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Evaluation of Effect of Policy Making Models on Organizational innovation Indices

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Abstract: This study was performed with purpose of evaluating the effect of policy making models on organizational innovation indices of the Sanam public industrial company by way of which company directors can select the best policy making model for improving innovation indices. Statistical population in this study included all directors and supervisors of the Sanam industrial company, a number of 37 individuals. In this study, by designing a 50 itemed questionnaire, the validity and reliability of which was approved, level of influence of 4 policy making models (critical, incremental, rational and social) on organizational innovation indices (including human resources, creation of new knowledge, transfer and application of new knowledge, financial affairs and innovation outputs) was evaluated. Research hypotheses were tested using the single group student t and the Friedman coefficient. Research results showed that the logical and social policy making models had meaningful effect on all indices of innovation. Additionally, critical and incremental policy making models except for the index of knowledge creation were influential on other indices of innovation in a meaningful way. Also, the incremental, rational and social models have the most influence on the human resources index and the crisis model has the most influence on the financial affairs and innovation outputs indices.

Keywords: Policy, Policy Making Models, innovation, innovation Indices

I. Introduction

Now a day, considering continuous changes and variety in needs of stakeholders, the topic of innovation has become a necessity in competitiveness of organizations to a limit that in some sources, innovation has been considered a criterion for company survival. Innovation has various kinds and among them organizational innovation has high importance. It leads to increased quality, decreased prices and faster presentation of products and services and needs to be blown into the body of the organization like a spirit and increase its survival. As a result, organizational innovation is one of the axial merits of a company in today's age.

On another hand, just like some people are more successful and effective in the human world because of more creativity and innovation, in the organizational world as well, the situation is the same. Particularly in the present age and as time advances, considering changes, progress of sciences and technologies and creation of new needs and challenges, organizations have also become more complex and their management has become more difficult. Continuous learning, innovative use of processes, structures, resources, science and technology also play an effective role in company performance. This outlook leads to realization of innovation in all dimensions of the organization and gives the ability to behave more innovative compared to their competitive environment.

In addition to the above considerations, other factors also affect organizational innovation. One of these factors is policy making with the purpose of solving problems facing company innovation. Organizations are among the most important detrimental systems in a country and are directly in connection with economy, creation of work, social welfare and helping national strength. Additionally organizations in regards with their innovative role creation in production, technological, economic and social areas have outlooks and goals. It is necessary that they be backed up by making decisions and implementing appropriate policies.

As a result, in every organization decisions and policies made repeatedly for resolution of problems in the mentioned areas needs to be in this continuum. Also, every including innovation policy has effects on the collective it covers and if these influences are such that they lead to distance from outlooks and desired goals, it means inappropriateness or weakness in the relevant policy. Therefore, there is need for policies to be studied well before being made and the best policy for resolving each problem is acquired. Considering the above, it is

appropriate that a comprehensive model for policy making gets selected so that undesirable effects are prevented.

Considering the importance of the topic of policy making and attention needed to it in organizational innovative activities, the purpose of this study was determination of a policy making model appropriate for achieving innovative indices for better success of companies in the economic and social arena. Achieving this important goal requires getting to know policy making models and presenting the best model for the condition and structure of the organization. On this basis, in this study, it has been tried to evaluate the effect of each of the related models on organizational innovation indices in the Sanam public industrial company by studying policy making models and organizational innovation indices.

II. Theory of Research

- **Policy**

Numerous definitions have been presented for policy including: policy is principles or rules for decision making and achieving logical consequences and a method for performing (Anderson, Chris, 2005). James Anderson, in another definition, introduces policy as the way of action for achieving a particular goal that is followed by the policy maker. The third definition on this issue is somewhat more conceptual and has been suggested by William Jenkins. According to him, policy is a collection of interrelated decisions with each other that are adopted by a policy maker or makers and refers to selection of goals and tools for reaching them under special conditions. It is of note that in the second definition, taking action and purpose are emphasized and in the third definition, inter related decisions are emphasized (Howlett M and Ramesh, 1995).

