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THE EFFECTS OF GOOD GOVERNANCE ON THE AGRICULTURAL SECTOR

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ABSTRACT

In this research, we use the Meta-synthesis method to find important factors of good governance to increase food security, using the Shanon Entropy model and weighing variables by a Fuzzy method. The Meta-synthesis results show international policy, group participation, and observance standards have the highest importance and rank. Fuzzy analysis shows agricultural employment, group participation and cooperative companies have the highest weight in political, social and environmental areas, and increased production, and financial and capital markets have the highest weight in the economic area. The policy recommendation is an implementation of agricultural governance to improve employment, financial markets, and group participation.

Keywords: Agricultural governance, Fuzzy Method, Meta Synthesis.

1. INTRODUCTION

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The role of governance is garnering much attention in the development literature and has often touted as a major reason why some countries have experienced faster economic growth than others (Samarasinghe, 2018). Governance is the process of making and implementing decisions that improve economic, political and social institutions (UNESCAP, 2014). Good governance affects the quality of life and welfare of people. Good governance involves many actors such as companies, political parties, military, non-government organizations and even influential individuals (Pere, 2015). While all these institutions have an influence on how decisions are made within a country, government sets the rules and norms that strengthen the ability of the public and private sectors to play a meaningful role. Without good governance, economic growth creates gaps within society's social and economic sectors (Pere, 2015).

In general, benefits of good governance are reduced corruption (due to transparency and accountability), realization of democracy, and increasing international cooperation (through trust and conformation with international law). Improving each of good-governance components, for example, increased civil liberties, can make a difference in the population's well-being (Stead, 2015). Good governance has three attributes (Janssen and Van der Voort, 2016): 1) supports good relations and cooperation between the government, civil society and the private sector; 2) upholds principles of partnership, decision clarity, accountability, justice, predictability, democracy, civil liberties and free access to information; and 3) establishes a set of norms and values desirable for institutions, and governmental and international organizations.

Meanwhile, the agricultural sector plays a major role in human welfare. To improve agricultural productivity in the developing countries, efforts have involved improvements in technology and input availability. Such efforts emphasize on providing tangible products, such as capital and modern agricultural technology for modernization (the focus of most international assistance programs), irrigation equipment, and chemical fertilizers. Yet researchers are realizing that these noticeable achievements are limited unless they are supported by good governance (Lio et al., 2008).

Good agricultural governance could be the key to food security and development, improving management of domestic resources and eliminating the internal and external barriers to development. This research investigates the role of the government, private sector and civil society in implementing good agricultural governance in order to increase food security in Iran, a country that faces challenges relative to good governance such as transparency and accountability, effectiveness, regulatory quality, rule of law, and corruption. Iran has an oil-dependent economy with technology adoption lags and little organizational innovation. Despite Iran's high agricultural potential, growth in agriculture's share of GDP is lower than other

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sectors. An improved agricultural sector could help reduce the economy's dependence on oil and increase food security.

The World Bank calculates a governance indicator by country, which varies from -2.5 (the weakest) to +2.5 (the strongest). All of the governance indicators for Iran are negative (Figure 1). This research investigates the role of governance in improving agricultural performance and food security in Iran. It builds on arguments that poor governance constrain agricultural productivity, and more emphasis is needed on the governance infrastructure to enhance agricultural performance to positively influence a country's agricultural productivity (Liu et al. 2008).

