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Analyzing Land-Use Change and Farmers' Behavioral Intentions Toward Wetland Conservation: A Case Study of Iran

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Abstract

Land-use change is a primary driver of global environmental degradation, with wetlands experiencing severe impacts, as 30–90% of global wetlands have been lost or significantly altered. Despite their critical ecological role, wetland land-use dynamics remain understudied, necessitating urgent conservation efforts aligned with three key 2030 global agendas. In Iran, agricultural overexploitation emerges as the predominant threat to wetland ecosystems, surpassing other factors such as climate change. This study investigates the drivers of land-use change and farmers' conservation behaviors in the Bakhtegan and Tashak wetlands of Iran through a two-phase approach. Phase one employs remote sensing and GIS to quantify land-use transformations from 2000 to 2020, revealing a significant expansion of bare lands surrounding these wetlands. Phase two surveys local farmers to assess the socio-psychological factors shaping their willingness to support wetland conservation, analyzed using ENVI 5.3, ArcGIS 10.3, SPSS 20, and AMOS 20. Results indicate that positive attitudes and subjective norms significantly influence farmers' behavioral intentions toward conservation ($p < 0.05$). These findings underscore the need for targeted policy interventions that integrate socio-psychological insights with land-use monitoring to enhance wetland conservation strategies.

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Introduction

Land use is the management of land cover through human intervention in favor of a desired land cover (Lambin et al., 2001). Land use and land cover are key aspects of socio-economic development (Kadoma et al, 2025; Verburg et al, 2006), and directly reflect human activities driven by economic, social, and political goals aimed at generating products and benefits from the environment (Savari et al., 2025; Ahsan et al, 2025; Bentley Brymer et al., 2020; De Groot, 2006). Land-use patterns may change over simultaneously changing scales of time and space and land-use changes (LUC) are increasingly regarded as primary forces behind global environmental change as change affects emissions of greenhouse gases, enhances global warming and increases local changes to climate, and reduces biodiversity and soil resources (Savari et al., 2024; Ghanian et al., 2020; Leip et al., 2015). The causes of LUC are complex, however, and change over time and from region to region. Understanding the mechanisms driving LUC has become the effort behind global-change research in recent decades (Meneses et al, 2017). In view of the diverse reasons for land-use change, such research must be interdisciplinary (Li et al, 2016; Qasim et al, 2013), and though LUC usually reflects socioeconomic and political forces, the physical environment determines trajectories of change (Msofe et al, 2019; Damaneh et al., 2024; Ghoochani et al., 2024).

According to the United Nations Food and Agriculture Organization, the agricultural sector is the source of one-third of global warming due to mismanagement and land-use change (Savari et al., 2022; Balogh, 2020; Dale et al, 2011). Sustainable land use in arid and semi-arid regions is declining due to land degradation caused by human activities (Ghorbani et al., 2021; Eswaran, Lal, & Reich, 2019;). Crop yields have been falling for decades, forcing people to expand cultivation to more land to meet their needs (Dahimavy et al, 2015; Maitima et al., 2009) and agricultural outputs have increased mainly by spatially expanding production (Weinzettel et al, 2013). Production from grazing lands have also been diminishing due to overgrazing. Natural vegetation has decreased as lands have been converted to cropland and pastures (Nzundaet al, 2013). These changes are fueled by growing demands for agricultural products that are important for achieving food security and generating income (and profit) among both the rural poor and wealthy commercial-farming investors.

The impact of land-use change on wetlands has been overlooked by researchers. Wetlands include lands that remain inundated to some degree, as well as marshes, swamps, peatlands, areas of natural and artificial landscapes that either permanently or temporarily contain stagnant or flowing fresh, brackish, or salt water (Eskandari-Damaneh et al, 2020). Wetlands are ecologically, hydrologically, and biogeochemically unique regions that provide an array of ecosystem services (ESs) (Kaushal et al, 2014; Mintah, Amoako, & Adarkwa, 2021). ESs include freshwater supply and storage for human uses like flood control, carbon storage, biological production, wildlife conservation, and prevention of salinization. Wetlands provide secondary benefits to community welfare and livelihood by supporting education, recreation, and tourism (Aryal et al, 2021; Kløve et al., 2011).