- **Various Policy Making Models**

In a classification presented by Jung (1986) for various policy making models, four main kinds have been introduced with the following titles: (Alvani, 2013)

1-Rational model 2-Incremental model 3-Critical model 4-Social model

III. The Rational Model

Overall, rationality refers to the belief that by using human mind, the world can be understood and interpreted (Heywood, 2002). The rational model assumes that humans have best behavior and obey the principle of scientific and experimental testing for discovering the truth and creation of novel knowledge (Taylor, 1987 and Weber, 1987). This definition of rationality is directly related to approving approaches in social science. General policy in this model notes that to reach maximum social benefit in use of scarce resources, the society needs to try. As a result, rational and logical policies are in policy models that while maximizing personal interests; minimize society's cost in the framework of these scarce resources [effectiveness and taking advantage]. Therefore a policy is accepted only when first, cost of implementation is not more than benefits produced and secondly, among suggestions a choice is selected that in comparison to costs has the highest benefits (Dye, 2013).

IV. The Incremental Model

This model was presented by Lindblom and is really considered a budgeting method. In this model all choices and information are not involved in the decision making calculations and long term and comprehensive decisions are not made but short term ones. In this model, it is not attempted to seek all solutions. Goals are evaluated and reconsidered and primary purposes are obtained by compromise, adaptation and agreement. Additionally, this model pays attention to non economic issues and is not interested in complete and ideal rationality of directors (Lindblom, 1959). The incremental model is a more conservative method of decision making. This model is not predictive, because past programs and decisions are considered as criteria for new decision making and by acceptance of legitimacy of the present and past programs, continuation of past policies are agreed upon (Dye, 2013).

V. The Critical Model

Many organizations because of deficiency in resources and intense pressure for supply of increased services face crisis. Critical problems arise more from growth of social needs, budget deficiency, lack of quality necessary financial resources, incorrect decision making direction, decreased profit and dissatisfaction of clients and customers. In critical situations, policy makers do not pay much attention to inclusion of employees, clients and organizational teachings. Instead, they emphasize the importance of principles, regulations and present methods of the organization by implementing power and official and organizational discretion. Considering the three factors of time, level of awareness and severity of crisis, directors of the critical method endeavor to react only to crisis situations in a hasty and immediate way and try to preserve the present situation. This method of management leads to severe decrease in quality and level of activities of the organization (Gholipour, 2010).

VI. The Social Model

This model integrates the rational and incremental models to present a general decision making framework by attention to aspects of science and art and social characteristics. This model goes further than other models and by inclusion of social and philosophical considerations enables the director to resolve the difficulties and problems of the organization by better understanding of the truth of the management world. Along with use of principles and concepts of the rational and incremental models, it looks at higher and more comprehensive values in decision making. As a result, a social method policy maker integrates processes, beliefs and behaviors along with the other models' value system to expand and enrich models, opinions and actions of management in interpretation of company problems (Gholipour, 2010).

VII. Innovation

In European languages, innovation is taken from the latin root *innovate* which means building something new (Ramezani, Yablouni, 2006). Innovation means new ideas in work. In more precise terms, an innovation is successful that acquires help from new processes for creation and implementation of new methods that lead to advantage and improved quality of works (Agha Davoud, Hatami, Hakiminia, 2010).

The first definition of innovation was presented by Joseph Schumpeter. According to his definition, innovation is reflected in outputs including the following items that lead to formation of a different task (Schumpeter, 1934):

- 1- New product or new quality of a product
- 2- Presentation of a new method of production
- 3- Creation of a new market
- 4- New method of provision
- 5- New organizational structure.

Kanter defines innovation as the process of collecting any new and useful idea for solving a problem and believes that innovation includes formation of the idea, acceptance and implementation of new ideas in the process, products and services (Kanter, 2007).

Crossan and Apaydin believe: Innovation is production, adaptation or advantage from a creation with increased value in the economic and social atmosphere such as recreating and extending products, services and markets, developing novel production methods and establishing modern management systems (Crossan & Apaydin, 2010).

VIII. Indices of Evaluation for Innovation

In 2000, the European Union announced indices of evaluation for innovation in four groups in response to world encompassment and science based economic changes and to attain its goals (promotion of innovation between member countries and being transformed into the most dynamic science based economy in the world)(OECD, 2005).