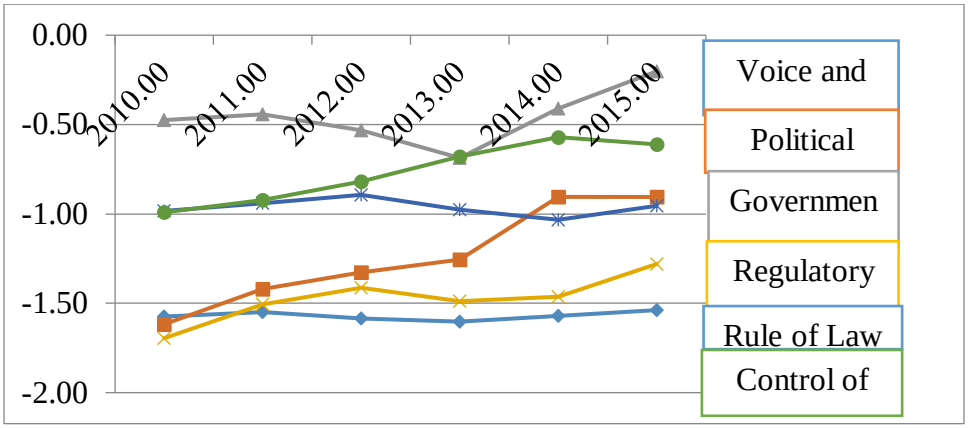

Figure 1: Governance Indicators in Iran in 2010- 2015.

2. LITERATURE REVIEW

Analyzing the role of improved governance infrastructure on economic performance is important for development and food security (Globerman and Shapiro, 2002). Good governance is a prerequisite for economic growth as other stakeholders become partners in the development process. Given the importance of agricultural, several studies have focused on agricultural governance. Lio et al. (2008) investigated the effects of governance infrastructure on agriculture and tested the hypothesis that good governance improves agricultural productivity. They showed a country with good governance can produce more agricultural output with the same amounts of inputs. They also investigated whether good governance can indirectly enhance agricultural labor productivity by driving agricultural capital accumulation. The results revealed that given the same amounts of agricultural capital stock and land, workers in a country with good governance produce more.

Bitzer et al., (2016) studied the governance of agricultural extension systems, concluding that demand-driven services in the agricultural sector have led to improvements in the efficiency of

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agricultural governance. Mohammadzadeh et al., (2017) studied the impact of government size on good governance and economic performance. Their results show that the size of government has a negative effect on economic growth, but good governance has a positive impact, and employment and education factors have positive effects on governance indicators.

Despite many studies on agricultural governance, there is no comprehensive study that determines how it affects economic, political, social and environmental aspects of agriculture (Elmenofi et al., 2014; Hayami et al., 1985; Liu et al., 2008). Due to economic sanctions and numerous challenges in investment and employment, Iran's agricultural conditions require improved governance. Iran is an oil-dependent economy, and an improved agricultural sector could help reduce the economy's dependence on oil and increase development and food security. In this research, we study the effects of improved agricultural governance on the economic, political, social and environmental aspects of the agricultural sector in Iran. Good governance could result in adopting appropriate agricultural policies, increasing agricultural productivity, production, and food security, reducing investment risk, and increasing farmers' participation in improving the agricultural sector.

3. METHODOLOGICAL APPROACH AND MODEL DEVELOPMENT

To determine the factors of good agricultural governance to improve Iran's agricultural sector, we use a meta-synthesis of a systematically retrieved sample of academic agricultural governance literature. This method identifies, evaluates, and synthesizes the articles produced by researchers, scholars and practitioners (Fink, 2010). This systematic review adheres to a set of principles that limits biases in the sample of studies (Booth et al., 2012; Moher et al., 2009; Petticrew and Roberts 2006). We collected academic articles from seven different academic databases: Web of Knowledge, Scopus, Science Direct, IEEE, Alps, Acs, Jstor, and Rsc sciences. They cover the 2000-2018 period, which is the focus of this review. A well-defined research based on the research questions in Table 1 is used to ensure sensitivity and specificity of the literature searches (Petticrew et al., 2006).

Table 1: Research Questions

	Research questions
	What are the variables which explain agricultural governance?
	What importance and weight does each variable have in agricultural governance?
	Who are experts to determine the variables that explain agricultural governance?
	How does agricultural governance improve the country?

