17. The members of our organization believe that our organization has great capacity to accept and implement this organizational change.	-0.01	-0.05	0.81	0.03	
18. The members of our organization believe that the organization will benefit from this change.	0.23	-0.12	0.75	0.05	
Factor 4: organizational change implementation capacity					.95
19. The individual and departments' roles and tasks for organizational change have been distributed evenly.	-0.34	0.17	0.16	0.58	
20. The structure of the organization is compatible with the successful acceptance and implementation of this organizational change.	-0.34	0.03	0.12	0.56	
21. Our organization has adequate resources (human, physical, financial) to carry out this organizational change.	-0.29	0.03	0.15	0.58	
22. The objective of the organizational change is clear.	-0.25	0.08	0.19	0.66	
23. Our organization explains, in detail, the contents related to organizational change.	-0.01	-0.09	-0.02	0.89	
24. Our organization is capable of providing the physical and psychological rewards for the long/short-term success of the organizational change.	-0.01	-0.11	-0.06	0.81	
25. The CEO continuously emphasizes the importance of organizational change.	0.39	0.01	-0.25	0.83	
26. The executives and managers lead by example to promote organizational change.	0.14	-0.05	-0.12	0.91	
27. The members of our organization are open-minded to the relevant organizational change.	-0.12	-0.01	0.02	0.86	
28. The members of the organization cooperate with each other to promote the acceptance and implementation of organizational change.	0.03	-0.04	-0.01	0.93	
Eigenvalue	9.362	5.878	4.024	1.749	
Percentage of total variance	37.4	23.5	16.1	7.0	

## Result

**Descriptive Statistics and CMB.** Table 3 presents the descriptive statistics of the proposed 28 items. All the items showed a mean of 3.63 to 4.62 and a standard deviation of 0.97 to 1.28. The correlation coefficients of all the items fell between 0.15 and 0.78, which showed a statistically significant positive correlation. Furthermore, a confirmatory factor analysis for the single common factor model was utilized to assess the common method bias (Podsakoff et al., 2003). Four fit indices were calculated to determine how the model fitted the data. For the Comparative Fit Index (CFI) and Tucker-Lewis Fit index (TLI), values greater than 0.90 represent a good model fit (Bentler, 1992). For the Root Mean Square Error of Approximation (RMSEA) and Standardized Root Mean Square Residual (SRMR) values less than 0.08 indicate a good model fit (Hu & Bentler, 1999). The result of the CFA indicated that it fit poorly with the collected data ( $\chi^2 = 13,436.78$ ;  $df = 350$ ; TLI = 0.70; CFI = 0.72; RMSEA = 0.13; SRMR = 0.10). As there was no single common factor explaining the major variance, the CMB was not considered a major problem in this study.

**Discriminant Validity.** To assess discriminant validity of the Readiness for Organizational change scale (ROCS), we followed the steps outlined by Hair et al. (2018). To analyze whether ROC is distinct from change support behavior and behavioral resistance to change, we performed a series of CFA. A full measurement model was initially tested in which the four factors of ROC loaded onto a general ROC factor and all indicators for change support behavior and behavioral resistance to change were allowed to load onto their respective factors. All factors were allowed to correlate.

The three-factor model showed a good model fit ( $\chi^2 = 5,326.63$ ;  $df = 656$ ; TLI = 0.90; CFI = 0.91; RMSEA = 0.05). In order to assess the distinctiveness of constructs in the study, sequential  $\chi^2$  difference tests were performed. The full measurement model was compared to three alternative nested models, in which (a) ROC and change support behavior ( $\chi^2 = 5,368.75$ ;  $df = 657$ ; TLI = 0.89; CFI = 0.91; RMSEA = 0.06), (b) ROC and behavioral resistance to change ( $\chi^2 = 5,604.55$ ;  $df = 657$ ; TLI = 0.89; CFI = 0.90; RMSEA = 0.06), and (c) ROC, change support behavior and behavioral resistance to change were fixed as equal to one ( $\chi^2 = 5,634.34$ ;  $df = 658$ ; TLI = 0.89; CFI = 0.90; RMSEA = 0.06).  $\chi^2$  difference tests were significantly different between full measurement model and alternative nested models, it indicated the ROC was correlated to change support behavior and behavioral resistance to change but performed as a distinct construct.

As an additional evidence of discriminant validity, we calculated the heterotrait–monotrait (HTMT) ratio, which is an alternative approach to the examination of cross-loadings and is based on the multitrait-multimethod matrix (Henseler et al., 2015). The HTMT is the mean value of the indicator correlations across constructs (i.e., the heterotrait-heteromethod correlations) relative to the (geometric) mean of the average correlations of indicators measuring the same construct. Typically, when HTMT is over 0.9, there is a problem with discriminant validity (Hair et al., 2018; Henseler et al., 2015). Applying this method in this study, HTMT was calculated to be 0.29 to 0.87, which shows that the scale had adequate discriminant validity.

