

# Human Factor Drivers of Change Readiness: A Targeted Approach to Change Success

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## ABSTRACT

The growing complexity of managing humans during change is evident in the increasing levels of uncertainty and risk. This research aimed to determine which two human factors drive change-ready individuals and to what extent. The researcher used a quantitative cross-sectional survey research design and convenience non-probability sampling method to determine change readiness. The validated change readiness survey was distributed on social media platforms between June 27 and July 9, 2022. The results included data from 112 participants whose average change readiness score was 7.8/10. Human factors that drove change readiness included resourcefulness (47.3%), confidence (34.8%), and optimism (30.4%). Those who were 10/10 change-ready were more likely to be confident (59%), females (93%), in age groups 18 – 25 and 58 – 67 years (30% respectively), and hold Master's degrees (33%). On average 1.7 human factors drove change at any one time, which increased to 3.5 human factors in those who were most change-ready. This research confirms a positive relationship between two core human factors and change readiness, namely resourcefulness and confidence. Change-ready individuals driven by resourcefulness and confidence have the potential to be strategic change agents and catalysts for project and change success. The result of this study can be replicated to generate a snapshot of change readiness with minimal effort and inconvenience and help to position the most change-ready individuals in roles of critical importance.

**Keywords** Change management, Change readiness, Human factors

## 1 Introduction

Increasing globalization and pandemic states of emergency have fuelled changes in the global workforce. Change is complex, interconnected, challenging, and always present (Mekonnen & Bayissa, 2023). However, change is also essential for the growth and transformation of people and organizations (Pahwa & Rangnekar, 2023). In this overview, we will introduce the connection between human change and change management, discuss the factors that influence organizational and individual change success, the importance of change readiness, and the impact of human factors on change.

Change management and project management are terms often used in organizational strategic plans. These two disciplines complement each other to ensure the long-term sustainability of change, yet they are uniquely different. Project management is well-established and widely used. Project management involves the process and activities of pushing the product through stages and driving it forward, change management focuses on the people and how the project may affect or change them (Ciccotti, 2014; Petersen, 2013). These are the complementary technical and behavioural components of overall management.

Change management is a newer concept, still emerging and developing, yet crucial to change success. Change management involves a combination of individual and organizational factors (Chen *et al.*, 2023), one key factor with the highest risk is human behaviour. Humans can make or break a project. An estimated 70% of change initiatives fail, largely due to human behaviour (Albrecht *et al.*, 2020; Connelly, 2020; Mason,

43 2021; Nohira & Beer, 2000), and the impact does not stop there. It is estimated that half of the project  
44 costs are determined by social and human factors (Cooke-Davies *et al.*, 2007).

45 The divestment in the change process can lead to major disengagement and profound  
46 consequences (Pahwa & Rangnekar, 2023). Exploring what drives the adoption and sustainability of change  
47 in humans is of value to change agents, leaders, organizations, and project managers (Mekonnen & Bayissa,  
48 2023). Knowing that successful change contributes to a reduction in project costs (Cooke-Davies *et al.*,  
49 2007), increases the quality of deliverables, reduces the time for implementation, and ensures the  
50 sustainability of the change in the long term (Antony *et al.*, 2023; Belack *et al.*, 2019; Ciccotti, 2014; Donnelly,  
51 2017).

52 Change readiness can be viewed as the intention of the participant to either support or resist the  
53 change (Gundersen, 2020). Change requires adjustments along a spectrum with those affected by change  
54 positioned at various points along the line (Hubbart, 2023). The shift from one side (resistance) to the other  
55 (acceptance) occurs when the change's driving forces overpower the change's restraining forces (Udod &  
56 Wagner, 2018). This change readiness does not happen without a major shift in individual readiness,  
57 confidence, and ability, and can often depend on commitment and culture, especially in the workplace  
58 (Antony *et al.*, 2023). It requires a shift in thinking and behaviour; liberation of the old way of doing and  
59 thinking, to make way for the new (Connelly, 2020). Change readiness is largely determined by human  
60 factors.

61 Human factors are the body of knowledge that studies people at work in relation to human  
62 limitations, abilities, and characteristics. Human factors scholars study humans and engineer human-  
63 focused processes to ensure efficiency (Antonovsky *et al.*, 2021), which has been widely adopted and applied  
64 to various disciplines including aviation, healthcare, technological interfaces, product development, and  
65 construction (Chen, 2020; Ciccotti, 2014; Ede *et al.*, 2021). A well-designed environment, using human  
66 factors research, can act as a catalyst for successful change.

67 There are seven human factor drivers of change-readiness, these include resourcefulness,  
68 adaptability, optimism, confidence, adventurousness, tolerance for ambiguity, and drive/passion (Kriegel  
69 & Brandt, 1997). According to the literature (Ciccotti, 2014; Sinek, 2019), only two human factors variables  
70 are fundamental, and key drivers of change at any one time in each individual. To date, there is no published  
71 literature to indicate which two factors. There is also no evidence exploring the relationship between change  
72 readiness and the human factor drivers of change. This limits the ability to focus change management on  
73 the most important factors that determine success.