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We use the Meta-synthesis method to find the important factors/variables used in the literature, and then present these variables to faculty members in the field of agriculture (as members of the expert group), to rank them using the Shannon Entropy method. The variables are also presented to a selected group of ten experts in the field of agriculture to identify the important agricultural-governance variables in Iran by modifying/adding/ deleting variables from the meta-synthesis. They weigh the variables by a Binary Comparison Matrix. Experts are selected by Snowball sampling, who complete their ranking through the Delphi method. Finally, we compare the global agricultural governance variables from the Shannon Entropy method with those from a pairwise comparison matrix using the Fuzzy method.

3.1 Meta-synthesis Model

In this method, the researcher performs a complete study and synthesizes the findings of related studies (Dekker and Bekkers, 2015), creating an interpretive combination of the findings. The seven-step method of Yahyapour et al., (2016) is used in this study:

Step 1: Formulating the review questions

The research questions in the meta-synthesis are: What are the variables which explain agricultural governance? What importance and weight does each variable have in agricultural governance? Who are experts to determine the variables that explain agricultural governance? How does agricultural governance improve the county's economy?

Step 2: Conducting a systematic literature search

It takes considerable effort to develop an exhaustive list of studies that might be included in the qualitative meta-analysis. Keywords are identified and used with all available databases within the study period. In this study, various databases, journals, key words and search engines were studied for the years 2000-2018. This process included 252 articles.

Step 3: Screening and selecting appropriate research articles

This step involves developing a means for determining the similarities among studies by using comparison parameters such as title, abstract and content.

Step 4: Extracting information from the articles

Information from papers is categorized by paper title and author, year of publication, and other important factors mentioned in the article. This step determines the range of factors for the Meta-Synthesis. The results are shown in "Table 2".

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Table 2: Factors and References on Agricultural Governance

Factors/Variables	References
Improving the quality of agricultural production and foods	Corsi et al (2014) Herman et al (2015) Hughes et al (2013) Benson and Jafry (2013) Papadopoulos (2003) Keulartz (2007) Paulino (2014) Mandemaker et al (2014) Lio and Liu (2008) Thirtle et al (2007) Herman et al (2015) Wang et al (2016) von Braun et al (2016) Corsi et al (2012)
The size and scale of agricultural land cultivation	Gehan et al (2014) Moguesand Owusu-Baah (2014) Paulino (2014) Biermann (2007) Cash et al (2006) Deininger et al (2014) Dryzek et al (2011) Paulino (2014) Hornidge et al (2015) Dinnie et al (2015) Mazzocchi et al (2014)
Operating expenses and taxes	Beckmann et al (2015) Yu (2015)
Group participation	Gera (2016) Zhou (2016) Soma et al (2016) Lemos and Agrawal (2006) Ford (2003) Bitzer et al (2016)

Water management and social justice	Bijman et al (2014) Huo et al (2016) Neal et al (2016) Barnard (2007) Huitema et al (2009) Fish et al (2010) Conrad et al (2016) Thirtle et al (2013) Settre1and Wheeler (2016)
Investing in agricultural research	Thirtle et al (2013) Saunier& Meganck (2009)
Observance of standards	Schouten and Bitzer (2015) Hospes (2014) Glasbergen and Schouten (2015) Hatanaka (2014)
Environment and natural resources	Pirani et al (2014) Stål et al (2015) Ay rikyan et al (2012) Bronen and Chapin (2013) Brunner and Lynch (2010) Paavola (2007) Primmer et al (2015) Zhou (2016) Gera (2016) Toddi (2014) Soma et al (2016)
Business	Av ram (2014) Biewald et al (2016) Birner et al (2016)
Agricultural employment	Tomiasi Paulino (2014)
Agricultural share of GDP	Gallego-Álvarez et al (2016)
Mechanization and technology	Greiber and Schiele (2011) Bernard and Rollin (2014) Hartley et al (2016)
Social justice and poverty	Ravnborg et al (2014) Fuchs and Glaab (2011) Elmenofi et al (2014)
Agricultural sustainability	Sanwal (2004)