**Convergent Validity.** The statistical significance of an item's factor loading and its magnitude can indicate the extent of the convergent validity of the item to the construct. The standardized factor loading between an item and its construct was calculated to confirm the convergent validity of the model. The standardized factor loadings of all the items were over 0.5, with an average of 0.76, which is above the threshold of 0.7. Further, composite reliability was calculated to be between 0.88 and 0.93, again above 0.7 (Hair et al., 2018). This indicates that the convergent validity of the ROCS was adequate (see Table 4).

**Concurrent Validity.** Evidence of concurrent validity for a measure is provided by sizable correlations between the construct measure under development and a criterion measure collected concurrently (Netemeyer et al., 2003). The criterion selected to prove the concurrent validity of the scale developed in this study was OCQ-C,P,R which for measuring readiness for change developed by Bouckenoghe et al. (2009). Both the ROCS developed in this study and OCQ-C,P,R were presented to respondents simultaneously. Analyzing the correlations between the scores of both scales, the correlation coefficients range from 0.58 to 0.76, which showed a statistically significant positive correlation. This showed that the scale developed in this study was concurrently valid.

**Predictive Validity.** When considering that ROC manifests in a behavioral pattern related to organizational change at the individual or organizational level (Holt et al., 2007; Rafferty et al., 2013), change support behavior and behavioral resistance to change are representative constructs for measuring predictive validity. ROC may translate into actions through intentions (Armitage & Conner, 2001). Indeed, Armenakis et al. (1993) argued that readiness for change is a precursor to actions relating to organizational change and that high levels of readiness for change may lead to positive behaviors. On





**Table 4.** Confirmatory Factor Analysis of the ROCS Items.

Factor	Item	$\beta$	SE	t	CR	$\alpha$
Individual change motivation	1. Even when the organizational change requires me to complete new tasks, I am confident that I will do this well.	.76	0.03	37.01	0.88	.88
	2. I have a positive feeling about new organizational changes being implemented.	.80	0.03	39.23		
	3. I don't feel scared or alarmed by the new organizational change within.	.73	0.03	35.49		
	4. I believe that this organizational change is needed for our organization.	.66	0.03	32.08		
	5. I have the capacity to efficiently carry out the organizational change tasks given.	.78	0.02	37.90		
	6. The organizational change in our organization leads to an increase in my individual job performance.	.75	—	—		
Individual change capacity	7. I know what is needed to prepare for the relevant organizational change.	.73	0.03	30.07	0.88	.88
	8. I have the content-specific knowledge required for the relevant organizational change	.76	0.04	30.99		
	9. I have the specific technology required for this organizational change.	.74	0.04	30.56		
	10. I have the typical set of skills needed to implement this organizational change.	.77	0.04	31.46		
	11. I daringly invest resources and time in the new organizational change.	.78	0.04	31.74		
	12. When required for the success of the organizational change, I can undertake personal sacrifices.	.64	—	—		
Organizational change motivation	13. The members of our organization have collectively developed the confidence that our organization is capable of such changes.	.84	—	—	0.92	.92
	14. The members of our organization share and interpret the organizational change in a positive manner.	.85	0.02	52.23		
	15. The members of our organization do not fear the planned organizational change.	.76	0.02	43.51		
	16. The members of our organization believe that the new organizational change is optimal for improving the current situation.	.83	0.02	49.53		
	17. The members of our organization believe that our organization has great capacity to accept and implement this organizational change.	.80	0.02	46.89		
	18. The members of our organization believe that the organization will benefit from this change.	.78	0.02	44.93		

(continued)

Table 4. (continued)

Factor	Item	$\beta$	SE	t	CR	$\alpha$
Organizational change implementation capacity	19. The individual and departments' roles and tasks for organizational change have been distributed evenly.	.79	—	—	0.93	.93
	20. The structure of the organization is compatible with the successful acceptance and implementation of this organizational change.	.81	0.02	44.56		
	21. Our organization has adequate resources (human, physical, financial) to carry out this organizational change.	.80	0.02	43.51		
	22. The objective of the organizational change is clear.	.72	0.03	38.01		
	23. Our organization explains, in detail, the contents related to organizational change.	.81	0.03	44.11		
	24. Our organization is capable of providing the physical and psychological rewards for the long/short-term successes of the organizational change.	.81	0.03	44.22		
	25. The CEO continuously emphasizes the importance of organizational change.	.79	0.03	42.77		
	26. The executives and managers lead by example to promote organizational change.	.53	0.03	26.58		
	27. The members of our organization are open-minded to the relevant organizational change.	.78	0.03	42.55		
28. The members of the organization cooperate with each other to promote the acceptance and implementation of organizational change.	.78	0.02	42.53			

Note.  $\beta$  = standardized factor loadings; SE = standard error; t = t-value; CR = composite reliability;  $\alpha$  = Cronbach  $\alpha$ .