There are approximately 1280 million hectares of wetlands worldwide; this includes inland and coastal wetlands in the form of lakes, rivers and swamps, and artificial wetlands like paddy fields and reservoirs (Ahmad et al, 2019; Assessment, 2005). Wetlands occupy 6% of Earth's surface, but environmental pressures from reclamation, dredging, overexploitation of resources, point-source pollution, and desiccation due to global warming threaten wetlands on all continents. An estimated 30-90% of the world's wetlands have already been destroyed or have been significantly altered (M. Finlayson et al., 2005). Iran is home to 24 internationally recognized wetlands, spanning an area of about 1,486,438 hectares, as recorded by the Ramsar Convention on Wetlands (Nasab et al, 2023). However, many of these ecosystems have suffered from severe contamination caused by human activities. Notable examples include the Anzali Wetland, the Hoor al-Azim Wetland, and the Hamoon Wetland (Cheshmvahm et al., 2023; Fakhradini et al., 2021; Ebrahimi-Khusfi et al., 2023).

Despite conservation policies, especially the Ramsar Convention on Wetlands of International Importance Especially as Waterfowl Habitat, there is no evidence that ecological damage has been reduced (Gardner & Davidson, 2011; Graversgaard et al., 2021). The protection and sustainable management of wetlands is a global priority as indicated by the 2030 Agenda for Global Sustainable Development Goals. Three goals (Goal 6.3 “Improvement of Water Quality,” 2.4 “Sustainable Food Production,” and 12.2 “Sustainable Resource Management”) seek to improve wetland management. Wetlands mainly support the provision of ESs, spiritual opportunities, biodiversity, recreation, and educational needs. Despite the importance of ESs, wetlands are still degraded. They have been identified as the most threatened ecosystems in the world (Wood, Dixon, & McCartney, 2013). This is attributed mainly to their drainage and conversion to agricultural lands and to increased withdrawal of water for economic development and food production (Dehnhardt, Häfner, Blankenbach, & Meyerhoff, 2019). For example, it is estimated that more than 50% of some wetlands (particularly coastal and inland wetlands and emerging estuaries) were converted to agricultural uses in Europe, Australia, North America, and New Zealand during the 20th century. Elsewhere, there are no reliable data, and therefore many estimates are speculative (Board, 2005; Finlayson, Bellio, & Lowry, 2005; Rebelo, Finlayson, & Nagabhatla, 2009). Wetlands tend to have nutrient-rich soils that allow small-scale farmers to produce crops throughout the year (Beuel et al. (2016). They have been increasingly exploited by smallholders to meet demands for food due to economic and demographic growth, global warming, and the reduced yields from traditional agricultural regions. In times of food shortages, wetlands are often the only sources of food for the communities living near them (Schuyt, 2005). Many wetlands in sub-Saharan Africa, however, are slowly deteriorating due to drainage and conversion to enable agricultural expansion (Ayyad eet al, 2022; Adekola et al, 2012; Rebelo et al, 2010).

Wetland ESs are shared resources and are essential to human life. In the Islamic Republic of Iran (hereafter Iran), as in many developing countries, the degradation of wetland ecosystems is a significant concern. Iran averages 250 mm of precipitation per year. Water supplies are chronically short and uneven distribution persists (Badamfirooz, Mousazadeh, & Sarkheil, 2021; Ghanian, Ghoochani, Noroozi, & Cotton, 2022). Wetlands are important in Iran and are made increasingly vital by global warming.

Iran is an important example of the need for water conservation and management of ESs (Masoompour Samakosh et al, 2024; Eskandari Damaneh et al, 2019; Eskandari Damaneh et al, 2018). Anthropogenic degradation is the main reason for wetland loss. The traditional view of residents of Iran is that wetlands are "wastelands,” which supports the utilitarian belief that "such obvious waste can only be used effectively if it is made cultivable for agriculture and human settlement" (Maltby, 2013). When not considered wasted space, wetlands are generally considered to have minimal value compared to other land uses that provide specific, short-term economic benefits (Palmer-Felgate et al., 2013). Exploitation for agriculture is among the most important causes of wetland destruction in countries like Iran (Masoumi et al, 202). In their research on 17 villages located near the Tashkent–Bakhtegan Lakes, Masoumi Jashni et al. (2024) assessed the vulnerability of farmers to climate change. The results revealed that over half of the communities (52.93%) were classified as highly vulnerable, while 23.52% of farmers experienced very low vulnerability and another 23.52% were moderately vulnerable. The Iranian government has undertaken several projects aimed at protecting wetlands. In this regard, Sadeghi Pasvisheh et al, (2021) emphasized that preventing further degradation and ensuring effective protection and restoration—aligned with the Sustainable Development Goals—require the integration of scientific insights into a practical framework that provides evidence-based support for policymakers and managers of the Anzali Wetland. To this end, the Drivers–Pressure–State–Impact–Response (DPSIR) framework was applied as an appropriate tool to connect human pressures with state changes and to offer a comprehensive overview of potential impacts.