## 74 **2 Literature Review**

75 The literature on change readiness was studied in-depth in an integrative literature review of 8  
76 databases (PubMed, ProQuest, Google Scholar, Cochrane, EBSCO, TRIP, ACCESS, and CORE). The  
77 search produced 89 results, of which 57 were excluded after abstract review, and a further 19 were excluded  
78 after full-text review. The remaining 13 articles (Ahmed *et al.*, 2019; Al-Maamari *et al.*, 2018; Aziz, 2018;  
79 Boone, 2010; Ead, 2015; Husin & Khairudin, 2019; Kapoor, 2018; Kho *et al.*, 2020; Mlekus *et al.*, 2018;  
80 Singh, 2021; Spence, 2020; Tait-Fries, 2021; Vaishnavi *et al.*, 2019) were appraised and revealed five primary  
81 outcomes including 1) change readiness, 2) the human-environment interface, 3) education and training, 4)  
82 resistance to change, and 5) change as being useful and usable. Less common themes that were found in  
83 the included articles were resilience, critical mass, work diversity, communication, and change fatigue.

84 Change readiness, resistance to change, useful and useable change, education and training, and how  
85 the individual interacts with the environment are interdependent and connected along a spectrum of  
86 change. These broad concepts are important to consider when implementing change and key elements in  
87 change management.

## 88 2.1 Change Readiness

89 Change readiness can be defined as the decision to either support or resist the change initiative  
90 (Vaishnavi *et al.*, 2019). This author proposes that engaged employees are change-ready employees; they are  
91 willing, motivated, and accepting of the change (Vaishnavi *et al.*, 2019). Their optimism affords them a  
92 positive outlook and the ability to recover from the change and any associated adversity (Tait-Fries, 2021)  
93 as well as the ability to rapidly adapt to future challenges (Tait-Fries, 2021). In business, change readiness  
94 was enhanced by changes that improved performance, efficiency, or control over tasks (Ahmed *et al.*, 2019).  
95 Attitudes, beliefs (Vaishnavi *et al.*, 2019), trust, and user perspective were evident in these change-ready  
96 employees, as was trust in management and a healthy work environment (Ahmed *et al.*, 2019). Of  
97 importance is that organizations have a role in creating the structures and processes that foster change  
98 readiness, including strategically designed change plans that are effective and reduce complexity (Vaishnavi  
99 *et al.*, 2019), and creating spaces that improve staff morale (Singh, 2021).

## 100 2.2 Human-environment Interface

101 The interface is the point of contact between the person and the environment; this dynamic  
102 interaction is always changing. It is in this space where the person first experiences the effect or disruption  
103 (Kho *et al.*, 2020) of change and makes a conscious decision to either support or resist it (Vaishnavi *et al.*,  
104 2019). The potential to create a positive outcome when interacting with the environment is dependent on  
105 the person's potential and psychological capacity (Tait-Fries, 2021). Without the mental and physical  
106 potential (Ead, 2015) the individual is likely unwilling to unable to participate and adopt the new behaviour  
107 needed for the change to occur (Ahmed *et al.*, 2019). The ability includes the attitude and awareness that  
108 there is a need for change (Singh, 2021), and a sense of value that the change has an individual meaning  
109 and satisfaction (Mlekus *et al.*, 2018), and is personalized (Kapoor, 2018).

## 110 2.3 Education and Training

111 Lack of education and training is known to contribute to change failure (Vaishnavi *et al.*, 2019). By  
112 planning and implementing sufficiently focused training before change initiation, employees may feel more  
113 aligned with organizational priorities, and better prepared for the upcoming changes. Training can eliminate  
114 obstacles and create motivation from the ground up, rather than the top-down approach (Boone, 2010).  
115 There is value in including employees in the planning stages for change as a way to increase buy-in and  
116 ensure that the change is relevant to them (Boone, 2010; Vaishnavi *et al.*, 2019). When educating people on  
117 change, it can be presented as a trial instead of a mandate, this secures certainty, trust, and productivity  
118 (Boone, 2010). These early discussions and strategies encourage bilateral communication and engagement.  
119 Of importance is that training for change has been linked to readiness for change, and is a product of a  
120 change-supportive environment (Singh, 2021), making it a critical component in change comfort and  
121 adoption.

## 122 2.4 Resistance to Change

123 Change implementation is often ad-hoc, reactive, and retrospective (Kho *et al.*, 2020). Resistance  
124 to change is well-studied and is known to result in project and change failure (Pahwa & Rangnekar, 2023).  
125 Some authors propose that it has less to do with strategic planning, and more to do with the emotions that  
126 an individual attaches to the change that determines the resistance (Kho *et al.*, 2020; Spence, 2020). Emotion  
127 intelligence is the capacity to identify and understand one's own and others' emotions (Spence, 2020). This  
128 collective understanding, or social collectivism, knowing what others are feeling has a ripple effect, and  
129 contrasts individualism which separates entities. The more individuals who support the change, the more  
130 others will follow and support the change (Spence, 2020). Unfortunately, the same is also true for resistance.  
131 To sustain the forward momentum of change and minimize resistant behaviours, employee morale should  
132 be monitored frequently with regular check-ins and open discussions, knowing that low morale is associated  
133 with resistant behaviours (Singh, 2021).