the contrary, behavioral resistance to change is typically exhibited when ROC is low (Self & Schraeder, 2009). According to D. T. Holt et al. (2007), when the organization's ROC is low and no interventional measures are taken, this may lead to behavioral resistance to change, thereby hindering the implementation of organizational change. Indeed, ROC can predict behavioral resistance to change with significant accuracy (Abdel-Ghany, 2014). The least squares regression analysis showed the significance of the predictive power of the developed ROCS for both change support behavior ( $\beta = .82$ ,  $p < .001$ ) and behavioral resistance to change ( $\beta = -.16$ ,  $p < .01$ ). These results proved that the developed scale had strong predictive validity; in other words, it predicts an organizational member's behavior and attitude toward organizational change with strong accuracy.

**Reliability.** As shown in Table 4, the Cronbach  $\alpha$  values in the main test were .88 for individual change motivation, .88 for individual change capacity, .92 for organizational change motivation, and .93 for organizational

change implementation capacity, which were all above the threshold of .7. The composite reliability analysis showed that all four factors had values over .6 (Fornell & Larcker, 1981). It proves that the composite reliability of this scale was adequate. Hence, it was concluded that the reliability of the ROCS was appropriate.

## Discussion

To successfully implement organizational change, it is important to measure and manage ROC to provide adequate intervention (Armenakis et al., 1993). However, previous scales which measure of readiness for organizational change were limited in the scope it measures and psychometric properties evidence (Gagnon et al. 2014; Holt et al., 2007; Weiner et al., 2008). Therefore, the goal of this study was to develop and validate a scale that will specifically measure readiness for organizational change in organizational settings. The three-step findings confirmed reliable and valid readiness for organizational change scale. Literature review and in-depth interview

were found the conceptual model which capture multi-level as well as multi-dimension characteristics, and initial item for measuring readiness for organizational change. The data generated from 224 respondents were found to be highly reliable through the findings of reliability tests. EFA resulted as four factors carrying all 28 items together and thus confirmed construct validity. Finally, the construct (convergent, discriminant) and criterion (concurrent, predictive) validity was established by examining the 28-item readiness for organizational change scale with OCQ-C,P,R (used for checking concurrent validity) and change support behavior, behavioral resistance to change (used for checking discriminant, predictive validity).

The developed scales consisting of 28-item has implications for researchers and practitioners to examine the role of ROC on organizational change context. First, when organizations aim to change, they could use this scale to assess the current situation. Readiness for change can be measured regularly which would provide temporal data on the characteristics, responses, and success factors of that organization's change. In addition, the organization may decide to make an online ROC diagnostic system to cultivate an environment in which employees can assess themselves for change as well as the organization. Through this, the individual and organization may identify strengths and weaknesses and propose development plans to overcome the latter. Second, the measurement of ROC can be the basis for strategies for the acceptance and implementation of successful organizational change. In particular, HR departments can use the diagnostic results of this scale to develop education/training and management programs designed to promote ROC. Hence, the measurement of this concept from a personal and an organizational level could identify strengths and weaknesses, which could lead to customized training programs for intervention strategies.

### Limitation and Suggestion

The findings have presented some evidences by establishing psychometric properties of readiness for organizational change; however, there are several limitations of this study which should be noted. First, future research could thus use different methods to prove the validity of this scale. This could involve developing a performance-based test of an individual's ROC capacity since this scale is a self-report measure. The results of that performance-based test could be compared with the scale developed in this study. Second, the questionnaires in this study were insufficient to verify the differences in ROC depending on age, sex, hierarchical ranking, and organizational size. Further, difference analysis could be used to compile more data on population demographics and organizational

characteristics, which would help provide training and intervention procedures tailored to groups of individuals or organizations. Lastly, although this study confirmed the model from a theoretical level by reviewing the theory-based hierarchical nature of ROC as well as from a personal and an organizational level by differentiating items accordingly (Klein et al., 2001), the scale could not be reviewed at the analysis level. Future research could thus validate summation validity inference based on measurements such as  $r_{wg}$ ,  $\eta^2$  to assess whether the measurement, which is a summation of individual scores, accurately reflects the characteristics of an organization. Furthermore, hierarchical linear modeling and multilevel structural equation modeling could also be used to conduct analysis in relation to hierarchical levels.

### Conclusion

The study was aimed to develop a reliable measure of readiness for organizational change with Korean samples. It is important to manage the level of readiness that can improve the possibility of achieving organizational change. It will help to proceed with more systematic diagnosis and intervention by assessing not only individual-level readiness but also group-level readiness. We hope that the finding and measure broadly contribute to the study of organizational change and provide practitioner and researcher a simple, and yet robust tool to evaluate comprehensive readiness for organizational change.


### Declaration of Conflicting Interests


The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: This work was supported by the Ministry of Education of the Republic of Korea and the National Research Foundation of Korea (NRF-2020S1A3A2A02091529).

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