

1 **Farmers' Quality of Life Prediction under Climate Variability in**
2 **Kermanshah Province: The Role of Psychological Coping Strategies**

3
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5 **ABSTRACT**

6 The present study investigates the impact of predicting variables specifically hexagonal capitals,
7 place attachment, and the benefiting of governmental services on the quality of life and
8 psychological coping strategies of Iranian farmer families facing climate variability. This research
9 is significant as it addresses the pressing challenges that these families encounter due to changing
10 climate conditions. Utilizing a survey methodology, data with Cochran's formula were collected
11 from 270 farmer families living in rural villages through a stratified sampling method and analyzed
12 using structural equation modeling. The reliability of our questionnaire was assessed using
13 Cronbach's alpha, with results indicating acceptable reliability ($\alpha = 0.60 - 0.80$). The findings
14 indicate that the proposed model explains 69% of the variance in quality of life under conditions
15 of climate variability. Notably, hexagonal capitals and place attachment were found to have a
16 positive and significant effect on both psychological coping strategies and the overall quality of
17 life of these families. Based on these results, it is recommended that specific interventions be
18 implemented to reinforce farmers' capitals, improve rural infrastructure and provide psychological
19 support, thereby enhancing the resilience of farmer families against climate variability.

20 **Keywords:** Benefiting of governmental services, Hexagonal capitals, Place attachment,
21 Psychological coping strategies, Structural equation modeling.

22
23 **1. INTRODUCTION**

24 Climate variability is one of the most complicated and critical challenges in today's world
25 (Keshavarz *et al.*, 2014; Bijani *et al.*, 2022), which has received global attention due to its
26 multidimensional effects (Aryal and Marenaya, 2021). Forecasts show that the effects of climate
27 variability will cause a three to six percent decrease in global food production and a 28% decrease
28 in GDP by 2050. Farmers, as the most vulnerable group to climate variability, are always
29 endangered due to their dependence on natural resources and rainfed agriculture to fulfill their

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30 needs as long as they have crops in the farms (Opiyo *et al.*, 2015). Since the quality of life relies
31 on the type of job of people (López-Ruiz *et al.*, 2021), it is required to pay attention to this issue
32 among farmer families, because this group, which constitutes the majority of the population of
33 developing countries, plays a crucial role in economic growth (Ma *et al.*, 2021) and the fourth goal
34 of sustainable development of the United Nations emphasizes the importance of quality of life
35 (Babyenda *et al.*, 2021) according to which farm families are not exception. This environmental
36 threat is also associated with stressful factors (Guillard *et al.*, 2021), as due to climate variability
37 and high stress in the work environment, agricultural work can lead to many physical and
38 psychological injuries for farmers (Anderson *et al.*, 2021). Under this condition, psychological
39 coping strategies can be the response of farmer families to stressful conditions caused by climate
40 variability (Guillard *et al.*, 2021) and influence their quality of life (Lazarus and Folkman, 1984).
41 It is necessary to better understand the psychological mechanisms related to the adoption of
42 psychological coping strategies by farmer families, so that the investigation of these conditions
43 under the impact of cognitive responses such as capital, place attachment and the access of
44 government services as determinants of the quality of life of farmer families is of great importance.
45 The present study was aimed to investigate the quality of life of farmer families in Kermanshah
46 province encountering the stressful conditions of climate variability in Iran.

47 As the investigation of behavioral sciences is critical in the field of quality of life, two theories
48 including person-environment and interactive model of stress and psychological coping have been
49 taken into consideration in this study. This theory investigates the interaction between individual
50 characteristics and the environment, the importance of place attachment (Chaudhury, 2003) and
51 perceive stress and its effect on quality of life (Edwards and Cooper, 2013). The theory of the
52 interactional model of stress and psychological coping developed by Lazarus and Folkman (1984)
53 also considers stressful situations as a balance between the individual and the desires perceived in
54 the environment; and claims that in stressful situations individuals adopt psychological coping
55 strategies that influence their quality of life (Mohan *et al.*, 2023; Parreira and Mouro, 2023). The
56 quality of life is the subjective assessment of different parts of people's lives based on their required
57 standards (Tang *et al.*, 2020). Meeting the basic-material needs of farmers stimulates the
58 motivation for spiritual needs (quality of life) (Liang *et al.*, 2022). The results of a study done by
59 Costanza *et al.* (2007) showed that farmers' access to livelihood (objective dimension) does not
60 enhance their quality of life, and simultaneous attention to other subjective aspects of quality of