Therefore, it is important to pay closer attention to the role of farmers in wetland management, conservation, and restoration. Despite the importance of local communities' participation in wetland management and conservation in Iran, managers, decision-makers, and policymakers have not paid much attention to the farmers that live near wetlands.

This paper examines the factors that influence farmers' wetland-conservation behavior by focusing on land-use change near the Bakhtegan and Tashak wetland in Iran. The objectives are to determine land-use change in the Bakhtegan and Tashak wetland and to analyze the determinants of farmers' behaviors toward wetland conservation. Employing a geographic information system (GIS) and remote sensing (RS) enable the tracking of LUC over the period from 2000 to 2020. Farmers' conservation behaviors were revealed in a survey conducted for this purpose. This study is novel in some respects. No comparable study has been performed in the study region. Therefore, this study provides a foundation for studies of the socio-psychological dimensions of wetland conservation. The use of the Theory of Planned Behavior (TPB) as an organizational conceptualization of farmers' behavioral intentions toward wetland conservation is also novel. The combination of the analysis of satellite data to detect land-use change with the survey of behavioral intent toward wetland conservation is also an innovation of this research.

Materials and methods

Study area

The Bakhtegan-Tashak International Wetlands are located west of Neyriz Township in Fars Province at 29°42´42´´N and 53°31´13´ E, 964 km east of the city of Shiraz. This wetland is an important wildlife habitat and is the second-largest inland lake in terms of area in Iran (Masoumi et al, 2024). A wide variety of bird species, mostly overwintering migrants, have been identified. Jackals, foxes, and hyenas are also seen on the wetland's edge. The catchment of the Bakhtegan-Tashak wetlands is almost entirely contained in Fars Province. Rain-fed and irrigated agriculture is performed on 685,186.92 ha of this catchment. Precipitation varies by elevation from 200 mm in the low-lying areas on the southeastern edge of the catchment to 700 mm in the higher elevations on its northwestern edge. The population density within the catchment averages 0.92 people/km^2 (Feizizadeh et al, 2025).

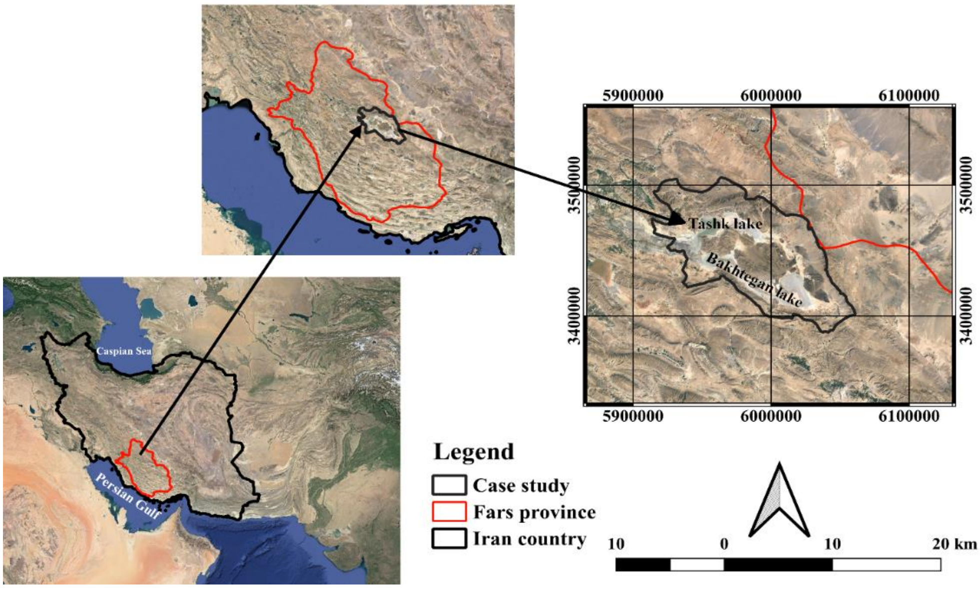

Figure 1. Geographical location of Bakhtegan-Tashk wetland catchment

Image processing

Landsat satellite images from the United States Geological Survey were acquired for the years 2000, 2010, and 2020 and these were analyzed to measure land-use changes. The spatial resolution of the imagery was 30 meters. Each image was clipped to the boundary of the study area (Table 1).