## 134 **2.5 Change as Useful and Usable**

135 What is change if it is not useful or useable? It would likely be seen as redundant, useless, and  
136 irrelevant. The usefulness of change lies in the end product and if it is useable to the end-users. Leveraging  
137 these change outputs (Ahmed *et al.*, 2019) in a future-forward approach (Kho *et al.*, 2020) is a key factor in  
138 change success. If the change is not useful, it likely won't be supported or sustained. Half of the variance  
139 in the perception of ease of use and usefulness can be explained by employee readiness (Ahmed *et al.*, 2019).  
140 The more ready a person is, the more useful they will find the change. Ensuring that change is useful and  
141 useable requires identifiable results, key outputs, and the inclusion of those affected in how these outputs  
142 are determined and measured (Mlekus *et al.*, 2018). The benefit of this is that those who are most affected  
143 by the change have an input in their work environment and the opportunity to participate in decision-  
144 making. This can create a positive collaborative environment where the change results are useful, useable,  
145 and self-sustain by those who are affected most.

146 In summary, humans are the biggest factor to consider when managing change. Change can be  
147 successful even in complex environments and uncertain times. The key is to follow strategic steps in  
148 planning, implementing, and evaluating the change process and transforming it into a newly improved state.  
149 A deep understanding of change and what drives individuals and creates meaning for them is essential. To  
150 add a layer of understanding to the change process, five factors on the change continuum have been  
151 outlined in the review of literature, namely, understanding change readiness, ensuring a favourable interface  
152 between humans and the environment, mitigating resistance to change, making sure change is useful and  
153 useable, and allowing sufficient time and resources for education and training. These factors have been  
154 identified in the published literature as the difference between change success and failure.

155 The purpose of this research is to determine which human factors drive change readiness in most  
156 individuals and measure the relationship between the seven human factors and change readiness. This has  
157 value for agents of change, change managers and project managers who strive to improve success in change  
158 management.

## 159 **3 Materials and Methods**

160 The researcher used a quantitative cross-sectional survey research design and a self-completed 35  
161 Likert scale questions validated survey (Kriegel & Brandt, 1997). The survey questions ask about  
162 participants' behaviours, how they respond to certain situations, and how they view themselves. Examples  
163 include: "I prefer the familiar to the unknown; I can't wait for the day to get started; I push myself to the  
164 max; I focus on my strengths, not my weaknesses." See supplementary material: change readiness survey.  
165 All questions were marked as mandatory to avoid non-response bias and missing data.

166 A convenience non-probability sampling method was used. The inclusion criteria for this study  
167 incorporated people all ages, geographic locations, and demographic categories. Participants required a  
168 good understanding of the English language to complete the survey, needed access to social media, and  
169 where required to read and complete an informed consent form. Exclusion criteria from participating in  
170 this study was submission of incomplete surveys. Anonymity and confidentiality were assured to encourage  
171 truthful responses. Checks for irrelevant content, data consistency, and filters for duplicates were used to  
172 validate the authenticity and assess for invalid or suspicious responses.

173 This survey was distributed on Facebook (Project Management Group, Change Management  
174 Groups, and Expatriate groups) and LinkedIn social media platforms for three weeks. The survey period  
175 of three weeks was calculated based on the likelihood of receiving a response. The ideal sample size for this  
176 study was calculated as being between 70 and 120 participant responses, and at least more than 106  
177 participants (LeBlanc & Fitzgerald, 2000), (Burmeister, 2012; Green, 1991). No incentives were offered in  
178 exchange for participation.

179 Descriptive data analysis was performed using Microsoft Excel Version 2209 and IBM® SPSS®  
180 Statistics 29, which included measures of central tendency, prevalence, and dispersion via graphs and tables.

181 Due to the non-random, non-probability nature of the data, inferential statistical analysis of correlation,  
 182 error, or confidence was not possible (Baker *et al.*, 2013; Hirschauer *et al.*, 2019; Trafimow *et al.*, 2018;  
 183 Williamson, 2003).