61 life, along with the objective dimension are of great importance. This finding underscores the
62 complexity of quality of life assessments, suggesting that a holistic approach is essential for
63 understanding the multifaceted nature of well-being among farming communities. Climate
64 variability affects farmers' livelihood (Tahiru and Legon, 2019), leading to increased vulnerability
65 and necessitating adaptive strategies. Farmer families respond to the current and future changes of
66 climate using the five livelihood capitals (natural, human, physical, social and financial capitals)
67 so that they can take some strategies to alleviate the effects of climate variability (Jezeer *et al.*,
68 2019). This multifaceted approach is essential, as each type of capital contributes uniquely to
69 adaptation. In the present study, psychological capital has been added due to its effective
70 enhancement of other types of livelihood capitals, recognizing that mental health plays a crucial
71 role in coping with environmental stressors. Balogun (2016) explains that the mental condition
72 and behavioral responses of people can be affected by the surrounding environment. Psychological
73 coping strategies are behaviors that are chosen as reactive responses in encountering the stressful
74 conditions of climate variability to control stress and negative emotions (Lazarus and Folkman,
75 1984). So, effective coping mechanisms not only mitigate distress but also foster a sense of agency
76 among farmers, enabling them to engage more actively in adaptive practices. Furthermore,
77 integrating psychological capital into the framework allows for a deeper understanding of how
78 emotional resilience interacts with other livelihood capitals, ultimately influencing the overall
79 quality of life for farming families in the face of climate challenges. Recent studies have
80 emphasized that psychological well-being is closely linked to effective coping mechanisms in rural
81 settings. Researchers state that choosing psychological coping strategies can be an important
82 psychological determinant of quality of life (Mohan *et al.*, 2023). On the other hand, livelihood
83 capitals influence the adoption of psychological coping strategies of farming families (Fitritinia
84 and Matsuyuki, 2023). For instance, access to social and financial capital can provide the necessary
85 support systems and resources that enable farmers to implement effective coping strategies.
86 Understanding these psychological mechanisms is critical for investigating how cognitive
87 responses such as capital, place attachment, and access to governmental services affect the quality
88 of life of farmer families. Furthermore, recognizing the interplay between these factors can inform
89 targeted interventions aimed at enhancing mental health and overall quality of life in rural
90 agricultural communities. This holistic understanding is essential for developing sustainable

91 agricultural practices that not only address economic needs but also promote mental health and
 92 quality of life among farmers.

93 As one of the psychological-social mechanisms, place attachment explains the relationship
 94 between the person and nature and its impact on the quality of life in the conditions of climate
 95 variability (Junot *et al.*, 2018). This emotional bond to one's environment can significantly
 96 influence how individuals perceive and respond to climate-related challenges. The results of the
 97 researches on place attachment and quality of life indicated that perceived physical and socio-
 98 environmental qualities are predictors of quality of life (Marcheschi *et al.*, 2015). Farmers' access
 99 to government services are two key important factors (Jha and Gupta, 2021) for their exposure to
 100 climate variability and the adoption of psychological coping strategies by farmer families. Access
 101 to these services not only provides essential resources but also enhances farmers' sense of security
 102 and community support, which can further strengthen place attachment. Di Falco *et al.* (2012)
 103 found that farmers who have better access to financial and educational services are more likely to
 104 adapt to the environment. Finally, the conceptual framework and research hypotheses are
 105 presented in Fig. 1. This framework investigates the relationship between independent variables
 106 (hexagonal capitals, place attachment and benefiting of governmental services) and psychological
 107 coping strategies and the quality of life of farmer families.

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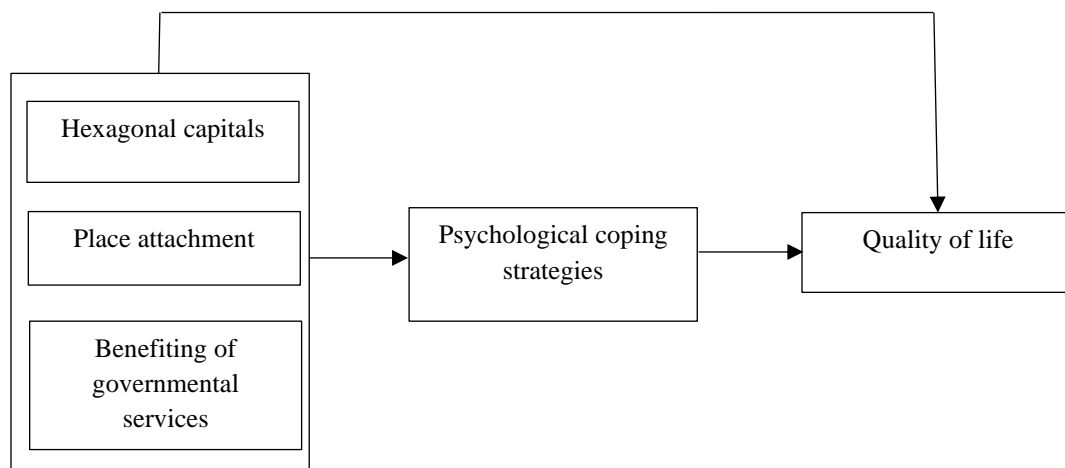
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Figure 1. Conceptual framework of research, Hypothesis 1. Hexagonal capitals will positively influence quality of life, Hypothesis 2. Place attachment will positively influence quality of life, Hypothesis 3. Benefiting of governmental services will positively influence quality of life, Hypothesis 4. Psychological coping strategies will positively influence quality of life, Hypothesis 5. Psychological coping strategies will mediate the relationship between hexagonal capitals and quality of life, Hypothesis 6. Psychological coping strategies will mediate the relationship between place attachment and quality of life, Hypothesis 7. Psychological coping strategies will mediate the relationship between benefiting of governmental services and quality of life.