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	Fuchs and Glaab (2011) Hart at al (2016) Gaviglio et al (2014) Fielke and Wilson (2016)
Governments policies	Giessen et al (2016) Bitzer et al (2016) Keulartz (2007) Lawrence et al (2008) Hanisch et al (2014)

Step 5: Analyzing and synthesizing qualitative findings

In this step we use the factors for the Meta-Synthesis analysis and aggregate them into concepts and then into basic categories so that we have summary data for using the Shannon Entropy method. The experts determined there were four categories, eleven concepts, and 22 factors from the 80 articles selected on agricultural governance. "Table 2" shows that a systematic study of agricultural governance has not been performed because all previous studies have focused on only one aspect of agricultural governance. Multiple dimensions of agricultural governance have not been considered in a coherent and systematic framework. The factors with each category and concept are shown in "Table 3".

Table 3: Categorization of Findings from the Meta-Synthesis

Categories	Concepts	Factors
Economic	Production and management	Mechanization and technology
		Agricultural employment
		Operating expense
		Taxes
	Marketing	Marketing efficiency systems
		Efficiency and production scale
		Agricultural land
	Natural resources	Development of institutions, capital markets and financial markets
	Development	Infrastructure
		Agricultural share of GDP
Political	Domestic	Government policy
	International	The role of market players in policy making
		Monetary and credit system
		International policy
Social	General	Reduce poverty and observance of justice
		Public participation
	Governmental	Use of cooperative companies and groups in the agricultural sector

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		Creation and expansion of consulting companies, public extension, education
Environment	Governmental laws	Sustainability
		Water management
	International laws	Protection of environment and resources
		Observance of standards
	Managerial	Determine the permitsand

Step 6: Control the extracted factors

We used the experts to classify the factors for agricultural governance. Cohen's Kappa Index (Barnett 2009) is used to test whether there is a consensus among the experts in their classification of factors.

The Meta-Synthesis analysis seeks to measure the importance of the various factors. The Shannon Entropy method provides a quantitative measure of importance, which incorporates the probability that a factor is important (Artstein et al., 2004; Hillborn, 1974; Shannon, 1948). The probability stems from the likelihood that a particular factor is mentioned in the literature. A system with higher Shannon entropy has more transitive information and, therefore, greater uncertainty. Events with higher probability contribute less transitive information to the system than events with lower probability (Rongbao, 2017).

In the Shannon Entropy method the rate that factors appear in the literature is counted toward its degree of importance. Equations 1 and 2 are used to calculate uncertainty and importance coefficients, respectively.

$$E \approx S\{P_1, P_2, \dots, P_n\} = -k \sum_{i=1}^{m} [p_{ij} ln p_{ij}], \text{ (j=1,2,…., n)} \qquad (1)$$

here E_j is an uncertainty coefficient, which is expressed by the probability distribution for each factor j. Pij is the probability that factor j is used in concept i.

$$P_{ij} = \frac{f_{ij}}{\sum_{i=1}^{m} f_{ij}} \quad (i = 1, 2, .., m; j = 1, 2, \dots, n), \quad k = \frac{1}{\ln m}$$

$$m = the\ number\ of\ studies$$

$$\sum_{i=1}^{m} f_{ij} = Frequency\ of\ studies\ for\ each\ concept$$

$$w_j = \frac{E_j}{\sum_{j=1}^{n} E_j} \qquad (2)$$

W_j is the importance of each study from the Shannon entropy method.

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3.2 Fuzzy hierarchical analysis method

The literature where responses to questions involving imprecise judgements are compared is extensive (Leung ve Chao, 2000). When human impressions are imprecise they are not successful in making quantitative predictions, but they are more efficient in qualitative forecasting (Kulak ve Kahraman, 2005). The uncertainty in the preference judgments gives rise to uncertainty in the ranking of alternatives as well as difficulty in determining consistency of preferences (Leung ve Chao, 2000). This is where fuzzy methods come into play.

