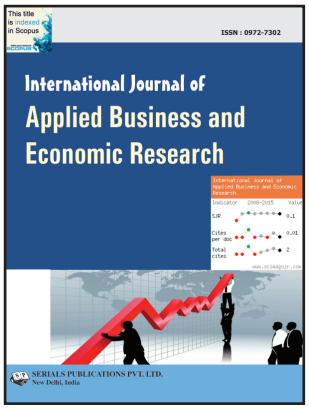

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Modeling Role of Institutional Factors in Agricultural Sector Investment in Sistan and Baluchestan Province, Iran (Structural Equation Modeling Approach)

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ABSTRACT

Purpose: This article aims to study the role of institutional factors in agricultural investment sector in Sistan and Baluchestan Province, Iran. Statistical population consisted of the experts and elites involved in agricultural sector in Sistan and Baluchestan province. The sample size consisted of 234 experts. Cochran's method was employed. We identified 7 institutional barriers in the agricultural sector including unproductive jobs, administrative structure, the instability of rules and regulations, administrative health, unfamiliarity of experts and farmers with potentials, high risk in agriculture, and allocated budget. Instability of rules and regulation was the most important factor. The indicators were investigated by forwarding questionnaires to experts and elites working in Agriculture Jahad and Bank of Agriculture in Sistan and Baluchestan Province, Iran. Structural Equation Modeling (SEM) was employed to analyze the data. It is argued that an acceptable consistency is found between the offered structural model and empirical data.

Keywords: Structural Equations, Sistan and Baluchestan Province, Institutional Factors, Investment, Agriculture.

1. INTRODUCTION

According to the institutional theory, institutional factors are effective in economy and business environment and macro decisions, organizational resource provision, maintaining the legitimacy of the organization, and strategy selection in organizations and companies. Such effectiveness is performed within either clear, legal, and official context or sometimes informal and unobvious networks. Economic activities in developing countries are mainly affected by these factors. Familiarity with them plays a key role in determining the business environment (Husseini et. al., 2013). Sistan region has faced multiple problems and challenges

in economy and agriculture sector due to continuous droughts and Helmand water cuts resulting from Afghanistan's non-compliance against bilateral agreements and failure to respect the water rights of Islamic Republic of Iran. Providing facilities would be highly effective in order to change the current trend and maintain and preserve the population, in particular the young, educated ones in the region. Statistics show that investment/GDP ratio is 16.5% on average. It is, however, 3.9% in agriculture sector. In other words, only 3.9% of total agricultural sector added value returns to the sector in the form of investment. Among the four resources (land, capital, work, and management), land, work, and management are accessible for the farmers regardless of their qualities. Capital, however, is scarce in Iranian agriculture (Nikoukar, 2012: 224). Capital is considered one of the most important production factors and key element of growth and development in agriculture sector. It plays a key role in quantitative and qualitative increase in production and development of economic activities, leading to the productivity of other production factors (Akbari, 2013). Therefore, this article aims to study the role of institutional barriers in agricultural sector investment in Sistan and Baluchestan province, Iran.

2. LITERATURE REVIEW

Keshavarzian Peyvasti and Azimi Chanzagh (2008) identified the institutional barriers of industrial development within administrative-executive process for the construction of industrial units in West Azerbaijan province, Iran. Isazadeh and Ahmad Zadeh (2009) studied the effect of institutional factors along with other economic ones. A total of 50 countries were investigated with different levels of development worldwide from 1996 to 2005. The results showed that the effect of public institutions such as the role of law, political stability, corruption control, bureaucracy quality, and the effectiveness of government were positive and significant in economic growth. The effect of accountability and democracy index, were, however, insignificant. Hussein Zadeh Bahreini and Malek Al-Sadati (2011) reviewed and measured the business institutional factors and feeling of investors' insecurity and concerns in Iran within multiple subjective variables. The results showed that business constituent components of the institutional environment, in most cases, are in a worse position compared to developing countries and worldwide. Shah Abadi and Dehghani Ahmad Abad (2012) carried out their study within endogenous growth models and the role of institutional factors on growth. According to the results for D8 countries from 1995 to 2009, they do not have endogenous mechanisms for internal R & D activities. Foreign R & D spillovers had a positive, significant effect on economic growth in D8 countries. The interaction between institutional factors, such as improving the business environment, improving the quality of training, and protecting patents with foreign R & D spillovers had positive, significant impact on economic growth in D8 countries. Other studies have been conducted in Iran in this regard by Ebrahimi Salari and Adibian (2013), Hekmat (2013), Abdi, Kiani Rad, and Pish Bahar (2014), and Kordi and Mehran Far (2014).