122 **2. MATERIALS AND METHODS**

123 The present study was performed in Kermanshah province located in the west of Iran with an
124 area of 24,640 square kilometer (Statistical Center of Iran, 2013). The studied population in the
125 present study N= 132816. The data were collected from the households of rural families in this
126 province. The sample size was calculated using Cochran's formula and stratified sampling method
127 as 270. The studied strata were selected based on three layers according to the intensity of climate
128 variability (moderate, severe, and very severe) in Kermanshah Province, to ensure a representative
129 sample across different segments of the population. So, from each stratum, three rural districts
130 (Dehestan) were randomly selected, and subsequently, three villages from each district were
131 chosen. Convergent validity was extracted by the average variance index and divergent validity
132 was evaluated using Fornell-Larker criterion. The reliability of the questionnaire was calculated
133 by calculating Cronbach's alpha ($\alpha= 0.60 - 0.80$) and composite reliability. Researches Djourova
134 et al. (2019) and Ghorbani et al. (2021) were applied to measure the capital variable farmer
135 families. The hexagonal capitals variable encompasses six forms of capital (natural, human,
136 physical, social, financial, and psychological) that influence farmers' coping strategies and quality
137 of life. Place attachment defined as the emotional bond between individuals and their environment,
138 which affects their quality of life. The place attachment variable of Brown and Raymond (2007)
139 was used for operationalization, which included the components of place identity and place
140 dependence. Benefiting from governmental services, refers to the accessibility and utilization of
141 governmental resources and support services available to farmer families. To operationalize the
142 benefiting from governmental services, this variable, includes the components of educational
143 support and financial support, was measured as researcher-built. Psychological coping strategies,
144 behavioral responses adopted by individuals to manage stress and emotional challenges related to
145 climate variability. Psychological coping strategies were measured according to the study of
146 Carver et al. (1989) and included the components planning, religion, instrumental social support,
147 emotional social support, active coping, restraint coping, suppression of competing activities,
148 reinterpretation and acceptance. In the present study and according to previous studies,
149 psychological coping strategies as a mediating variable (Homburg *et al.*, 2007; Ojala and
150 Bengtsson, 2019) link other research variables to quality of life. Quality of life, measured as a
151 subjective assessment of various aspects of life based on individual standards. Quality of life was
152 measured as the dependent variable of the research based on the study of Hills and Argyle (2002)

153 with components well-being, self-respect, contentment and satisfaction with life. All variables of
 154 the questionnaire were scored using a five-point Likert scale. Structural equation modeling (SEM)
 155 was employed in two sections of measurement and structural models to test research hypotheses
 156 using Smart PLS3 software (Hair *et al.*, 2011).

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 158 **3. FINDINGS AND DISCUSSION**

159 **3.1. Descriptive statistics**

160 Most of the farmer families were male (78.8%) and the rest were female (12.2%). The majority
 161 of respondents were married in terms of marital status (83%) and the remaining 17% were single.

162 Descriptive statistics and correlation matrix between the variables of the proposed research
 163 model are presented in Table 1. The findings of the correlation analysis indicate that there is a
 164 positive and significant correlation between all the variables of the study, except for benefiting of
 165 governmental services, with the quality of life of families. The capitals variable showed the highest
 166 correlation with the quality of life of respondents under the conditions of climate variability and
 167 this was consistent with findings of Fitritinia and Matsuyuki (2023). The presence of a significant
 168 correlation between the place attachment variable and the quality of life is consistent with the
 169 findings of Phillips and Murphy, (2021) and inconsistent with the results of Ramkissoon *et al.*
 170 (2013). The absence of correlation between benefiting of government services and the quality of
 171 life was inconsistent with the studies of Qi *et al.* (2023). There is a significant correlation between
 172 psychological coping strategies and the quality of life of respondents, and it is consistent with the
 173 findings of Holubova *et al.* (2017) and the study done by van de Van de wiel *et al.* (2021).

Table 1. Descriptive statistics and correlation matrix variables.

Variables	M	SD	1	2	3	4	5
1. Quality of life	102.90	17.61	-	0.83**	0.50**	0.08	0.42**
2. Hexagonal capitals	0.51	0.12		-	0.46**	0.16**	0.46**
3. Place attachment	43.00	7.69			-	0.13*	0.27**
4. Benefiting of governmental services	28.03	9.48				-	0.16**
5. Psychological coping strategies	166.05	30.12					-

Note: M: Mean, SD: Standard deviation; *p < 0.05; **p < 0.01

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175 **3.2. Measurement model evaluation**

176 Before the implementation of the measurement model of the study, first the normality of the
 177 statistical data between the variables to enter the analysis process with the values of skewness
 178 ($|Skw| < 2$), kurtosis ($|Krt| < 7$), tolerance ($0 < \text{Tolerance} < 1$) and variance inflation ($VIF < 10$) were
 179 examined (Domingues *et al.*, 2021). Results normality distribution of the samples in Table 2
 180 indicate the normality and the absence of the collinearity problem between the research variables.