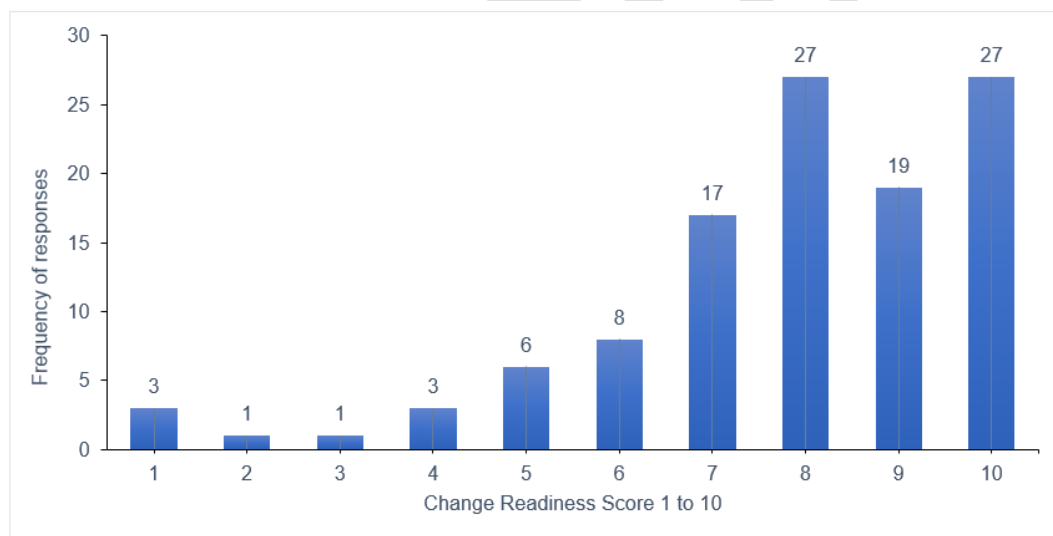
## 184 4 Results

185 Data collection occurred between June 27 and July 9, 2022, via eight social media groups targeting  
 186 187,094 individuals in total. 112 responses were collected, meeting the sample size requirements discussed  
 187 in the methodology section. There were no missing data, and all responses were accounted for, reducing  
 188 nonresponse bias.

### 189 4.1 Demographic Data

190 Demographic questions included sex, age, education level, and perceived readiness for change on  
 191 a scale of 1 to 10 (10 = completely ready for change, 1 = not at all ready for change). Change was defined  
 192 as the ability to continuously adapt to changes in a positive way.

193 Demographic details of the sample population showed that the majority of survey participants were  
 194 female (83.9%), between the ages of 18 and 25 (28.6%) and were master's prepared (42.9%). Only three  
 195 survey participants had no education, and only one was PhD prepared. Almost one-quarter of participants  
 196 reported that they were 10/10 change ready (24.1%), and another quarter reported 8/10 change readiness,  
 197 as illustrated in Figure 1. The average perceived change readiness score was 7.8/10 for this sample  
 198 population (N=112).



199 **Figure 1: Change Readiness Scores (N=112)**

200 The participant self-reported change readiness; ranked on a scale of 1 to 10.

201 The highest perceived change readiness scores were noted in females, in age groups 18 – 25 and  
 202 58 – 67 years, and those with Master's degrees. Females were on average more change ready than males,  
 203 and those aged 58-76 years were on average the most change-ready 9/10, with change readiness scores  
 204 decreasing with age. The average perceived change readiness score for level of education was the highest in  
 205 the 'other' education group, followed by 'trade/technical/vocational training' group.

206 The last question in the demographic data asked participants to select two of the seven human  
 207 factors that they thought drove them most in situations of change. Most participants selected optimism  
 208 (43%) and resourcefulness (40%) as their key drivers of change.