In terms of the studies abroad, Pravin Jadhou [1] (2012) studied the role of economy and institutional and political factors to attract Foreign Direct Investment (FDI) in Brazil, Russia, India, China, and South Africa (BRICS) and compared these factors to attract FDI. Panel data were used in a decade (2000-2009). Significant determinants of FDI in the BRICS were tested by holistic method. The data were analyzed bypanel unit root test and multiple regression. Finally, "economy" factor was more significant than political and institutional factors in BRICS economy. Esmaeel El-Nihavi [2] and Foad Hanim Fadzil [3], Rapiah Mohammad [4] (2014) studied the mediating role of performance measurement in the relationship between the institutional factors (Mandatory and normative pressure) and organizational efficiency. Data were collected using 154 commercial banks in Libya. The results showed a significant, positive correlation

between mandatory and normative pressure and organizational efficiency through the evaluation of non-financial efficiency. The study, however, did not provide any evidence concerning the significant relationship between normative pressure and organizational efficiency through the evaluation of non-financial efficiency. In terms of foreign studies, we can point out to studies by Eleanor Storm [5] (2008), Acemoglu and James A. Robinson [6] (2010).

3. METHODOLOGY

Among investment in different economic sectors, agricultural investment is of great importance because such investment can lead to production growth and employment due to continuous demand for food items and other produce (Shir Afkan Lamsou et. al., 2012). Figure 18.1 shows the institutional factors affecting the investment in agricultural sector.

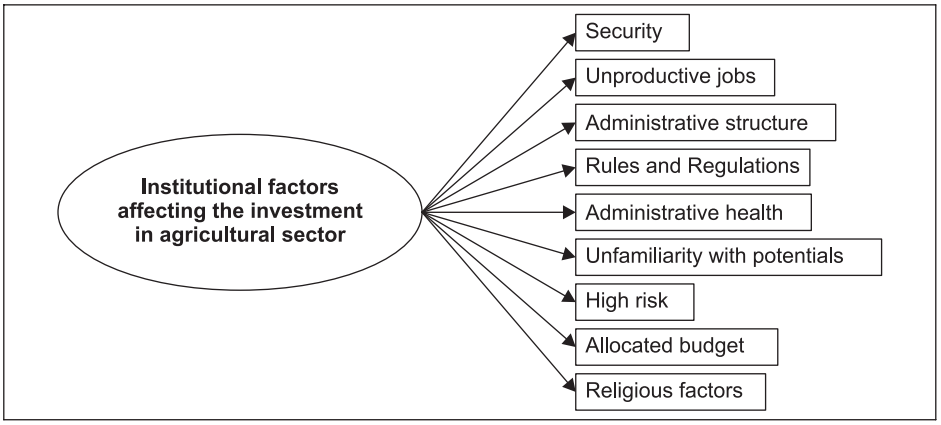

Figure 18.1: The Conceptual Model
Source: **Researcher's investigation**

As it can be seen, institutional factors consist of 9 factors including security, unproductive jobs, administrative structure, the instability of rules and regulations, administrative health, unfamiliarity of experts and farmers with potentials, high risk in agriculture, allocated budget, and religious factors. These factors were reduced to 7 due to lack of sufficient validity of some indicators as follows:

1. Security: is an important barrier due to the province borders with both Afghanistan and Pakistan.
2. The dominance of unproductive jobs: such as trafficking and brokering.
3. Weak administrative structure: All kinds of irregularities appear in inefficient administrative system (Baqeri, 2008).
4. The instability of Rules and Regulations: Regular and predictable changes in policies and laws help the economic agents by providing calm environment.
5. Weak administrative health: The owners of economic institutions, corporations, and private-sector organizations are interested in close contact and informal communications with senior administration officials because they can offer profitable orders or grant government loans and other government assistance (Ayat Baqeri, 2008).
6. Unfamiliarity of experts and farmers with potentials: Promotion by improving the knowledge and skills of farmers can be effective in agriculture development (Khanjari et. al., 2008).

7. High risk [7] in agriculture sector: natural and artificial hazards in agriculture sector caused farmers to face insecure conditions. Therefore, their income is faced with instability (Rei [8], 1967).
8. Allocated budget: An efficient financial market which meets the financial needs of farmers with low cost is one of the fundamental prerequisites of agricultural sector development (Abdullahi, 2006).
9. Religious factors: Sistan and Baluchestan is a province with Shiite and Sunnite population. In the past, people used to believe that bank interest is usury and is forbidden. Therefore, they avoid saving their money in banks. It, however, changed today because of increased knowledge and information. Yet, there are still some who believe in the matter.