To prepare the images, atmospheric and radiometric corrections were performed using the FLAASH module in ENVI 5.3. The parameters required for atmospheric corrections were extracted from the text file that accompanied the prepared images, and also the required elevation information was obtained from a digital elevation model. All images were corrected to the UTM WGS84 coordinate system, northern zone 39. A supervised maximum likelihood classification method, simple yet powerful, was used to classify land uses across the study area (Gashaw, Tulu, Argaw, & Worqlul, 2017). Six land use classes were used: agriculture, bare lands, forest, rangeland, built-up land, and water body. Training points were determined by combining information from Google Earth, a field survey, a false color composite, and indicators from the images (NDVI, NDBI, and NDWI) (Table 2) (Arekhi, Goksel, Balik Sanli, & Senel, 2019; Rugel, Henderson, Carpiano, & Brauer, 2017).

Table 1. Details of Landsat satellite images

Images	Years	Spatial separation	Row/Column
Landsat 5	2000	30	162/39; 162/40; 161/40
Landsat 5	2010	30	162/39; 162/40; 161/40
Landsat 8	2020	30	162/39; 162/40; 161/40

Table 2. Details of the indicators obtained from Landsat satellite images used in the present study

Index	Range	Description
$NDVI = \frac{NIR - R}{NIR + R}$	Between -1 to 1	Normalized index of vegetation difference (Tucker et al., 1986)
$NDWI = \frac{NIR - SWR}{NIR + SWR}$	Between -1 to 1	Normalized index of difference in water-covered areas (Gao, 1996)
$NDBI = \frac{SWR - NIR}{SWR + NIR}$	Between -1 to 1	Normalized index of differences in urban areas (Zha et al., 2003)

(NIR = Near Infrared, R = Red band, and SWR = Short red band)

The accuracy of the classification of the images from the three dates was evaluated using a confusion matrix. Producer accuracy, User accuracy, overall accuracy, and Kappa index were calculated (Gashaw et al., 2017).

Survey of attitudes

Participants

Empirical survey research was conducted in the villages around the wetlands. The survey population consisted of households that use the wetland's ESs. The total population of households is 12,328 households. A sample of 450 households was randomly selected based on Ratio stratified random sampling method from the list of households in the district as found in the resident directory for each community. Times and places were arranged to meet with villagers (either in their homes or workplace) to conduct the interview (i.e., a verbally administered questionnaire). Villagers who agreed to participate were given the right to refuse to answer any question that made them feel uncomfortable. All responses are anonymous. No incentives were provided to the respondents. All responses were checked for completeness. In total, 401 households completed the questionnaire, a response rate of 89%.

Materials/Procedures

This quantitative study uses a non-experimental research design. It involved a cross-sectional survey of farmers in 2020. Data were collected using a researcher-designed questionnaire. The validity and reliability of the survey instrument were tested and confirmed by a panel of experts (either faculty members or field practitioners having extensive experience in socio-ecological interventions for sustainable wetlands management) using Cronbach's alpha coefficients which exceeded the acceptable rates for all components of the questionnaire (Table 3). Three other indicators (composite reliability, convergent validity (CV) (or average variance extracted (AVE)), and divergent validity) were also used to confirm the validity of the indices. The divergent validity of the questionnaire was evaluated by the average shared squared variance (ASV) and the maximum shared squared variance (MSV).

Following the Theory of Planned Behavior (Ajzen (2002), four perceptual variables were created: attitudes, perceived behavior control, subjective norms, and behavioral intention. The data were analyzed using SPSS (version 20) and AMOS (Analysis of Moment Structures, version 20). A Likert seven-point scale (from fully disagree (1) to fully agree (7)) was used for all questions. The summary of the answers was computed as a total score (alpha coefficient) for each variable (Table 3). The values for skewness and kurtosis did not identify any serious violations of normality as all the coefficients were below ±2.