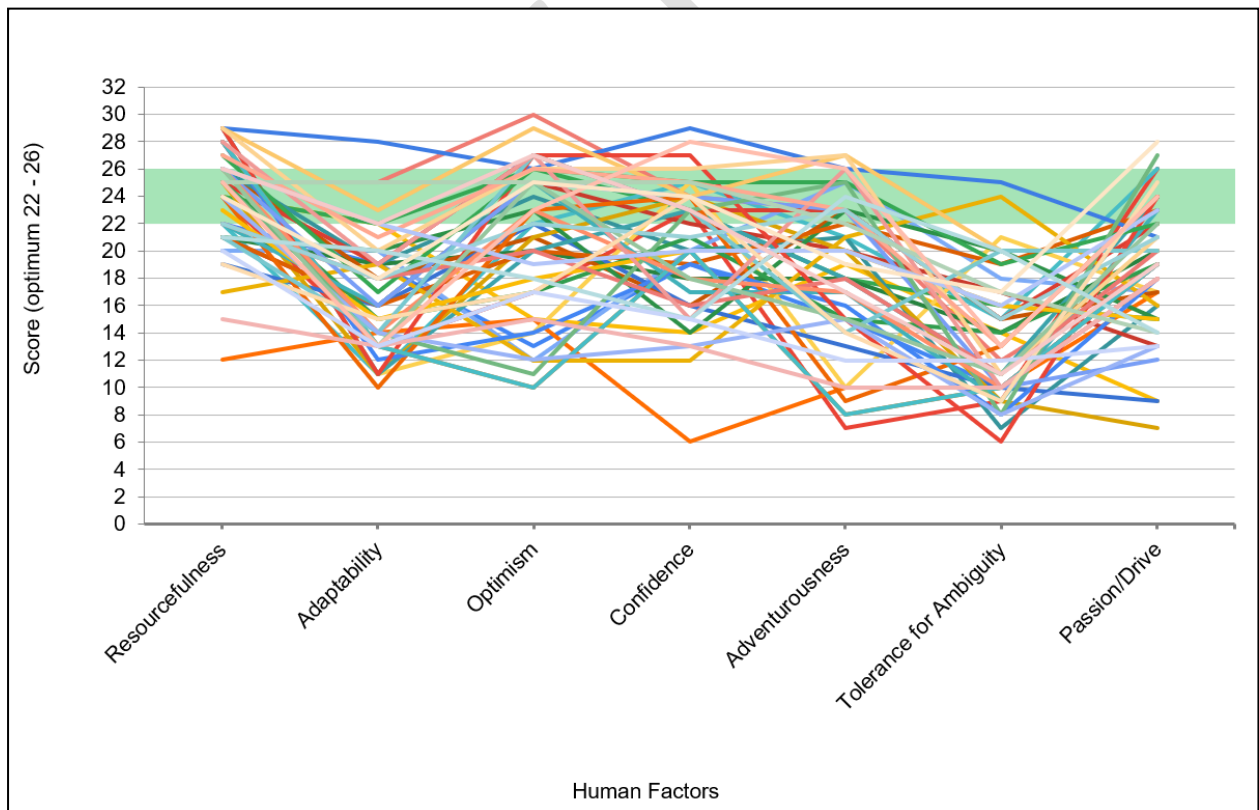
## 209 4.2 Descriptive Statistics

210 Descriptive data included human factors and change-ready scores. There were seven human factors  
 211 measured in this survey, namely resourcefulness, adaptability, optimism, confidence, adventurousness,  
 212 tolerance for ambiguity, and passion/drive. The single human factor mean that fell within the optimal range  
 213 of 22-26, indicating change readiness, was resourcefulness. Just outside of the optimal range were mean  
 214 confidence, followed closely by mean passion/drive and optimism. Much lower mean scores were seen in  
 215 adaptability, adventurousness, and tolerance for ambiguity. Table 1.

216 **Table 1: Human Factors Data**

Human Factor	N	Range	Minimum	Maximum	Mean	Mode	Median
Resourcefulness	112	18	12	30	22.8	25	23
Adaptability	112	19	9	28	15.9	13	15
Optimism	112	25	5	30	19.1	25	20
Confidence	112	23	6	29	20.0	20	20
Adventurousness	112	20	7	27	16.7	15	16
Tolerance for Ambiguity	112	19	6	25	13.4	11	13
Passion/Drive	112	22	7	29	19.5	17	19

217 All participant scores for each human factor were calculated and plotted on a graph to illustrate all  
 218 responses graphically in Figure 2. This line graph shows the variation in the 112 participant responses with  
 219 noticeable patterns of peaks and troughs following similar pathways. The majority of scores for each  
 220 category of human factor lie below the optimum 22 to 26 (change-ready) green-shaded area.



221 **Figure 21: Graphic Representation of Human Factor Scores from Participants (N=112)**

222 The trend of all participants' responses. The green area is the change-ready zone.

223 A subset analysis was conducted on participant responses that fell within the 22-26 range  
 224 (indicating change readiness). The human factors frequency data for this subset showed that 47.3% of  
 225 resourcefulness responses fell within the optimal range, and 34.8% of confidence and 30.4% of optimism  
 226 responses were also within this range, see Table 2. This indicated that in the total survey population, almost  
 227 half of the participants were driven in change by resourcefulness, and more than one-third were driven by  
 228 confidence.

229 **Table 2: Optimal Range Human Factors Subset (scores between 22-26)**

Optimal range 22-26	n (%)	Minimum	Maximum	Mean	Change ready mean
Resourcefulness	53 (47.3)	22	26	24.09	8.21
Adaptability	11 (9.8)	22	26	22.91	8.36
Optimism	34 (30.4)	22	26	24.12	8.29
Confidence	39 (34.8)	22	26	23.85	8.79
Adventurousness	20 (17.9)	22	26	23.75	8.45
Tolerance for Ambiguity	3 (2.7)	22	26	23.67	8.67
Passion/Drive	32 (28.6)	22	26	23.69	8.66

230 When the human factors of the survey data that fell within the optimal range were compared to  
 231 the human factors that participants thought drove them most (Table 3), the data differed. The participants  
 232 believed that optimism was their primary driving factor, while the survey calculated that resourcefulness  
 233 was the primary driving factor in change. In addition, participants perceived themselves to be more  
 234 optimistic and adventurousness, and less resourceful and confident than what the survey results indicated.

235 **Table 3: Self-reported Human Factor that was the Strongest Driver of Participant Change**

Human factor	Survey data in optimum range (22 – 26), n (%)	Self-reported driver of change n (%)
Resourcefulness	53 (47)	45 (40)
Adaptability	11 (10)	38 (34)
Optimism	34 (30)	48 (43)
Confidence	39 (35)	22 (20)
Adventurousness	20 (18)	33 (29)
Tolerance for Ambiguity	3 (3)	7 (6)
Passion/Drive	32 (29)	38 (34)

### 236 4.3 10/10 Change Ready Participants Data

237 The data were further sorted into a sub-group of only those participants who rated themselves as  
 238 10/10 change ready and whose human factors fell within the optimal range of 22 to 26. This subgroup of  
 239 27 was studied to explore what human factors drove them to be so well adapted to change. In this sub-  
 240 group, 93% of participants were female, 30% were between the ages of 18 and 25 years, and a further 30%  
 241 were between 58 and 67 years old. 33% had a master's degree and 30% had a bachelor's degree.