Table 18.1
The source of questions

Indicator	*Items*	*Reference*
Security	q1 - Borders with both Afghanistan and Pakistan have caused insecurity in agriculture sector q2 - Political situation of neighboring countries had caused the reduction of input provision and export	Rafee (2009): Interviews with experts
Dominance of unproductive jobs	q3 - The dominance of commercial business over agriculture sector due to borders with Afghanistan and Pakistan and trafficking q4 - The outflow of capital from the agricultural sector due to the profitability of unproductive activities (trafficking and brokering)	Interviews with the experts
Weak administrative structure	q5 - Weak coordination between public agencies in Sistan and Baluchestan is a barrier for investment in agriculture sector.	Administrative reform Road Map(2013)
Instability of Rules and Regulations	q6 - Inappropriate investment-related rules and regulation in agriculture sector in Sistan and Baluchestan province and Iran. q7 - Instability of policies and decisions in the field of investment in agriculture sector q8 - Complex and time-taking process of license and facilities from the decision to implementation a plan to operational phase q9 - Different perception, unfamiliarity and lack of information regarding rules and regulations q10 - Lack of commitment to pre-determined programs by the government q11 - Waste of investment resources in agriculture sector due to the absence of long-term horizon in this sector q12 - Administrative bureaucracy q13 - Barriers to export agricultural products q14 - Fostering a sense of insecurity due to the faded ownership rights q15 - Unpredictable changes in policies and laws q16 - Equal rules in different parts of Iran	Interviews with agricultural experts
Weak administrative health	q17 - Outflow of capital from agriculture sector due to insufficient administrative health in organizations q18 - Grants, licenses and facilities to those who are not real manufacturer due to lack of administrative health q19 - Low administrative health	Coffman [9] et. al. (2010). Iranian Monitoring Coordination Council

Indicator	*Items*	*Reference*
Unfamiliarity of experts and farmers with potentials	q20 - Unsuccessful agricultural experts to identify investment potentials in different regions and introduce such potentials to farmers q21 - Unfamiliarity of experts and farmers with different investment fields in agriculture sector q22 - Absence of skilled experts who are able to manage manufacturing units scientifically and practically q23 - Waste of investment resources in agriculture sector due to no commitment to apply the comments of experts	Education and Promotion of Agricultural Research (2015): Interviews with Assessment Expert of Agriculture Bank
High Risk in Agriculture	q24 - Inappropriate economic conditions which have caused the pessimism of agricultural sector investors to future q25 - Fluctuations in input and agricultural products prices leading to risky production in agriculture sector q26 - Insufficient risk compensation by insurance and lack of diverse insurance services.	Aziz Nasiri (2011): Interviews with farmers
Allocated Budget	q27 - Insufficient allocated budget to agriculture sector q28 - Limited and insufficient financial support for manufacturers and applicants to invest in agriculture sector q29 - Absence of efficient financial market to provide the financial needs to farmers	Abdullahi (2006): Pour Afzal and Amani and Mohammad Zadeh (2012)
Religious factors	q30 - There are still farmers who believe in Haram bank interest concerning the reception of loans, leading to lack of contribution of investment	Interviews with farmers and agricultural experts

Source: Researcher's findings

Document and desk study was employed in order to achieve a theoretical frame, transparent social condition, and familiarity with literature review. This is also a survey to collect, classify, and describe the data. It is also an applied study. The statistical population consisted of 600 agricultural experts in Sistan and Baluchestan Province. Cochran's formula was used. A total of 234 experts were enrolled. A total of 300 questionnaires were forwarded to experts in a 6-month period from where we received 235 questionnaires. The questionnaire was forwarded to experts (Economy and Agriculture professors) in order to study the validity of questions and items. Then, the items were taken into account for measuring. Irrelevant items were eliminated and their comments were taken into account. A limited number of experts (80) were selected in order to verify the reliability. Deficiencies and inadequacies relating to some questions were met after data extraction and the evaluation of weak and strong points. Therefore, the data were analyzed in two stages. In the initial investigation, Alpha was 0.89. It was, however, 0.875 in the final stage. Cronbach's alpha which is greater than 0.7 has an acceptable level of reliability. Therefore, the reliability was rated acceptable.

Structural Equation Modeling (SEM) was used to model the institutional factors affecting the investment in agriculture sector which is to accurately test the theoretical patterns based upon the correlation between the observed and latent variables. Covariance or correlation matrix was used to analyze the correlation. They are divided into two parts: factor analysis and SEM. LISREL is used to perform both of them. SEM [10] is a casual structure among a set of latent structures. SEM has two elements: a structural model which determines the structure between latent variables and a measurement model which defines the relationship between the observed and latent variables (Habibi, 2012: 10).