Table 2. The statistical results are related to the normality variables.

Variables	Skw	Krt	Tolerance	VIF
1. H.C	0.21	- 0.59	0.86	1.15
2. Ph.C	0.46	- 1.00	0.90	1.10
3. F.C	0.24	0.12	0.71	1.40
4. N.C	- 0.28	- 0.38	0.75	1.31
5. S.C	- 0.33	- 0.34	0.49	2.01
6. Ps.C	- 0.22	- 0.28	0.52	1.92
7. P.A	- 0.83	1.21	0.68	1.46
8. B.G.S	0.37	0.12	0.95	1.05
9. Ps.C.S	0.20	2.67	0.72	1.37
10. QoL	- 0.49	0.02	-	-

Note: Skw: Skewness; Krt: Kurtosis; H.C: Human capital; Ph.C: Physical capital; F.C: Financial capital; N.C: Natural capital; S.C: Social capital; Ps.C: Psychological capital; P.A: Place attachment; B.G.S: Benefiting of governmental services; Ps.C.S: Psychological coping strategies; QoL: Quality of life.

181 Then, composite reliability and convergent validity indicators were examined. Composite
 182 reliability ($CR \geq 0.6$) for research variables showed good internal consistency. Convergent validity
 183 was examined by calculating the average variance extracted ($AVE \geq 0.5$). The results of Table 3
 184 showed that all variables (except capitals) have good convergent validity. In capitals variable, AVE
 185 higher than 0.3 is acceptable due to composite reliability that is higher than 0.6 (Fornell and
 186 Larcker, 1981); and, convergent validity is verified. The factor loadings of all measured variables
 187 (except for physical capital which was eliminated) is higher than the acceptable value of 0.4 (Table
 188 3).

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Table 3. Results of the measurement model.

Variables	CR	AVE	Factor	Factor Load
Ca	0.71	0.35	H.C	0.42
			F.C	0.47
			N.C	0.44
			S.C	0.78
			Ps.C	0.74
P.A	0.89	0.81	P.I	0.93
			P.D	0.86
B.G.S	0.72	0.58	E.S	0.95
			F.S	0.51
Ps.C.S	0.90	0.51	Pl	0.81
			Rel	0.64
			I.S.S	0.83
			E.S.S	0.75
			A.C	0.72
			R.C	0.75
			S.o.C.A	0.61
			Re	0.70
			Acc	0.44
			QoL	0.91
S.R	0.86			
Co	0.86			
S.w.L	0.86			

Note: Ca: Capitals; P.I: Place identity; P.D: Place dependence; E.S: Educational support; F.S: Financial support; Pl: Planning; Rel: Religion; I.S.S: Instrumental social support; E.S.S: Emotional social support; A.C: Active coping; R.C: Restraint coping; S.o.C.A: Suppression of competing activities; Re: Reinterpretation; Acc: Acceptance; W.B: Well-being; S.R: Self-respect; Co: Contentment; S.w.L: Satisfaction with life.

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197 In order to examine the divergent validity, the Fornell-Larker criterion was applied and
198 confirmed (Table 4).

Table 4. Results of the discriminant validity.

Variables	Discriminant validity				
	1	2	3	4	5
B.G.S	0.76				
P.A	0.30	0.90			
Ps.C.S	0.34	0.44	0.71		
Ca	0.29	0.49	0.50	0.59	
QoL	0.30	0.52	0.55	0.80	0.84

199 **3.3 Structural model evaluation**

200 Then, the path analysis method (structural model evaluation) was used. To check the structural
201 model, it is required to check and confirm the fit of the research model. The findings of the fit of
202 the model in Table 5 indicate that although the NFI index does not show a good fit, other
203 measurement such as standardized root mean square residual (SRMR) confirmed an appropriate
204 fit for our model.

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Table 5. Structural model fit indices.

Fitness index	Saturated value	Estimated value	Acceptable value
SRMR	0.09	0.09	< 0.10
NFI	0.66	0.66	> 0.90
d_ ULS	2.17		p > 0.05
d_ G	0.68		p > 0.05

Note: SRMR: Standardized root mean square residual; NFI: Normal fit index; d-ULS: Squared euclidean distance; d-G: Geodesic distance.