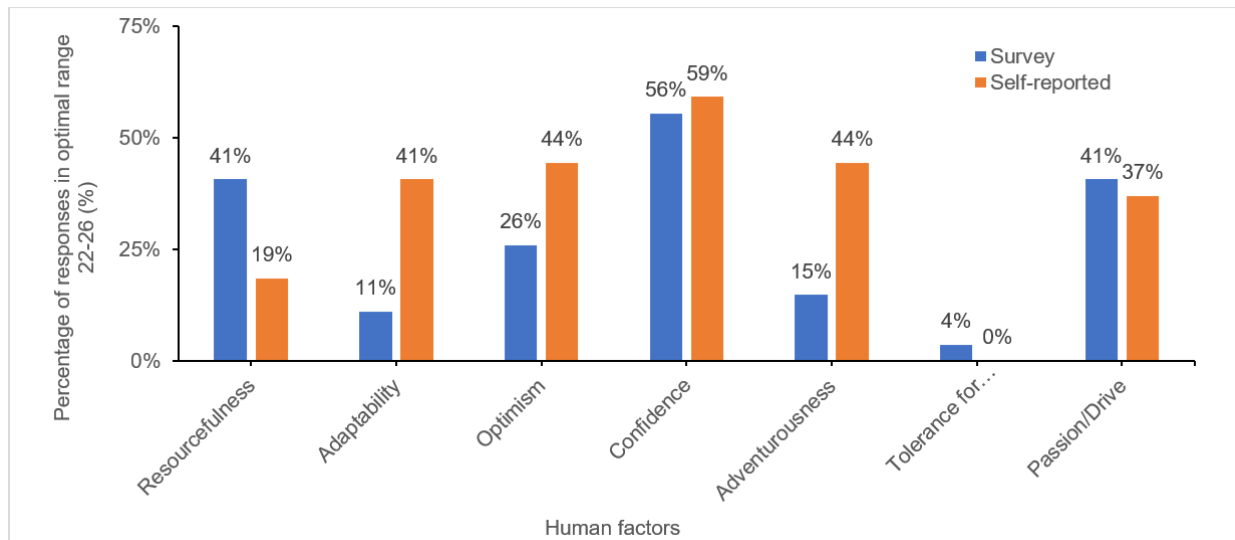
242 **Table 4: Human Factors Driving the most Change Ready Participants**

Human Factor	n (%)	Range	Minimum	Maximum	Mean
Resourcefulness	27 (24.1)	11	19	30	24.81

Adaptability	27 (24.1)	16	9	25	15.37
Optimism	27 (24.1)	21	9	30	19.33
Confidence	27 (24.1)	10	17	27	22.07
Adventurousness	27 (24.1)	19	8	27	16.96
Tolerance for Ambiguity	27 (24.1)	16	6	22	13.04
Passion/Drive	27 (24.1)	13	16	29	21.52

243 The average number of change-ready factors that drove these individuals were more than two times  
 244 higher than the sample population (3.50 versus 1.71 factors for each individual). Almost all were female  
 245 (92.6%) and 60% had a bachelor's or master's degree. In this group, two human factors' means fell within  
 246 the optimal range, resourcefulness and confidence, as seen in Table 4.

247 When comparing the perceived human factor drivers of change to those calculated from the survey  
 248 to be within the optimal range, there were also differences, as seen in Figure 3. However, the most reported  
 249 human factor that drove these participants was confidence, the same as what the survey data calculated.



250 **Figure 3: Perceived Versus Calculated Human Factors that Drive Change-ready Participants**

251 Comparison between self-reported human factors data and survey human factors data

252 Change-ready participants, however, reported themselves to be much more driven by  
 253 adventurousness, optimism, and adaptability, and less by resourcefulness as the survey calculations revealed.  
 254 These change-ready participants also had zero tolerance for ambiguity and the survey calculations revealed  
 255 that they were less adaptable and adventurousness than they perceived.

## 256 5 Discussion

257 This research sought to determine which human factors drive people to be change-ready and to  
 258 what extent. The goal was to generate a greater understanding of human behaviour in change management  
 259 to increase the chances of change success.

260 In this survey population of 112 participants, most perceived themselves to be more ready for  
 261 change, noting an average self-reported change readiness score of 7.8/10. This research sample was sourced  
 262 from social media groups where many participants were members of ex-pat and academic groups who may  
 263 have experienced a recent/imminent major life change, which may have made them more open and ready  
 264 for change.

265 Those participants who ranked themselves as being 10/10 change ready were highly likely to be  
 266 females, in age groups 18 – 25 and 58 – 67 years, and those with Master's degrees. Across all change



267 readiness levels, females were on average more change-ready than males, and those aged 58-76 years were  
268 on average the most change-ready 9/10, with change readiness scores decreasing with age.