4. DISCUSSION AND ANALYSIS

Based upon the conceptual model, we clarified the institutional factors affecting the investment. Factor analysis and structural equations were employed in order to study the effect of each of institutional factors. Figure 18.2 and 18.3 shows the results of model estimation.

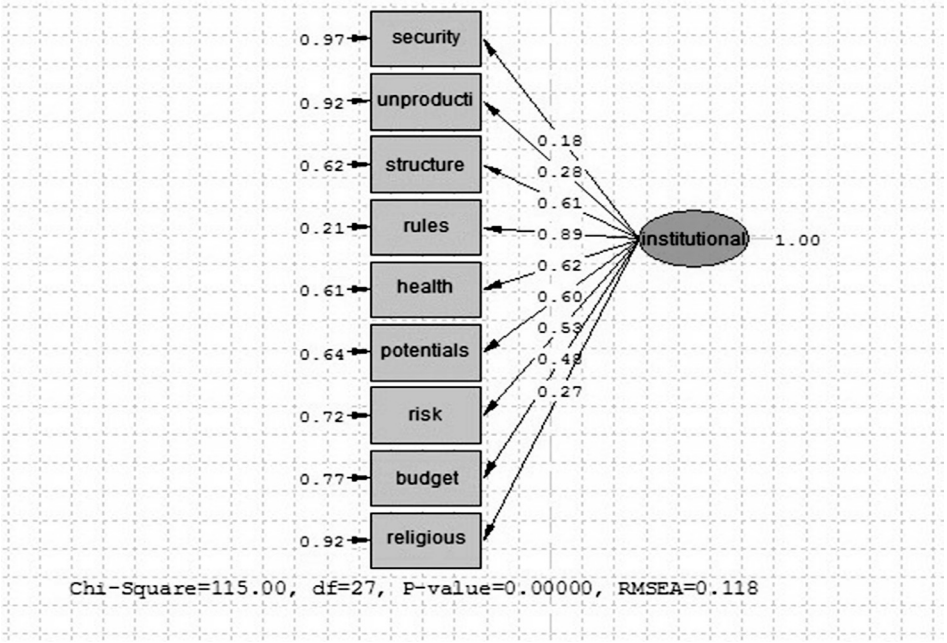

Figure 18.2: First-Order Confirmatory Factor Analysis Output at Standard Estimation Mode

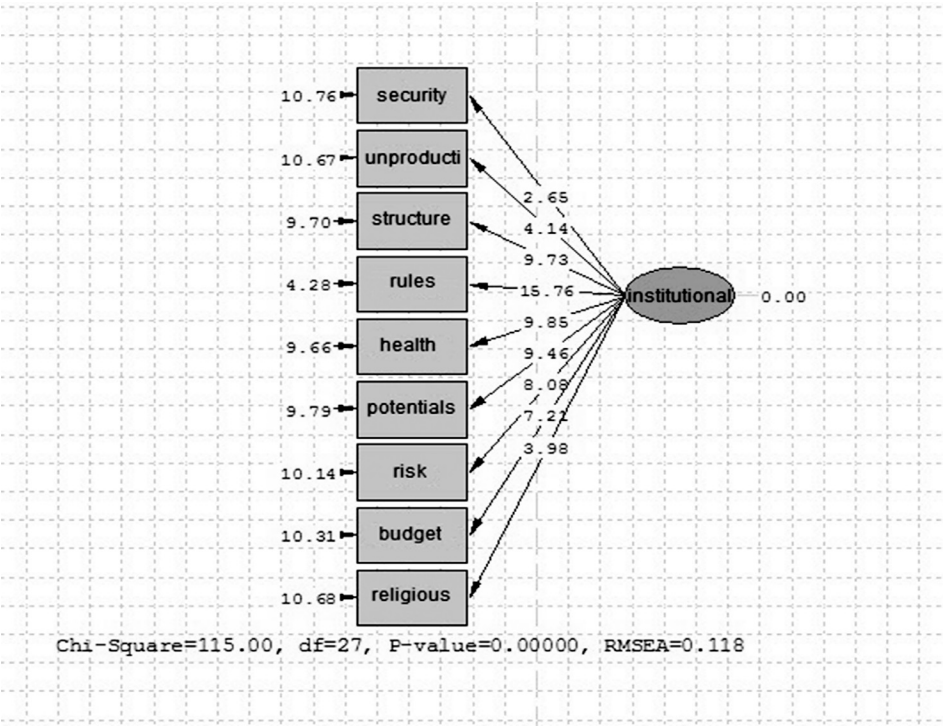

Figure 18.3: First-Order Confirmatory Factor Analysis Output at *t*-Estimation Mode for institutional factors

As it can be seen in Figure 18.2, all load factors are greater than the critical value of 0.3 except for security and unproductive jobs eliminated from structural equation test due to lack of validity. According to Figure 18.3, since *t* values are not between –1.96 and +1.96, they are all significant at less-than-0.05 significance level. Second-Order Confirmatory Factor Analysis is carried out due to the elimination of indicators without load factor shown in Figure 18.4 and 18.5.