Table 3. The study items included in the study questionnaire and alpha coefficient

Variable	Items	Alpha coefficient
Attitude	A1: I think the conservation campaign is a good initiative to protect the wetland area.	0.86
	A2: I think engaging in the proper management of fertilizers and pesticides in agricultural activity could reduce water pollution.	
	A3: I think participation in wetland conservation and management is useful.	
	A4: I think wetland conservation and management during periods of water shortage is necessary.	
Perceived Behavioral Control	P1: I have the necessary knowledge to participate in wetland conservation and management.	0.87
	P2: I have the time and skills to participate in wetlands management and conservation.	
	P3: I have the necessary economic capacity to participate in wetlands conservation and management activities.	
Subjective norms	S1: I think my friends and acquaintances expect me to be as committed as I can be to participate in the management and conservation of the wetland.	0.74
	S2: My friends and acquaintances think that I should be committed to participating in the management and conservation of the wetland.	

Behavioral intention	B1: I want to learn the necessary skills for wetland conservation and management.	0.75
	B2: I would like to cooperate with the government, experts, and stakeholders involved in the rehabilitation of the wetland.	
	B3: I would like to participate in the management and conservation of wetland.	

Results

Image processing

Classification analysis of 2000, 2010, and 2020 Landsat images

The study area images were classified into six classes (Figure 2). Visual analysis shows that there were significant changes to the proportions of the study area covered by each category. For example, the amount of land covered by water decreased dramatically over the 20-year period. Forested lands disappeared, agriculture diminished, and rangeland and bare lands increased greatly. Built-up areas also grew.

In 2000, rangelands covered 389,202.97 ha or 56.8% of the study area (Table 4). Forest occupied 21,555.3 ha, 3.15% of the area. Bare lands covered 74,441.49 ha (10.86%). Agriculture covered 77119.79 ha (11.26%). Built-up lands accounted for 767.06 ha (0.11%), and water covered 122,100.31 ha (17.82%). By 2010, rangelands, though still occupying a majority of the area declined to 362,142.24 ha (52.85%). Forest decreased to 3,501.38 ha representing only 0.51% of the study area. Bare lands increased nearly three-fold to 201,089.32 ha (29.35%), as did built-up land which grew to cover 2,471.98 ha (0.36%). Agriculture covered only 64,373.41 ha (9.40%) and wetlands decreased to 51,608.59 h (7.53%), less than half of its area in 2000. By 2020, water had decreased to only 179.35 ha (0.03%). Built-up land had grown to 5,856.38 ha (0.85%), nearing 8 times its 2000 extent. Bare lands increased to 277,710.79 ha (40.53%), nearly 4 times its 2000 coverage. Forest decreased to 197.25 ha (0.03%), rangelands to 349,731.62 ha (51.04%), and agriculture to 51511.55 ha (7.52%). Water decreased 17.79% over these 2 decades, and its extent was nearly 0% of the region (Figure 3). Bare lands increased about 29.67% from 2000 to 2020 and agricultural land diminished from 11.26% in 2000 to 7.52% in 2020.

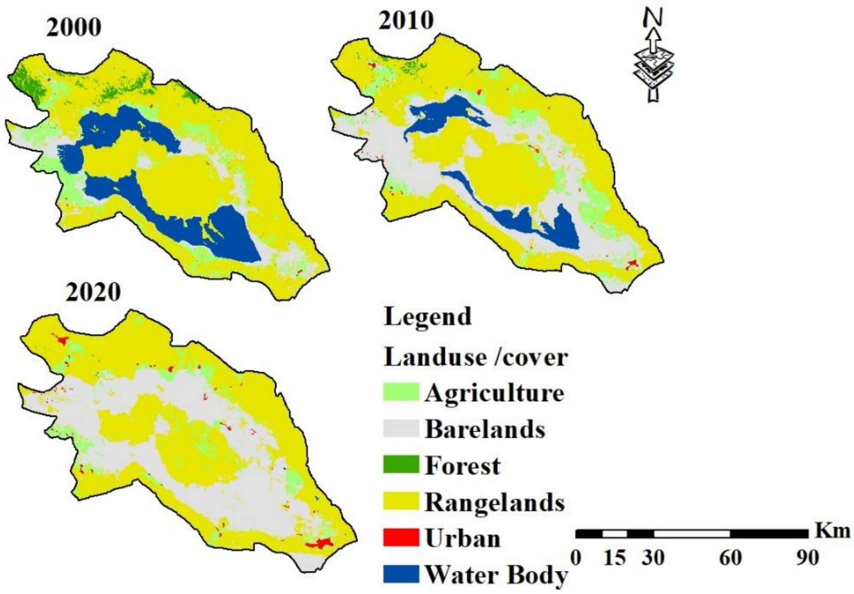

Figure 2. Classified land use land cover maps from 2000 to 2020.