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207 **3.4. Research hypotheses test**

208 The results of this section in Table 6 indicate that the variables of the research could explain 69%
 209 and 33% of the variance in the quality of life of respondents under the conditions of climate
 210 variability and psychological coping strategies. Evaluating the predictive power of the structural
 211 model by examining the predictive values, indicate the high power of the model (0.46%) in
 212 predicting the quality of life and the average predictive power of the model (0.15%) for
 213 psychological coping strategies. The importance of each path coefficient was evaluated using the
 214 bootstrap method (Hair *et al.*, 2021). According to the research of Hair *et al.* (2011), at the 90%
 215 confidence interval, the acceptable T statistic should be higher than 1.65. If the T statistic is
 216 estimated less than the mentioned value, the non-significant paths do not support the proposed
 217 causal relationship and the research hypothesis is rejected.

218 The results showed that capitals variable has the greatest impact on the quality of life of the
 219 studied respondents ($\beta= 0.66$, $p< 0.001$). This finding demonstrates importance and role of capitals
 220 in predicting the quality of life compared to other variables. Thus, the first hypothesis the research
 221 is supported, which is emphasized by previous studies (Alam *et al.*, 2017; Guo *et al.*, 2022).
 222 Enhancing the quality of life of farming families requires investigating the role of one or more
 223 capitals together (Suárez *et al.*, 2022). Some studies showed that the lack of access to capital under
 224 the conditions of climate variability has a negative impact on the quality of life (Borah *et al.*, 2023).
 225 In a study, Subekti and Sunartomo (2019) showed that the lack of quality of life among farmers is
 226 due to their dependence on capitals. Hence, it was found that in the studied population, capitals
 227 had a significant impact on the quality of life of farmer families. The obtained result is in line with
 228 the researches of Savari and Moradi (2022) and Gunn *et al.* (2012) that fulfilling the needs of
 229 farmers can enhance their quality of life.

230 According to the structural analysis results, place attachment is effective on quality of life ($\beta=$
 231 0.12, $p< 0.001$). Thus, the second hypothesis of the research is supported. The obtained finding is

232 consistent with various studies (Joaquim Araújo de Azevedo *et al.*, 2013; Junot *et al.*, 2018;
233 Dlamini and Tesfamichael, 2021). Perhaps, the place attachment of the families to the village
234 makes them not intended to migrate even if they can do it, because migration leads to discomfort
235 experience, and paying attention to how the migration takes place affects the quality of life.
236 Another reason for this finding may be that farmer families usually are not inclined to social-
237 emotional support and adaptation to the new society. For example, research shows that even
238 though the coastal areas population is aware of the exposure to this critical risk, they attempt to
239 preserve their local communities (Baluku, 2023). Adger *et al.* (2013) stated that families may be
240 forced to migrate even if they adapt to climate variability. Also, the result of place attachment is
241 the reluctance of residents to leave the environment and migrate from the village, which is related
242 to the strong emotional attachments of families to the place (Ellis and Albrecht, 2017); a
243 connection that even the information and training of extension systems and other institutions can
244 not destroy it (Domingues *et al.*, 2021). The farm environment is important as a place for homes
245 and families and affects their quality of life under climate variability conditions (Joaquim Araújo
246 de Azevedo *et al.*, 2013). Place attachment creates empathy so that place-dependent people
247 experience a higher understanding of meaning and purpose in life compared to non-attached
248 individuals (Junot *et al.*, 2018). This causes a higher feeling of cohesion among families, stronger
249 social and neighborhood bonds, more interest in family members and, as a result, an increase in
250 their quality of life (Dlamini and Tesfamichael, 2021).

251 In the third research hypothesis, there was no significant relationship between the variable of
252 benefiting of government services and quality of life ($\beta= 0.01$, $p< 0.271$). The finding was
253 expected, because no correlation was found between benefiting of government services and quality
254 of life as shown in Table 1. This finding may be due to the limited availability of government
255 services by the farming families in the conditions of climate variability, which has no impact on
256 the quality of life of the studied people. Another possible explanation for the lack of the proposed
257 relationship is that presenting these services (e.g. extension services) seems to be executed without
258 the participation of farmers, it means that without considering the knowledge and opinions based
259 on their experience are designed and planned; or maybe it is because they were in a good condition
260 in terms of using capitals and presenting the government services did not affect their quality of
261 life. Therefore, more researches are required to confirm this relationship. In a study, Karpisheh
262 (2010) indicated that farmers have poor access to support services provided by the government,

263 and the obtained from the present research is inconsistent with the results of Sarker and Itohara
264 (2009), Wang et al. (2021), Matlou et al. (2021) and Fitritinia and Matsuyuki (2023). They showed
265 that benefiting of government services in the conditions of climate variability can positively
266 influence the quality of life of farmers under the assumption of meeting their needs, but relying
267 only on government services is not adequate and educational services and the government
268 intervention methods are as important as presenting their content (Borah *et al.*, 2023). This finding
269 is consistent with the study of Ding et al. (2018) that the government should not emphasize too
270 much on subsidies, so that the government should focus on meeting the basic needs of farmers.
271 Thus, this finding is inconsistent with knowledge transfer via public services which has a
272 differential effect on quality of life (Terano and Mohamed, 2013; Kamaruddin *et al.*, 2013; Jha
273 and Gupta, 2021; Suárez *et al.*, 2021).