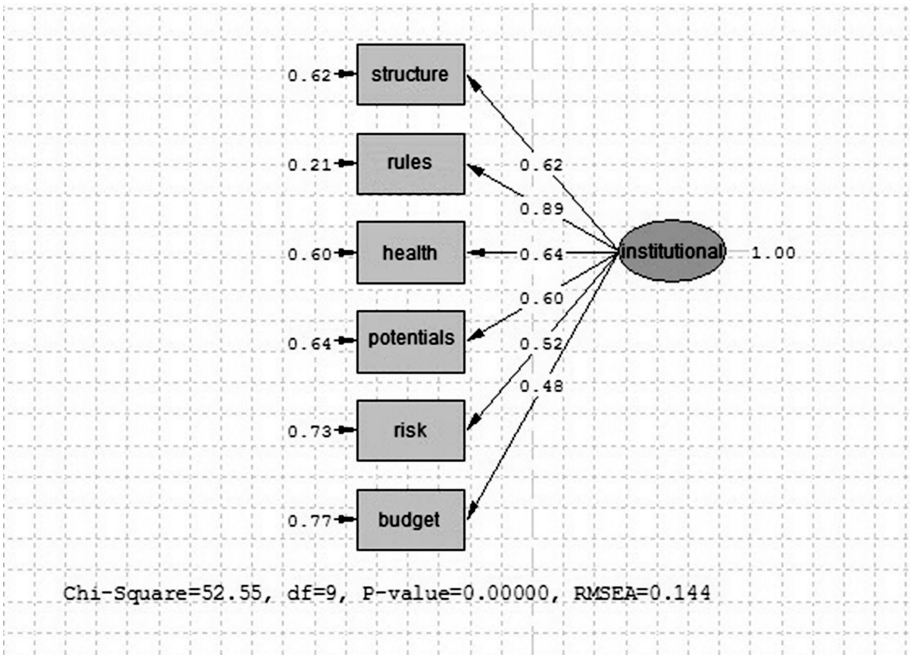

Figure 18.4: Second-Order Confirmatory Factor Analysis Output at Standard Estimation Mode

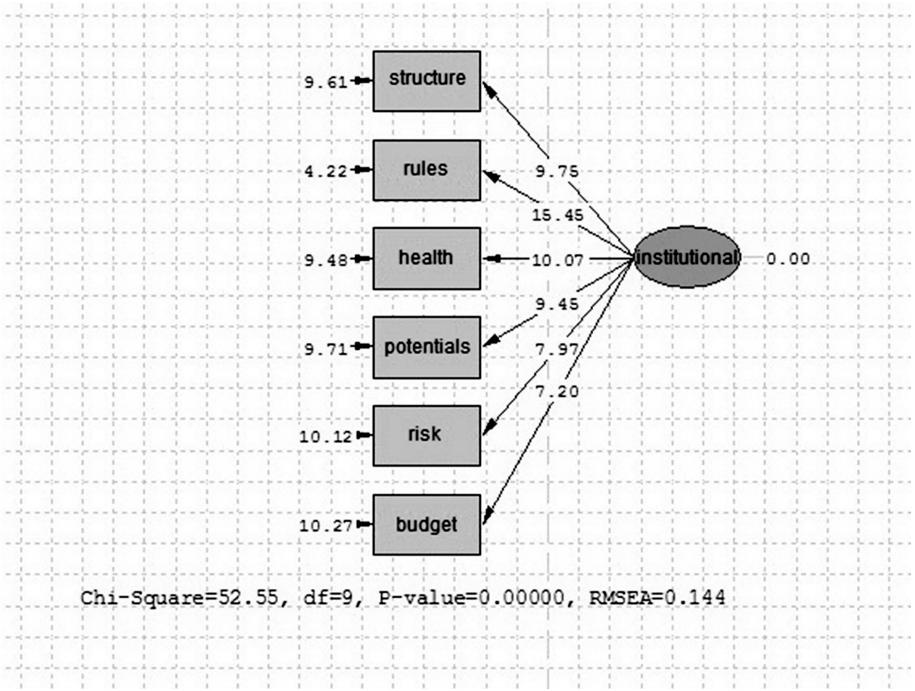

Figure 18.5: Second-Order Confirmatory Factor Analysis Output at *t*-Estimation Mode for institutional factors