In this application survey respondents were asked to rank factors of agricultural governance based on their relative importance using a scale with six rankings, from extremely important to weakly important. Those rankings were given weightings that reflect uncertainty on the part of the respondent that are consistent with other fuzzy analytical applications. With the fuzzy method, a pairwise comparison matrix is formed among evaluators and a weighted score, S_k, is calculated for each respondent as follows (Ping Wan et al., 2017).

$$S_k = \sum_{j=1}^{n} M_{kj} * [\sum_{i=1}^{m} \sum_{j=1}^{n} M_{ij}]^{-1} \qquad (1)$$

where M_{kj} is the ranking given for row k and factor j. In the fuzzy analysis method, we calculate the s_k's order of magnitude, where the order of magnitude for the two fuzzy numbers that constitute the upper (u) and lower (l) bounds for the ranking, M1 and M2, respectively, is shown as V (M1> M2) in equation (2).

(2)

$M_2 = (l_2, m_2, u_2)$, $M_1 = (l_1, m_1, u_1)$

$$\begin{cases} V(M_1 \geq M_2) = 1 & if\ m_1 \geq m_2 \\ V(M_1 \geq M_2) = Hgt(M_1 \cap M_2) & otherwise \end{cases}$$

$$\text{Hgt}\ (M_1 \cap M_2) = \frac{u_1 - l_2}{(u_1 - l_2) + (m_2 - m_1)}$$

The weight vector (T) of the factors is the same as the abnormal vector of the fuzzy analysis process, which is as W'(x):

(3)

$$W(x_i) = Min\{V(S_i \geq S_k)\} \quad \rightarrow \quad W(x_i) = \left[W'(c_1), W'(c_2), \dots, W'(c_n)\right]^T \ , k = 1,2, \dots, n$$

$k \neq i$

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$$W_i = \frac{w_i^{'}}{\sum w_i^{'}} \quad (4)$$

4. EMPIRICAL RESULTS

The Cohen's Kappa Index is used to test the classification of factors. This calculated statistic is 0.68 and is significant at the 0.001 probability level; we reject the null hypothesis that the factors are independent and conclude that the factors and concepts are appropriate. The results of the Shannon entropy method and the final ranking are shown in "Table 4". The coefficients international organization policies, group participation, and observance of standards have the highest importance and rank coefficient, the important variables of agricultural governance worldwide. Finally, we compare the global agricultural governance factors from the Shannon Entropy method with those from the Fuzzy hierarchical analysis method.

Table 4: Shannon Entropy Results and the Ranking Agricultural Governance Factors

Concepts	Factors	Frequently	$\sum_{i=1}^{m} p_{ij} \, lnp_{ij}$	Uncertainty E_j	Importance coefficient W_j	Total rank
Production and Management	Mechanization and technology	3	-0.203	-0. 044	0.0323	9
	Agricultural employment	1	-0.105	-0.023	0.0169	11
	Efficiency and production scale	14	-0.35	0.077	0.0566	3
	Agricultural land	11	-0.36	-0.079	0.0580	2
Natural resources	Operating expense	1	-0.105	-0.023	0.0169	11
Marketing	Taxes	1	-0.34	-0.075	0.0551	4
	Market efficiency systems	3	-0.21	-0.046	0.0338	8
Development	Institutional development, capital market and financial market, the infrastructures	2	-0.345	-0.075	0.0551	4
	Agriculture share of GDP	2	-0.345	-0.075	0.0551	4
Domestic policy	Government policy and the role of market players in policy making	2	-0.364	-0.079	0.0580	2
	Monetary and credit system	3	-0.306	-0.067	0.0492	5
International policy	International organizations policy	1	-0.36	-0.080	0.0588	1
	Climate policy	2	-0.27	-0.059	0.0433	7