274 The findings showed that psychological coping strategies have a significant impact on the quality
275 of life at the level of 1% of probability ($\beta= 0.16$, $p< 0.001$), thus, the fourth hypothesis was verified.
276 It seems that the farmer families have high perseverance and will to do agricultural tasks due to
277 climate variability. It is obvious that such psychological morale makes them adapt to these
278 conditions to do agricultural work, be more successful in choosing psychological coping strategies,
279 and as a result, their quality of life is increased; because the climate variability management is not
280 only a physical activity, it also includes psychological activities that influenced the quality of life
281 of farmer families. Natural environments can alleviate the stress caused by climate variability and
282 its adverse consequences due to providing comfort for people (Koger *et al.*, 2011). It has been
283 emphasized that if farmers take psychological coping strategies, they can increase their quality of
284 life by controlling or overcoming the conditions of climate variability (Prenda and Lachman,
285 2001). It is required to adopt psychological coping strategies considering the dependence of work
286 and life of farmer families (Caldwell and Boyd, 2009), which can lead to an increase in their quality
287 of life. The result obtained from the current study is consistent with the studies of Morrissey and
288 Reser (2007), Gattino et al. (2015), Karimah and Puspitawati (2020) and Miyaji and Mohil (2022).
289 According to these studies, in facing the risk of climate variability, farmers adopt psychological
290 coping strategies in order to find a solution by evaluating the risk; because the result of this process
291 is reducing stress and enhancing their quality of life. Also, the obtained finding is inconsistent with
292 the study of Marsac et al. (2007). Researches indicate that if families can overcome previous
293 disasters and cope with it, this previous experience gives them realistic expectations and a criterion

294 of self-efficacy and self-confidence, after which it is easy for farmer families to adopt coping
295 strategies regarding the tolerance of psychological conditions and stress and increases their quality
296 of life (Morrissey and Reser, 2007). Besides, based on the obtained finding, it is stated that the
297 relationship between the risk factor and the result of the risk is non-linear, as the exposure to a
298 continuous risk such as climate variability in the early years is associated with an increase in stress
299 and distress, and, the process of this stress is decreased (O'Brien *et al.*, 2014). This helps farmers
300 to adapt themselves to low levels of risk (Luong *et al.*, 2021) and this desire to adaptation to the
301 environment makes them not feel too worried in life (Gunn *et al.*, 2021) and this increases their
302 quality of life. Therefore, farmer families can experience positive outcomes from exposure to risk.
303 However, some studies believe that farmers who have experienced more years of climate
304 variability, especially in the early years, due to reasons such as leaving the agricultural job,
305 migration, etc., they encountered potential risks such as lack of financial security, which has led
306 to continuous distress and a decrease in their quality of life (Mehdipour *et al.*, 2022).

307 Capitals variable had a positive and significant effect ($\beta= 0.34$, $p< 0.001$) on psychological
308 coping strategies. Therefore, the fifth research hypothesis is supported. The obtained finding may
309 be due to the fact that the capitals of farmer families is average and forces them to take
310 psychological coping strategies. Researchers argued that a combination of different types of
311 capital, along with their access and wise application, mitigates the impacts of climate variability
312 and improves the ability of farmer families to encounter these conditions (Kuang *et al.*, 2019; Alam
313 *et al.*, 2017). Various researches (Mohammadi-Mehr *et al.*, 2018; Valizadeh and Bijani, 2017)
314 have indicated that having access to the high levels of Maslow's needs helps farmers in taking
315 appropriate attitudes and behaviors. Some researchers claim that when farmers are not poor, they
316 obtain psychological security with more self-confidence to adapt to their living conditions and
317 cope up with problems (Li *et al.*, 2020). In the interactional stress model of Lazarus and Folkman
318 (1984), cognitive processes including the adoption of psychological coping strategies (Higuchi
319 and Echigo, 2016) are of great importance in response to stressful reactions. The strategies used to
320 deal with the stressful conditions of climate variability depend mostly on the available resources
321 of individuals. Therefore, capitals are some of the resources available to farming families that
322 Lazarus has identified as necessary to deal with these conditions (Lazarus, 1993). Studies have
323 shown that if farmer families have access to more capitals, they can adopt more psychological
324 coping strategies (Fitritinia and Matsuyuki, 2023).