Table 18.2
The Summary of Model Fitting Tests

No.	*Test*	*Main Criteria*	*When is the model fit?*	*Interpretation*
1	X^2	The difference between observed and expected frequency	Is significant (greater than table value)	52.55 (excellent fitting)
2	RMR	Remaining variance and covariance	Close to zero	0.055 (excellent fitting)
3	GFI	Relative variance and covariance evaluation	Between 0 and 1. Equal or greater than 0.9	0.93 (excellent fitting)
4	AGFI	Mean Square instead of Sum of squares in above model	Between 0 and 1. Equal or greater than 0.9	0.84
5	RMSEA	Total root mean error	Less than 0.1	0.144
6	NFI	Compare the model to the model without their relationships	Greater than 0.9	0.91 (excellent fitting)
7	CFI	Compare the model to the model without their relationships	Greater than 0.9	0.92 (excellent fitting)

Source: Applied Probability and Statistics

With focus on the seven fitting indicators, the fitting model, from the one hand, and empirical data, on the other hand, can be emphasized. Considering the model concerning the role of institutional factors in investment in agriculture sector, an appropriate model was devised. The acceptable fitting indicates structural equation modeling with emphasis on indicators. Seven indicators were developed to study the role of institutional factors in investment in agriculture sector in Sistan and Baluchestan, Iran.

1. Weak administrative structure: weak coordination among public agencies is an important barrier to invest in agriculture sector.
2. Instability of Rules and Regulations