Table 4. Area statistics of the classified images.

LUC class	2000		2010		2020	
	Area (ha)	%	Area (ha)	%	Area (ha)	%
Agriculture	77119.79	11.26	64373.41	9.40	51511.55	7.52
Bare lands	74441.49	10.86	201089.32	29.35	277710.79	40.53
Forest	21555.30	3.15	3501.38	0.51	197.25	0.03

Rangelands	389202.97	56.80	362142.24	52.85	349731.62	51.04
Built-up	767.06	0.11	2471.98	0.36	5856.38	0.85
Water Body	122100.31	17.82	51608.59	7.53	179.35	0.03
Total	685186.9229	100	685186.9229	100	685186.9229	100

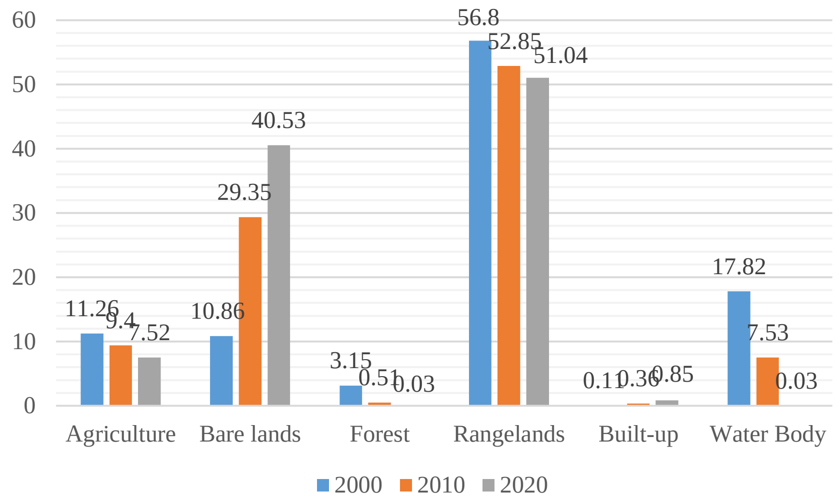

Figure 4. Class statistic of classified map in percentage from 2000 to 2020 (Percent).

Survey of attitudes

Demographic attributes of respondents

The average age of the survey respondents was 49.4 years (Table 5). The majority of the respondents had primary-level education (53.6%) and about one-fourth (24.5%) were illiterate. Most of the respondents were married (88.9%).

Correlations between Independent and Dependent Variables

A Pearson correlation matrix was constructed to examine the relationships between the variables within the research framework (Table 6). The results reveal that there is a positive association between 'attitude' and 'behavioral intention' ($p<0.05\%$), and positive associations between 'subjective norms' and 'perceived behavioral control' and 'behavioral intention' ($p<0.05\%$).

Table 5. Demographic attributes of the respondents

Demographic attributes	Category	Frequency	Percent
Marital status	Single	45	11.1
	Married	356	88.9
Education	Illiteracy	98	24.5
	Elementary	215	53.6
	High school	49	12.3
	Diploma	24	5.8
	B.Sc.	15	3.8
Age (year)	Mean	St.D.	Min-Max
	49.4	12.71	24-75

Table 6. Associations between constructs of the research framework (Pearson correlation)

	Attitude	Subjective norms	Perceived behavioral control	Behavioral intention
Attitude	1			
Subjective Norms	-0.21	1		
Perceived behavioral control	0.12	0.23	1	
Behavioral intention	0.41**	0.52*	0.48*	1

* $P \leq 0.05$ ** $P \leq 0.01$

Confirmatory measurement model

A confirmatory measurement model was tested using AMOS (V20). Confirmatory factor analysis (CFA) was used to ensure the uni-dimensionality of the scales measuring each construct (whether measures of a construct were consistent with the nature of that construct) (cited in (Hall, 2008)). Several commonly-used fit indices were employed to assess the overall model fit (Hu & Bentler, 1999) (Table 7). The comprehensive goodness-of-fit indices produced a Chi-square of 158.26, and Chi-square/DF=2.34 (Schreiber, Nora, Stage, Barlow, & King, 2006), The comparative fit index (CFI) value of 0.93, incremental fit index (IFI) value of 0.93, and Tucker-Lewis index (TLI) value of 0.90 were deemed good fits to the model (Hu & Bentler, 1999). The root mean square error of approximation (RMSEA) value was 0.06 (a value between 0.05 to 0.10 indicates a fair fit) (MacCallum et al., 1996, as cited in (Hooper, Coughlan, & Mullen, 2008a, 2008b)). The results of the measurement model fit acceptably.