325 Place attachment has a positive and significant impact on psychological coping strategies ($\beta=$
326 0.21, $p < 0.001$). So, the sixth hypothesis of the research is supported. This is quite natural, as
327 farming families are the ones who directly cope up with these conditions (Luís et al., 2016). Farmer
328 families relate their sense of belonging and dependence to the village with their quality of life. The
329 latter reason is in line with Lazarus and Folkman's (1991) interactive model of stress and coping,
330 which states that in stressful situations related to perceived risks due to a recognized threat such as
331 climate variability, individuals can adopt psychological coping strategies. Strong place attachment
332 can mitigate awareness of existing problems and risks in order to take management strategies
333 (Domingues *et al.*, 2021; Parreira and Mouro, 2023). Studies in coastal areas have demonstrated
334 that people with strong place attachment are not inclined to participate in some actions to reduce
335 risk (Parreira and Mouro, 2023). Some researchers have recommended that highly place-dependent
336 individuals may deny local threats as a defense mechanism. Considering that such people are
337 emotionally dependent on their environment, they change objective risk levels to prevent the
338 coping process (Sullivan and Young, 2020). Farming families may really perceive the risk of
339 climate variability, but they can psychologically cope with the threat via the risk normalization
340 process (Domingues *et al.*, 2021). Therefore, researchers believe that risk normalization is a type
341 of psychological coping with climate variability and this strategy leads to a decrease in subjective
342 judgment about the risk severity (Domingues *et al.*, 2021). When families have high place
343 attachment, they may adopt behaviors (Joaquim Araújo de Azevedo *et al.*, 2013) that they are not
344 willing to leave their place of living under the unpleasant conditions. If people feel deeply attached
345 to a place, threats to others are much more likely to be perceived as a personal issue. Individuals,
346 care about what they like. Some researches indicate that long-term exposure of families to climate
347 variability increases their concerns and stress (Stain *et al.*, 2011). The adoption of psychological
348 coping strategies by farmers largely depends on their sense of place attachment and their relative
349 health condition (Ellis and Albrecht, 2017). Studies have shown that if families have a place
350 attachment, they will feel relaxed and probably less inclined to migrate instead of threat and tension
351 (Qing *et al.*, 2022) and admit the risks of climate variability as part of the environment. This result
352 is consistent with Lee and Lin's study (Lee and Lin, 2022) and is inconsistent with Sullivan and
353 Young's research (Sullivan and Young, 2020). Families that are exposed to climate variability
354 adopt psychological strategies to mitigate the risk of the variability. This behavior is a desirable
355 social response and the lack of fear of climate variability is a justification for not migrating.

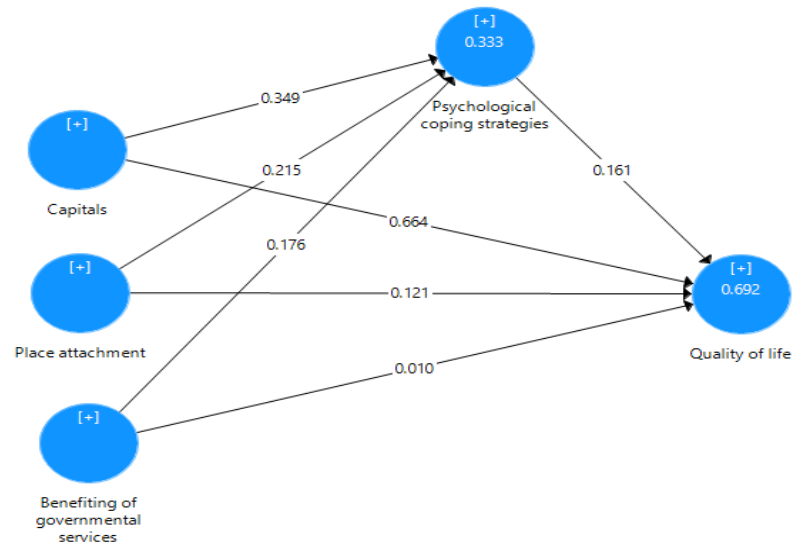
356 Benefiting of governmental services was another variable of the proposed research model that
 357 positively and significantly influence psychological coping strategies ($\beta= 0.17$, $p < 0.002$) and
 358 supports the final hypothesis. Presenting financial-support services along with extension services
 359 by the government can lead to an increase in the adoption of psychological coping strategies by
 360 farmer families. This means that benefiting of governmental services facilitates taking
 361 psychological coping strategies with climate variability in the studied area. The finding is
 362 consistent with the research of Fitritia and Matsuyuki (2023) and inconsistent with the research
 363 of Zhao (2011) and Ahmad et al. (2019) that farmers are intended to rely on services provided by
 364 the government. Presenting extension services influences the adoption of psychological coping
 365 strategies by farmers under the conditions of climate variability (Mardy *et al.*, 2018). Studies show
 366 that the poor access of farmer families to government services makes them less likely to adopt
 367 psychological coping strategies under the conditions of climate variability (Fitritia and
 368 Matsuyuki, 2023). Other studies consider relying on governmental organizations as a method to
 369 deal with the cognitive complications of threat assessment and decision-making regarding coping
 370 behaviors (Parreira and Mouro, 2023). Administrative authorities potentially affect the adoption
 371 of different behaviors when individuals seek to cope up with risk (Cologna and Siegrist, 2020).

Table 6. Total effects statistical results of the structural model in a significant state.