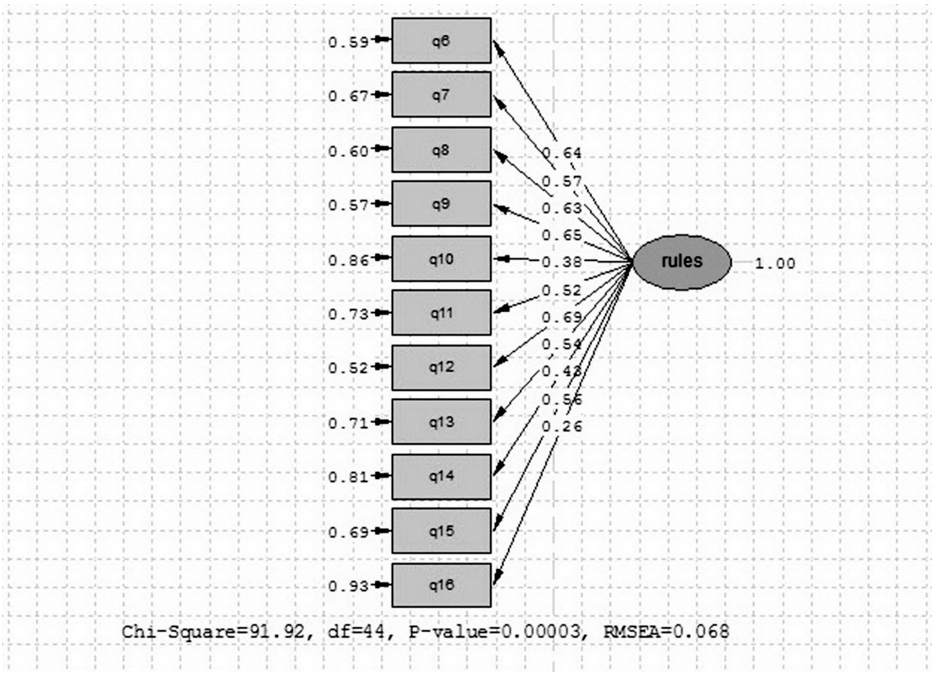

Figure 18.6: SEM for Rules and Regulations

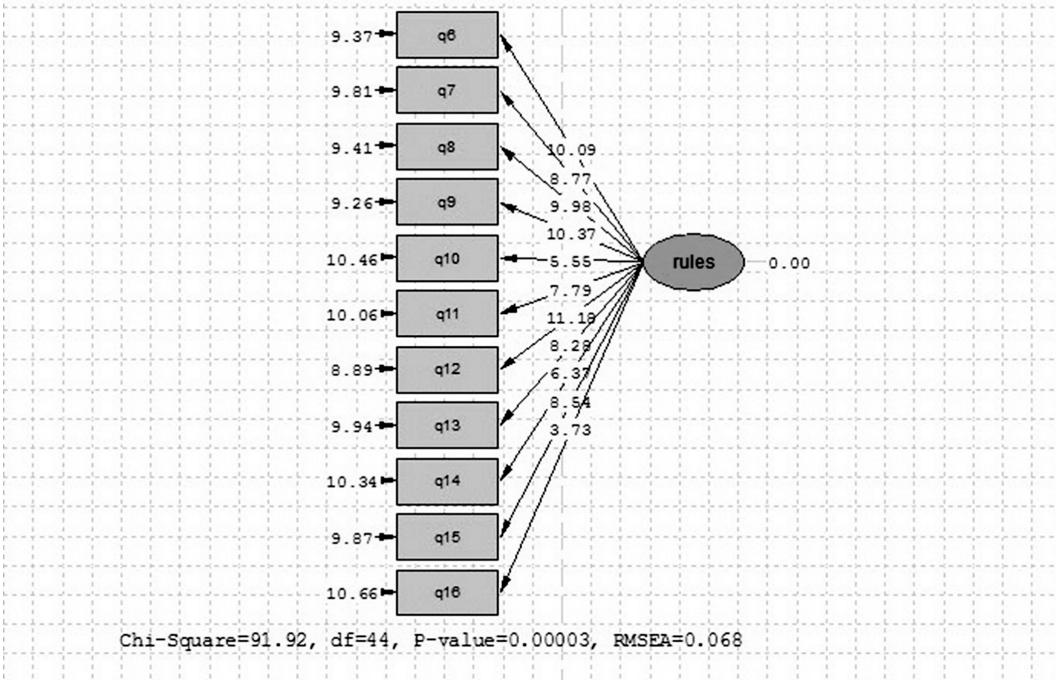

Figure 18.7: T value test for Rules and Regulations

"Administrative bureaucracy" (q12) was the most important item with standard coefficient of 0.69 and $t = 11.19$."Different perceptions, lack of familiarity and understanding the law and practice" (q9) was the second item with standard coefficient of 0.65 and $t = 10.37$. "Inappropriate rules and regulations related to investment in agriculture sector in Sistan and Baluchestan province" (q6) was the third important factor with standard coefficient of 0.64 and $t = 10.09$.

3. Weak administrative health: the second item was "Grants, licenses and facilities to those who are not real manufacturer- was the important factor" (3.4). The second item had an average of 3.14 and the third had an average of 3.12.

4. Unfamiliarity of experts and farmers with potentials:

   "Unfamiliarity of farmers and investors with different field of investment in agriculture sector" (q12) was the most important item with standard coefficient of 0.73 and $t = 10.02$. "Unsuccessful agricultural experts to identify investment potentials and failure to introduce these potentials to utilizers" (q20) was the second important item with standard coefficient of 0.69 and $t = 9.49$. The third item was "Absence of skilled experts who are able to manage manufacturing units scientifically and practically" (q22) with standard coefficient of 0.55 and $t = 7.70$.

5. High risk in agriculture: "Fluctuations in input and agricultural products prices leading to risky production in agriculture sector" was the most important item with standard coefficient of 4.09. The second and third items had standard coefficients of 3.92 and 3.59, respectively.

6. Allocated budget: The most important item was "Insufficient allocated budget to agriculture sector" with standard coefficient of 3.87. The second and third items had standard coefficients of 3.73 and 3.62, respectively.

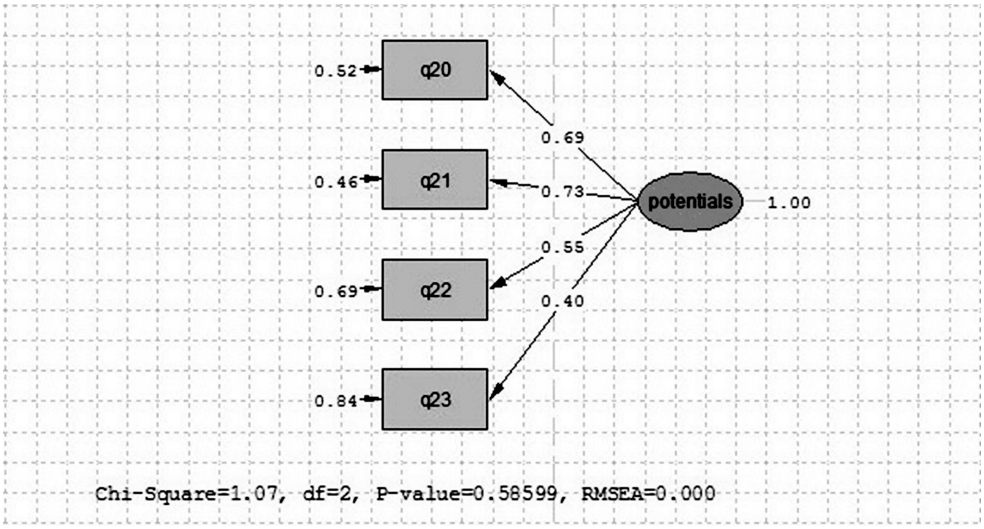

Figure 18.8: SEM for the "Unfamiliarity of experts and farmers with potentials" indicator