Evaluating Validity and Reliability Results Using Measurement Models

All standardized factor loadings should be at least 0.5 and statistically significant. Such loadings would indicate that observed indicators are strongly related to their associated constructs and contributes to construct validity (J. Hair, R. Anderson, B. Babin, & W. Black, 2010; J. F. Hair, R. E. Anderson, B. J. Babin, & W. C. Black, 2010). The standardized factor loadings in the model are significant and above 0.5 (Table 8). This indicates a satisfactory fit between the model and the data. Convergent and discriminant validity were also established for all constructs. Composite reliability for all constructs exceeded the threshold of 0.7 (J. J. Hair et al. (2010). Average variance extracted (AVE) for all constructs exceeded the threshold of 0.5 (J. Hair et al., 2010; J. F. Hair et al., 2010). Discriminant validity statistics (MSV and ASV should be less than AVE). All four constructs had good discriminant validity (Table 4). Finally, the skewness and kurtosis did not indicate any serious violations of normality as all coefficients were below ±2 (Table 8).

Table 7. Measures of the research framework model fit

Items	Chi square	Chi square/DF	IFI	TLI	CFI	RMSEA
Indices	158.26	2.34	0.938	0.901	0.917	0.06

CFI: Comparative Fit Index
IFI: Incremental Fit Index
TLI: Tucker-Lewis Index
CFI: Comparative Fit Index
RMSEA: Root Mean Square Error of Approximation

Table 8. Factor loadings and convergent and discriminant validity in Confirmatory Factor Analysis (CFA)

	Attitudes	Perceived Behavioral Control	Subjective norms	Behavioral intention	Skew	Kurtosis
A1	0.791[a]				1.302	0.975
A2	0.658**				0.374	0.852
A3	0.825**				1.502	0.531
A4	0.598**				0.881	1.123
P1		0.661 [a]			-1.45	0.741
P2		0.725 **			0.367	0.298
P3		0.798 **			0.811	0.453
S1			0.785 [a]		0.175	0.961
S2			0.718 **		0.728	-0.816
B1				0.685 [a]	0.557	0.691
B2				0.725**	0.472	0.853
B3				0.758**	0.907	0.657
CR	0.81	0.77	0.72	0.70	-	-
AVE	0.52	0.53	0.57	0.54	-	-
MSV	0.28	0.29	0.18	0.19	-	-
ASV	0.23	0.21	0.12	0.13	-	-

a Values were not calculated because loadings were set to 1.0 to control construct variance
** Significant at 1%

Analyzing the Relationships among Variables

Multiple regression was conducted to evaluate how predictive the measures of attitudes, subjective norms, and perceived behavioral control, were toward behavioral intention of wetland conservation. The stepwise method was chosen because it enters the predictor constructs into the equation model until the addition of further constructs produce no significant improvement of the correlation coefficient.

To predict the goodness of fit of the regression model, the multiple correlation coefficient (R), coefficient of determination (R^2), and F ratio were examined (Table 9). The linear combination of the two constructs is significantly related to the behavioral intention of farmers towards wetland conservation (R2=0.31, F = 75.43, p= 0.0001). Only two of the three predictor constructs, attitudes and subjective norms, entered the equation. The other construct did not contribute significantly to the correlation coefficient (0.559). Approximately 0.313 percent of the variance (R^2) in the behavioral intention of farmers towards wetland conservation can be explained by the two predictor constructs. Beta coefficients (or standardized coefficients) can explain the relative contributions of the constructs to the variance in the behavioral intention towards wetland conservation. Assuming that other predictor constructs are held constant, the standardized beta weights indicate attitudes (Beta = 0.39, p = 0.0001) carried the most weight while subjective norms (Beta = 0.28, p = 0.0001) provided less. The other predictor construct does not have a statistically significant effect on behavioral intent.