269 While this sample comprised of a majority female participants, it has been previously documented  
270 that there are sex differences in change readiness and resistance (Change Catalysts, 2015; Clemente, 2022;  
271 Coughlin, 2019; Rosca *et al.*, 2020; United Nations, 2022; Vally, 2005). When benefits or payoffs aren't  
272 apparent, or change takes time and energy, males tend to display a higher level of resistance to change. In  
273 contrast, if goals are harder to meet, females resist change (Vally, 2005).

274 Women are well known to be highly adapted to change. Companies, where women are leaders,  
275 perform better financially, generating up to 50% higher profits (Clemente, 2022). Women in leadership are  
276 drivers of solutions, according to the UN Secretary-General, who goes further to state that climate action  
277 will not succeed without women (United Nations, 2022). Women appear to play the role of change-makers,  
278 shifting nimbly to maintain the balance between the competing tensions, and ultimately becoming change  
279 masters and drivers of change solutions (Coughlin, 2019). Furthermore, irrespective of sex, adopting a  
280 transformational leadership approach can increase organisational change commitment and efficacy in  
281 healthcare settings (Mekonnen & Bayissa, 2023).

282 The average age of change readiness varied in this sample, especially for those who were most  
283 change-ready. Both younger and older groups ranked themselves 10/10, but on average, change readiness  
284 decreased with age across the whole sample. There is very little information published about age-related  
285 change readiness. One study noted that contrary to stereotypes, the older the age of an individual, the less  
286 resistant they are to change (Kunze *et al.*, 2013). This pattern was confirmed by Mardhatillah (2020), who  
287 also found that the older a participant was (over age 50 years), the more ready for change they were  
288 (Mardhatillah & Rahman, 2020). This is consistent with the results of this study, showing 10/10 change-  
289 ready scores in the age group 58 – 67 years.

290 However, what was different in this study was that an additional younger change-ready group was  
291 identified. Those participants between the ages of 18 and 25 also indicated that they are 10/10 ready for  
292 change, which is an emerging generation of young adults, often known as millennials. This generation  
293 exhibits unique approaches and has high expectations. Supporting these young change-ready individuals by  
294 leveraging their confidence, resourcefulness, and digital savviness could be of advantage in actioning  
295 change. Of interest, evidence has shown that self-efficacy and personal valence facilitate digital change  
296 readiness (Haffar *et al.*, 2023); traits that have been found in youth (Kowalski *et al.*, 2014).

297 The demographic data showed that the higher the education level, specifically those with Master's  
298 degrees, showed the highest change readiness scores (10/10). Similarly, other studies have shown the same.  
299 It has been documented that higher academically educated individuals are also more ready for change  
300 (Mardhatillah & Rahman, 2020) and irrespective of age, show higher readiness for learning and  
301 development (Bartosiewicz *et al.*, 2019).

302 This research also confirms the theory by Ciccotti (2014) and Sinek (2019), that only two human  
303 factors are key drivers of change at any one time in the majority of individuals (Ciccotti, 2014; Sinek, 2019).  
304 In the larger sample, an average of 1.7 human factors drive change at any one time. In the most change-  
305 ready participants subset, this number increased to 3.5 factors driving them to change at any one time. This  
306 could indicate that the more human factors an individual has developed to help them cope with change,  
307 the more ready for change they will be. It is unknown how these factors are developed, the assumption  
308 would be over time, noting the average age of the change-ready groups, and with higher education. Future  
309 research is recommended to explore this further.

310 In the 10/10 change-ready group, there was less discrepancy between the human factors that the  
311 survey found drove participants in change, and that which the participants self-reported to drive them. It  
312 appears that individuals who use more human factors and are change-ready have a more accurate  
313 perception, and greater awareness, of what drives them to change. Being more attuned to what factors assist  
314 them through times of change is an asset, allowing them to engage different human factors at different  
315 times to meet their needs and manage the disruption.

316 These human factors, resourcefulness and confidence, could therefore be seen as key behavioural  
 317 performance indicators of change readiness, which could help to focus change management strategies on  
 318 specific human factors with the highest likelihood of influencing change success. Resourceful people are  
 319 self-assured, able to adapt well to new situations and think creatively while keeping an open mind.  
 320 Resourcefulness can be nurtured by organizations and leaders through shared collaboration, partnerships,  
 321 venturing growth and shared governance. Creating an environment of interdependence and support  
 322 enhances change success (Deng *et al.*, 2023). Confident people feel sure about themselves and are  
 323 realistically and securely aware of their abilities. They accept and trust themselves to have control in their  
 324 life, know their strengths and weaknesses, and can handle criticism well. Building confidence in individuals  
 325 involves building knowledge and/or building experience. The more confidence, the more willing an  
 326 individual is to participate. Other research has identified intentional behaviour as a driving factor in change  
 327 readiness (Pahwa & Rangnekar, 2023).

328 Using this human factors knowledge, organizations can build change readiness by clearly  
 329 communicating change intentions (Hubbart, 2023) and culturing an environment of teamwork (Ellis *et al.*,  
 330 2023). Change managers can then position the most change-ready individuals in strategic positions within  
 331 the organization to ensure the most successful, cost-effective, on-time, and on-target approach to change  
 332 management.