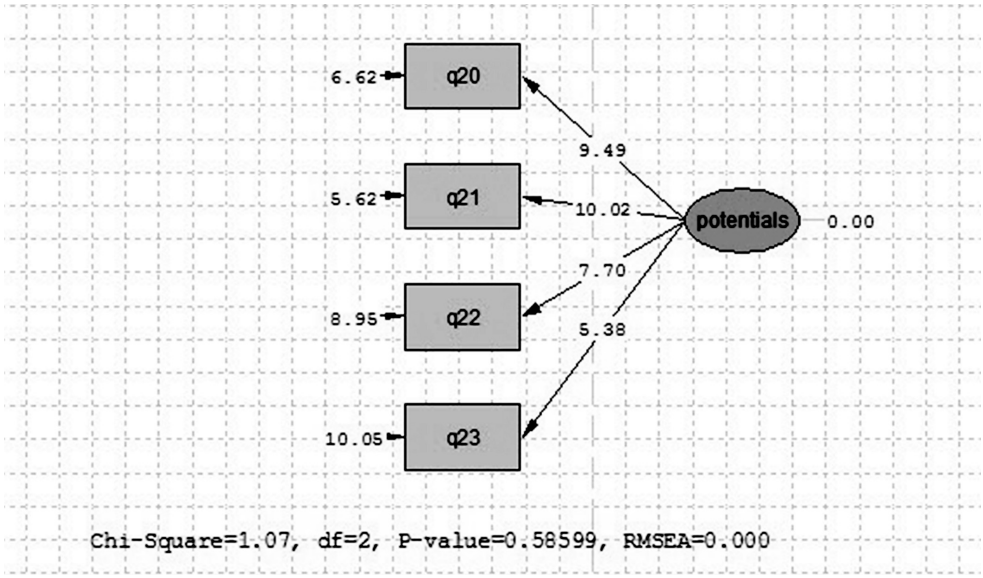

Figure 18.9: T-value test for the "Unfamiliarity of experts and farmers with potentials" indicator

5. CONCLUSION AND RECOMMENDATIONS

Considering the SEM and factor analysis, "rules and regulation" is the most important factor. Relative stability and logical duration of policies and rules as well as legal and predictable changes in policies and rules provide peace among economic agents. In such environment, unexpected changes are minor in policies and rules [11]. Economic agents are sure that the government is committed to its policies and rules [12] and any changes is quickly announces to stakeholders. More importantly, economic agents are involved in the process of changing policies and rules [13] (Hussein Zadeh Bahreini and Malek Al-Sadati, 2011). "Unproductive job" analysis showed that it leads to the capital outflow due to the profitability of unproductive activities such as trafficking and brokering. Therefore, monitoring such illegal activities help to direct toward farming. Concerning the "weak administrative structure", poor coordination among public agencies is a barrier to investment in agriculture sector. Harmonizing the objectives of public agencies in

Sistan and Baluchestan province through meetings prepares the ground to introduce the fields of investment. In terms of "instability of rules and regulation", administrative bureaucracy is an important barrier in agriculture sector investment. Decision makers need to reduce the administrative procedures. In "weak administrative health", grants, license, and facilities are given to those who are not real manufacturers. Assessment experts need to be carefully selected. They must be agriculturally knowledgeable in order to properly allocate budget. Concerning the "unfamiliarity of experts and farmers with potentials", an economic insight, informed attitude based on agricultural science, and experienced-based foresight are required in agriculture sector in order to find the regional potentials. Then, planning is required to prepare the ground for investing by natives and non-natives. Farmers need to be debriefed not to copy from each other in production. This leads to a regional value chain, meaning that livestock, poultry, store, farmland, fish ponds, etc. are needed at the same time in a region. Since agriculture is always associated with risk, "high risk in agriculture" is not ignorable. Fluctuations in the prices of inputs and agricultural products lead to risky production in agriculture sector. Given that the agricultural product price follows the demand and the accurate prediction of demand is not possible in the future, stability of input prices seems impossible. Fluctuations can be reduced to once in a year by taking the inflation rate into account. Finally, allocated budget is insufficient in the province. Therefore, managers and planners need to consider the issue positively in order to allocate more budget to this sector.

1. Ray. [8]
2. Kaufmann. [9]
3. Stractural Equation Model. [10]
4. No policy surprise. [11]
5. Credibility of announcements. [12]
6. Information and participation. [13]
7. Risk. [7]
8. Pravin Jadhav. [1]
9. Ismail Elnihewi. [2]
10. Faudziah Hanim Fadzil. [3]
11. Rapiah Mohamed. [4]
12. Elinor Ostorm. [5]
13. Acemoglu & G.A. Robinson. [6]

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