Government	Reduce poverty and observance of justice.	3	-0.306	-0.067	0.0492	5
	Creation and expansion of consulting companies, public extention, education	2	-0.364	-0.080	0.0558	2
General	Proper use of group and cooperative companies in agricultural policies.	1	-0.36	-0.080	0.0588	1
	Use group participation in agricultural sector and technology transfer.	2	-0.27	-0.059	0.0198	10
Governmental laws	Sustainability	5	-0.364	-0.079	0.0580	2
	Water management, permitstand	9	-0.285	-0.062	0.0455	6
International laws	Environmental protection and resources	15	-0.262	-0.057	0.0419	7
Managerial	Observance of standards	7	-0.363	-0.080	0.0588	1

After determining the important variables of agricultural governance globally, we make the pairwise comparison matrix based on the responses to the questionnaires. "Table 5" shows the result for one responder in the economics area and "Table 6" shows the result for one responder in the political, social, and environmental area. Total fuzzy numbers in the pairwise comparison matrix are calculated based on equation 1.

$$\left[\sum_{i=1}^{m}\sum_{j=1}^{n} M_{ij}\right]^{-1} = (0.009\ ,0.01, 0.013)$$

The abnormal weight vector (T) of the factors in the economic area (calculated from equation 3) are:

$W'(X_i) = [0, 0.5, 0.2, 0.6, 0.1, 0.09, 0.09, 0.6, 0.7]^{T}$

The normalized factor weights (calculated from equation 4) are:

$W_i = (0, 0.17, 0.06, 0.20, 0.03, 0.31, 0.31, 0.20, 0.24)$

The abnormal and normalized factor weights of factors for the political, social and environmental areas are calculated from the same formulas and are:

$W'(Xi) = [0.17, 0.02, 0.12, 0.20, 0.40, 0.08, 0.12, 0.13, 0.34]^{T}$

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W_i = (0.10, 0.012, 0.07, 0.12, 0.25, 0.05, 0.07, 0.08, 0.21)

The Meta-synthesis method shows that international policy, group participation, cooperative companies, and observance standards have the highest importance and rank. For the fuzzy analysis the factors of agricultural employment, group participation and cooperative companies have the highest weight in the political, social and environmental areas and the factors of increase production, and financial and capital markets have the highest weight in the economic area.

Table 5: Pairwise Comparison Matrix for One Respondent in the Economic Area

	Mechanization and technology	Poverty Reduction	Marketing efficiency systems	Operating expense and taxes	Agricultural land	Efficiency and production	Development of institutions, capital markets and financial markets	Infrastructure	Agricultural Share of GDP
Mechanization and technology	(1,1,1)	(2/3,1/2,2/5)	(1,2/3,1/2)	(1,1,1)	(2,1,2/3)	(2,1,2/3)	(2/3,1/2,2/5)	(1,1,1)	(2/3,1/2,2/5)
Poverty Reduction	(3/2,2,5/2)	(1,1,1)	(1/2,2/5,1/3)	(1,1,1)	(2,1,2/3)	(2,1,2/3)	(1,2/3,1/2)	(2/3,1/2,2/5)	(1,1,1)
Marketing efficiency systems	(1,3/2,2)	(2,5/2,3)	(1,1,1)	(1,1,1)	(1,1,1)	(2,1,2/3)	(1/2,2/5,1/3)	(1,2/3,1/2)	(1/2,2/5,1/3)
Operating expense and taxes	(1,1,1)	(1,1,1)	(1,1,1)	(1,1,1)	(2,1,2/3)	(2,1,2/3)	(1/2,2/5,1/3)	(1,2/3,1/2)	(2/3,1/2,2/5)
Agricultural land	(1/2,1,3/2)	(1/2,1,3/2)	(1,1,1)	(1/2,1,3/2)	(1,1,1)	(1,2/3,1/2)	(2/3,1/2,2/5)	(1/2,2/5,1/3)	(2/5,1/3,2/7)
Efficiency and production	(1/2,1,3/2)	(1/2,1,3/2)	(1/2,1,3/2)	(1/2,1,3/2)	(1,3/2,2)	(1,1,1)	(1,1,1)	(2/3,1/2,2/5)	(1/2,2/5,1/3)
Development of institutions, capital markets and financial markets	(3/2,2,5/2)	(1,3/2,2)	(2,5/2,3)	(1,1,1)	(3/2,2,5/2)	(1,1,1	(1,1,1)	(2,1,2/3)	(2/5,1/3,2/7)
Infrastructures	(1,1,1)	(3/2,2,5/2)	(1,3/2,2)	(1,1,1)	(2,5/2,3)	(3/2,2,5/2)	(1/2,1,3/2)	(1,1,1)	(2/5,1/3,2/7)
Agricultural Share of GDP	(3/2,2,5/2)	(1,1,1)	(2,5/2,3)	(3/2,2,5/2)	(5/2,3,7/2)	(2,5/2,3)	(5/2,3,7/2)	(5/2,3,7/2)	(1,1,1)