Hypothesis	Path	Original sample	Standard deviation	T statistics	P-values	Sign. level	Remarks	R ²	Q ²
H1	Ca -> QoL	0.66	0.03	22.49	0.001	**	Supported	0.69	0.46
H2	P.A -> QoL	0.12	0.04	3.76	0.001	**	Supported		
H3	B.G.S -> QoL	0.01	0.03	1.10	0.271	n.s.	Rejected		
H4	Ps.C.S -> QoL	0.16	0.04	3.63	0.001	**	Supported		
H5	Ca -> Ps.C.S	0.34	0.06	5.76	0.001	**	Supported	0.33	0.15
H6	P.A -> Ps.C.S	0.21	0.06	3.44	0.001	**	Supported		
H7	B.G.S -> Ps.C.S	0.17	0.05	3.08	0.002	**	Supported		

Note: **p < 0.01; n.s. not significant; R²: Coefficient of Determination; Q²: Predictive Relevance.

372 The structural model with standardized path coefficients is presented in the Fig. 2.



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Fig. 2. The PLS based SEM model with standardized path coefficients.

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3.5. Theoretical Implications

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3.6. Practical Implications

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3.7. Intervention Development

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394 that these families are significantly impacted by environmental stressors, the proposed
395 interventions are designed to address both the psychological and material needs identified in the
396 study. Workshops focusing on strengthening the hexagonal capital (natural, human, physical,
397 social, financial and psychological) should be implemented. These programs will educate farmers
398 on sustainable practices and resource management. Establishing counseling services to assist
399 families in developing effective psychological coping strategies in response to climate stressors
400 can be beneficial. On the one hand, facilitating better access to governmental support services,
401 including financial assistance and educational resources, is essential. Additionally, creating local
402 support groups where farmers can share experiences and coping strategies can strengthen
403 community resilience. Organizing local events and activities that enhance the emotional
404 connection between farmers and their environment is also important.

405

406 **4. CONCLUSIONS**

407 According to the obtained results, the climate variability does not always mitigate the quality
408 of life of farmers' families, and the adoption of psychological coping strategies has been effective
409 in the results obtained. This study showed that psychological coping strategies have mediated the
410 relationship between capital, place attachment and benefiting of governmental services with
411 quality of life. By promoting the research variables as influencing factors under the conditions of
412 climate variability on increasing the quality of life of farmer families, it is recommended to
413 consider special interventions focusing on meeting the essential needs of the inhabitants of the
414 villages, investment and support of governmental and non-governmental organizations to avoid
415 the migration of farmers' families from villages via paying attention to the aesthetics of the place
416 of living, comfort facilities, etc. Considering all these items can make the farmer families able to
417 relieve the stress caused by climate variability, pay more attention to the health of their body and
418 soul, and enjoy more peace in life.

419

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684 **پیش‌بینی کیفیت زندگی خانوارهای کشاورز استان کرمانشاه در شرایط نوسانات اقلیمی: نقش راهبردهای**
685 **مقابله روانی**

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687 **صحرا محمدی‌مهر، داریوش حیاتی، و عزت‌اله کریمی**

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چکیده

690 پژوهش حاضر به بررسی تأثیر متغیرهای پیش‌بینی کننده کیفیت زندگی به ویژه سرمایه‌های شش‌گانه، دلبستگی مکانی و
691 برخورداری از خدمات دولتی بر راهبردهای مقابله روانی خانوارهای کشاورز ایرانی در شرایط نوسانات اقلیمی پرداخته
692 است. این مطالعه از آنجا که به چالش‌های مبرمی می‌پردازد که خانوارها به دلیل شرایط نوسانات اقلیمی با آن مواجه هستند،
693 قابل توجه است. با استفاده از روش پیمایش، داده‌ها با فرمول کوکران از 270 خانوار کشاورز روستایی به روش نمونه‌گیری
694 طبقه‌ای جمع‌آوری و با استفاده از مدل‌سازی معادلات ساختاری، واکاوی شد. پایایی ابزار سنجش با استفاده از آزمون آلفا
695 کرونباخ ارزیابی شد که یافته‌ها حاکی از پایایی قابل قبول ($\alpha = 0/60 - 0/80$) آن بود. یافته‌ها نشان داد که مدل پیشنهادی قادر
696 است 69 درصد از تغییرات متغیر کیفیت زندگی را در شرایط نوسانات اقلیمی تبیین نماید. به طور قابل‌توجهی مشخص شد
697 که سرمایه‌های شش‌گانه و دلبستگی مکانی هر دو تأثیر مثبت و معناداری بر راهبردهای مقابله روانی و کیفیت کلی زندگی
698 خانوارها داشته‌اند. بر اساس این نتایج، توصیه می‌شود که مداخلات ویژه‌ای برای تقویت سرمایه‌های کشاورزان، بهبود
699 زیرساخت‌های روستایی و ارائه حمایت روان‌شناختی به منظور افزایش تاب‌آوری خانوارهای کشاورز در برابر نوسانات
700 اقلیمی، اجرا شود.