Table 9. Multiple regression analysis of behavioral intention

Constructs	R	R^2	B	Beta	t statistic	Sig	f statistic	Sig
Constant	-	-	6.17	-	12.59	0.0001**	75.43	0.0001**
Attitudes	0.490[a]	0.241	0.149	0.393	8.05	0.0001**		
Subjective Norms	0.559[b]	0.313	0.288	0.286	5.85	0.0001**		

** P ≤ 0.01
a: Predictors: (Constant), Attitudes
b: Predictors: (Constant), Attitudes, Subjective Norms

Based on the non-standardized coefficients the regression equation is:

$Y = 6.17 + 0.14X_1 + 0.28X_2$

Y: Behavioral intention

X_1: Attitudes

X_2: Subjective norms

Discussion and Conclusion

Agricultural lands, pastures, gardens, and forests are ecosystems. The biological performance of these systems depends on the behaviors of the communities within which they operate. Farmers direct food production activities and interact with environmental systems (Van Loon et al., 2020). A precondition for future policy-making and planning of environmental management in the milieu of farming is farmers' behavioral intent and attitudes toward management activities or goals. Understanding what influences of farmers' attitudes can provide a strong foundation for management decisions. Such importance doubles the value of this research focus.

Landsat images were used to classify LUC in the Bakhtegan-Tashak wetlands from 2000 to 2020. The analysis showed that water bodies have dramatically decreased in size over that period. Built-up lands have grown in area from 0.11% (2000) to 0.85% (2020) of the study region. This is due to both population growth and exploration to establish new residences. Bare land also increased significantly from 10.86% in 2000 to 40.53% in 2020.

The survey results indicate a high average age of the study's sample (49.4 years). Such results are very concerning as they indicate that the majority of the farmers are middle-aged and older. Rural youth have little desire to work in agriculture. Declining interest in agriculture does not bode well for Iran and other countries like it as agricultural activity is an important foundation for any country's economy. Furthermore, most of the survey respondents are illiterate or had limited ability to read and write (78.1%). Functional (or total) illiteracy is a major challenge to improving standards of living. This situation adds to the concern for environmental management, especially when it comes to providing extension training to these people.

According to the survey results, farmers' attitudes towards participation in wetland conservation were positively and significantly associated with farmers' behavioral intentions. We can conclude that having a favorable attitude towards wetland conservation significantly strengthens farmer intention. This result is supported by (Mahdavi, 2021). Favorable attitudes toward participation in wetland conservation are influenced by prerequisites like previous participation experience, awareness of the consequences of not participating, and the expectancy of the outcomes in the field by participating in the conservation of wetlands (Eskandari-Damaneh et al., 2020). Ideally, they should be aware of the consequences of participation or non-participation in wetland conservation.

The results also revealed that subjective norms had significant positive effects on farmers' intention toward wetland conservation. Therefore, we can understand the key role and importance of farmers' social environments in guiding farmers' behavioral intentions. Similar findings are found in two other studies (Ghoochani et al, 2017; Sahraii et al, 2019). It can be stated that farmers are more inclined to perform wetland protection behaviors when they feel and understand others' (such as family, friends, acquaintances, and neighbors) needs and desires to protect wetlands. The issue may reflect a lack of understanding of wetland conservation and a lack of awareness of the ESs of wetlands. This case study shows the importance of specific groups in a community to facilitate the protection of wetlands. The people who are influential and depend on farmers inside farming networks have important influence and capacity to encourage farmers` behavioral intentions. Such stakeholders can also be used to explain elements of programs to farmers to enhance the likelihood that they will help to preserve wetlands. If leaders are used, there may be no need for one-on-one communication to reinforce behavioral intents and social conditions may be bolstered by social pressures. This further underscores that wetlands management programs would work more effectively if they were community- and/or regionally-based.

According to (Leeuwis & Van den Ban, 2004), agricultural extension is regarded as a set of communication interventions that help solve problematic situations. Therefore, it is suggested that agricultural extension can help to reduce unwise changes in agricultural land uses and activities. To strengthen farmers' intentions by changing attitudes, it is necessary to closely examine the social context of the farming community when devising participatory activities. Behavioral and attitudinal alternatives should be devised with the farmers through participatory packages and projects. It should always be remembered that unsuccessful reviews of participation by farmers will cause them to be reluctant toward future participation. Research ought to assess the perspectives of other stakeholders through assessments of managers, agricultural extension agents, experts from environmental agencies, and others.

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