Table 6: Pairwise Comparison Matrix in the Political, Social, and Environmental Are

	Government policy	**The role of market players in policy making**	**Monetary and credit system**	**International Policy**	**Agricultural employment**	**Observance standards and permitstand**	**Sustainability**	**Water management**	**group participation and consulting companies**
Government policy	(1,1,1)	(2/5,1/3,2/7)	(1,2/3,1/2)	(1,1,1)	(1,2/3,1/2)	(2/3,1/2,2/5)	(2/3,1/2,2/5)	(2,1,2/3)	(2/5,1/3,2/7)
The role of market players in policy making	(5/2,3,7/2)	(1,1,1)	(1/2,2/5,1/3)	(1,2/3,1/2)	(2,1,2/3)	(2,1,2/3)	(1,2/3,1/2)	(2/3,1/2,2/5)	(1,1,1)
Monetary and credit system	(1,3/2,2)	(2,5/2,3)	(1,1,1)	(2,1,2/3)	(2/3,1/2,2/5)	(2,1,2/3)	(1/2,2/5,1/3)	(1,2/3,1/2)	(2/3,1/2,2/5)
International Policy	(1,1,1)	(1,3/2,2)	(1/2,1,3/2)	(1,1,1)	(2,1,2/3)	(2,1,2/3)	(1/2,2/5,1/3)	(2/3,1/2,2/5)	(2/3,1/2,2/5)
Agricultural employment	(1,3/2,2)	(1/2,1,3/2)	(3/2,2,5/2)	(1/2,1,3/2)	(1,1,1)	(2/5,1/3,2/7)	(2/3,1/2,2/5)	(1/2,2/5,1/3)	(2/5,1/3,2/7)
Observance of standards and permitstand	(3/2,2,5/2)	(1/2,1,3/2)	(1/2,1,3/2)	(1/2,1,3/2)	(5/2,3,7/2)	(1,1,1)	(1,1,1)	(2/3,1/2,2/5)	(1,2/3,1/2))
Sustainability	(1/2,1,3/2)	(1,3/2,2)	(2,5/2,3)	(1,1,1)	(3/2,2,5/2)	(1,1,1	(1,1,1)	(2,1,2/3)	(2/5,1/3,2/7)
Water management	(1,1,1)	(3/2,2,5/2)	(1,3/2,2)	(3/2,2,5/2)	(2,5/2,3)	(3/2,2,5/2)	(1/2,1,3/2)	(1,1,1)	(1/2,2/5,1/3)
group participation and consulting companies	(3/2,2,5/2)	(5/2,3,7/2)	(3/2,2,5/2)	(3/2,2,5/2)	(5/2,3,7/2)	(1,3/2,2)	(5/2,3,7/2)	(2,5/2,3)	(1,1,1)

5. CONCLUSIONS AND DISCUSSION

Agricultural development and food security are important issues facing developing countries. While a great deal of effort has been devoted to improve agricultural technologies, physical infrastructure and education, researchers and policy-makers have recently attached more importance to the impact of governance on agricultural performance. In this research, we used the Meta-synthesis and Fuzzy analysis methods to idenify important governance variables for Iran's agricultural. Those are agricultural employment, group participation, and cooperative companies in the political, social and environmental areas, and increased production as well as financial and capital markets in the economic area. The policy recommendation is the

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implementation of agricultural governance to include a broad approach that encompasses the whole agriculture sector to improve employment, financial markets, and group participation in Iran's agriculture sector.