333 Change is part of our everyday lives. The pace of change has resulted in the need to create and  
 334 integrate innovative solutions and strategies to effectively manage and promote progressive change. We  
 335 know that human factors influence change, either driving it forward or resisting it. If change is managed  
 336 correctly, positive drivers of change can act as catalysts allowing for earlier adoption and change realization.  
 337 This requires an awareness of the interaction between humans and the environment, how this space may  
 338 affect change readiness and an understanding of how education and training can play a role in mitigating  
 339 resistance to change.

## 340 6 Practical Implications

341 Using the results from this survey and focusing purely on the five resourcefulness and five confidence  
 342 questions taken from the original change readiness survey, a score could be generated that would assess  
 343 only resourcefulness and confidence as the most important predictors of change readiness. This transforms  
 344 a 35-question survey into a 10-question mini-survey that would be easier to administer at intervals during  
 345 the project timeline, illustrated in Table 5.

346 **Table 5: A Focused Assessment for Change Success**

Circle the number beside each statement that reflects how accurately the statement describes you.		
1 = Not Like Me      6 = Exactly Like Me		
1.	I rarely second-guess myself	1 2 3 4 5 6
2.	If something's broken, I try to find a way to fix it	1 2 3 4 5 6
3.	I can make any situation work for me	1 2 3 4 5 6
4.	When I get stuck I'm inclined to improvise solutions	1 2 3 4 5 6
5.	I can handle anything that comes along	1 2 3 4 5 6
6.	When people need solutions to problems, they call on me	1 2 3 4 5 6
7.	I focus on my strengths, not my weaknesses	1 2 3 4 5 6
8.	My strength is to find ways around obstacles	1 2 3 4 5 6
9.	My trust in my abilities is unshakable	1 2 3 4 5 6
10.	I look in unusual places to find solutions	1 2 3 4 5 6

347 Legend: Resourcefulness, white-shaded questions; Confidence, grey-shaded questions.

348 The optimal range for change readiness for each human factor would again be between 22 and 26.  
349 This condensed version of the broader survey could be more easily integrated into digital surveys and  
350 automated via existing platforms and tools.

351 Regularly assessing change readiness using this 10-question focused change readiness survey could  
352 assist individuals, leaders, and organizations to predict if a project is feasible, the chances of change success,  
353 and determine what kinds of support may be needed. Research has confirmed that self-assessment readiness  
354 tools and readiness frameworks are helpful in decision-making and assist with change adoption (Chen *et al.*,  
355 2023; Gabutti *et al.*, 2023). By identifying the strengths and weaknesses of the change process using this  
356 survey ahead of time, a future-focused approach is facilitated, mitigating challenges before they begin. The  
357 assessment should also continue during the project, to track the readiness of impacted groups to adopt the  
358 changes needed to ensure success.

359 The result should produce a snapshot of change readiness with minimal effort and inconvenience  
360 and help to position the most change-ready individuals in roles of critical importance. While building  
361 confidence and resourcefulness in the remaining individuals using strategies already discussed in this study.

## 362 **7 Conclusion**

363 This study has deconstructed change readiness down to the individual human factors as the starting  
364 point for greater understanding. The researcher has explored the individual determinants of change  
365 readiness by describing the effect of seven human factors on change readiness. This research confirms a  
366 positive relationship between two core human factors and change readiness, namely resourcefulness and  
367 confidence. Well-planned change management takes a strategic approach to focus the efforts on the  
368 changes that are the most relevant, most valuable, and with the highest likelihood of success. This ensures  
369 both individual and organizational change goals can be realised. The individual benefits from reduced  
370 change fatigue, clear and transparent communication, and increased input. The organization benefits from  
371 an engaged workforce that reaches critical mass quicker and sustains the change in the long term. At the  
372 core, the targeted approach to change success is simply understanding the human factors that drive change.

## 373 **8 Declarations**

### 374 **8.1 Study Limitations**

375 Limitations of this study include the research design, the method, distribution, and sampling. Cross-  
376 sectional survey studies are useful in measuring the prevalence of a concept in study participants at the same  
377 time. However, since the data is collected at one point in time, it is not possible to determine a causal  
378 relationship from cross-sectional data. Surveys are dependent on self-reported data, can be flawed by non-  
379 response, and questions may be interpreted differently than intended by the researcher. This research used  
380 convenience non-probability sampling methods, meaning, the sample may not represent the entire  
381 population and is therefore non-random. Other limitations include selection bias, exclusion of a large  
382 percentage of the population, few controls, and generally high nonresponse rate. Lastly, CAPTCHA or  
383 human verification mechanisms were not used in this study.

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## 391 8.4 Competing Interests

392 The author has no competing interests to declare.

## 393 8.5 Informed Consent and Ethics

394 All participants in this research study provided informed consent and data were collected anonymously.  
395 Research ethics review and approval (No. 202184025) for this study were granted by LIGS University,  
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