The group participation and cooperative companies are identified in both methods. Group participation and cooperative companies provide a connection between people and government and makes sense that these factors are important in agricultural governance because they complement and enhance public accountability mechanisms. Rural production cooperatives help small farmers increase their production and marketing capacities (Khosravipour et al., 2014), and increase the bargaining power of the operators, reducing costs of transportation and marketing. Government's role is to provide information, as well as financial and technical support for the formation and development of production cooperatives in Iran's agricultural sector.

Easy access to financial resources is a requirement for investment and development of the agricultural sector. However, due the lack of developed agricultural financial markets in Iran, this sector faces investment constraints. This paper shows that one of the important variables in agricultural governance is increased efficiency in agricultural financial markets so that credit constraints are loosened. To achieve this goal, the government needs to adopt policies that strengthen financial structures, which allow farmers to access financial markets easily.

Agricultural production is vitally important as the main source of livelihood for 2.5 billion people in the world, yet the growth of agricultural productivity has stalled. Yields for major grains grow by about 1 percent per year, which is lower than the population growth rate. Given that expanding the cultivated area is not possibility to meet future needs, increasing agricultural productivity is the only solution to feeding the growing (urbanized) population (who has higher food demand). The use of modern communications methods in extension services can foster adoption of new technologies and promote profitable cultivation among farmers. Increasing productivity among smallholders in developing countries is a crucial instrument to guarantee food security in the long-run (Dethier et al., 2011).

Balancing world agricultural production and prices in an ever-changing global environment is notoriously difficult. The world population will reach 9.3 billion by 2050 (UN). World demand is estimated to require a 60% increase in agricultural production globally compared with 2009 levels. Natural resources across the globe, notably soil and water on which farming depends, are under unprecedented strain from productivity demands and climate change. These events focus attention on the pivotal role of agricultural policies as crucial variables of agricultural governance for food security and rural prosperity.

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An important variable of agricultural governance worldwide is international policy. The international aspects of agriculture policy have an important role in pursuing the fundamental objectives of governments. For instance, the Common Agricultural Policy of the European Union emphasizes agricultural productivity, a fair standard of living for farmers, ensuring reasonable prices for consumers, and promoting stability in markets (in particular stabilizing imports and exports) as well as food security (Ciolos, 2012). Other key elements have a direct bearing on the international aspects of agricultural policy, including commercial policy that sets negotiations and conclusions for tariff and trade agreements; policies that are coherent with improving food security and rural prosperity in developing countries; policies that contribute toward global sustainability of the farming sector (encompassing the challenges of climate change and conservation of biodiversity); policies that support the rules-based global trading system in a way that takes account of the fundamental role of agriculture in ensuring food security.

Another significant variable in agricultural governance worldwide is observance standards. Standards and technical regulations have attracted increasing attention in ongoing regional and global trade policy dialogue as tariff and quota issues seem to assume a declining dimension. With the reduction in the applicability of tariff barriers, the adoption rate of standards as a trade restrictive strategy has increased significantly. This growing emphasis on non-tariff barriers, in the face of increased globalization and rapid agricultural trade liberalization, has attracted considerable public debate on the impact of standards on regional and international market access for agricultural commodities.

In addition to hindering access to markets for agricultural commodities produced by smallholder farmers, standards also raise the cost of agricultural exports. Thus serving as disincentives to smallholder farmers (Odularu et al., 2011). In fact, Sanitary and Phyto-Sanitary (SPS) measures, which apply to domestically, sub-regionally, and regionally produced/traded agricultural products, take many forms, such as requiring products to come from a disease-free area, inspection of products, specific treatment or processing of products, or permitted use of only certain additives in food products. Ultimately, the measures help to ensure that agricultural commodities are safe for consumers, and prevent the spread of pests or diseases among animals and plants.

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