- 1) Human resources: level and quality of human resources are considered major determinants of creation and expansion of new knowledge in all of economy.
- 2) Creation of new knowledge: measures indices related to creation of knowledge, capacity and situation of countries.
- 3) Transfer and application of new knowledge: covers unofficial innovating activities such as new instruments for organization service and production systems, adaptation of innovations that have been developed by other enterprises and adaptation of new knowledge for company special needs.
- 4) Financial affairs and outputs of innovation: includes indices such as supply of risky capital, advanced technology, sale of innovation (Tabatabaian, 2006).

IX. Research Hypotheses

Considering the importance of policy making and also innovation in an organization, hypotheses of this study are:

1. The critical policy making model is effective on Sanam company innovation indices from view point of relevant directors.
2. The incremental model of policy making is effective on Sanam company innovation indices from view point of relevant directors.
3. The rational model of policy making is effective on Sanam company innovation indices from view point of relevant directors.
4. The social model of policy making is effective on Sanam company innovation indices from view point of relevant directors.

X. Research Method

The purpose of this study was applied and the method of data collection was descriptive-survey and regarding relationship between variables, it was correlation. Study variables included: policy making models (critical, incremental, rational and social) as the independent variables and innovation indices (human resources, creation of new knowledge, transfer and application of new knowledge and financial affairs and innovation outputs) as

dependent variables under the influence of independent variables, the effects of which will be evaluated. Additionally, the statistical population of this research included all senior and middle directors and supervisors of the Sanam public industrial company, a total of 37 individuals. As a result, due to limitation of the statistical population, there was no need for sampling. The main tool for information gathering in this study was a 50 item questionnaire that was prepared by the researcher. For validity determination, a number of professors and experts were interviewed with this regard who confirmed the correctness and validity of the questionnaire. To evaluate the reliability of the questionnaire, the Cronbach alpha coefficient was calculated which 0.82 was. As a result, the research questionnaire had high reliability. In this study, before distribution of questionnaires, an explanatory session about the policy making models and indices of innovation was held for discussion by the directors so that they could complete the questionnaire with awareness of theoretical bases and the results of the research would gain better validity and precision. After collection of the questionnaires, research hypotheses were tested using the SPSS software. Hypothesis testing was performed using the single group student t test and next, using the Friedman coefficient, effect of policy making models on indices of innovation were ranked.

XI. Results of the Study

1) Test of the first hypothesis: critical policy making model affects the organizational innovation indices. Considering Table (1), since the level of meaningfulness of effectiveness of the critical model on human resources, transfer and application of new knowledge and financial affairs and innovation outputs is less than 0.05, it can be concluded that the critical model has meaningful effect on human resources, transfer and application of new knowledge and financial affairs and innovation outputs.

Table (1): Test of the first hypothesis

Hypothesis	t statistics	Significance level	Situation of the hypothesis
Effect of the critical model on human resources	3.98	0.000	confirmed
Effect of the critical model on creation of new knowledge	2.21	0.089	Not confirmed
Effect of the critical model on transfer and application of new knowledge	3.16	0.001	confirmed
Effect of the critical model on financial affairs and innovation outputs	4.12	0.000	confirmed

2) Test of the second hypothesis: incremental policy making model affects the organizational innovation indices.

Considering Table (2), since the level of meaningfulness of effectiveness of the incremental model on human resources, transfer and application of new knowledge and financial affairs and innovation outputs is less than 0.05, it can be concluded that the incremental model has meaningful effect on human resources, transfer and application of new knowledge and financial affairs and innovation outputs.

Table (2): Test of the second hypothesis

Hypothesis	t statistics	Significance level	Situation of the hypothesis
Effect of the incremental model on human resources	4.51	0.000	Confirmed
Effect of the incremental model on creation of new knowledge	1.98	0.11	Not confirmed
Effect of the incremental model on transfer and application of new knowledge	3.85	0.002	confirmed
Effect of the incremental model on financial affairs and innovation outputs	3.41	0.03	confirmed

3) Test of the third hypothesis: rational policy making model affects the organizational innovation indices. Considering Table (3), since the level of meaningfulness of effectiveness of the rational model on human resources, creation of new knowledge, transfer and application of new knowledge and financial affairs and innovation outputs is less than 0.05, it can be concluded that the rational model has meaningful effect on human resources, creation of new knowledge, transfer and application of new knowledge and financial affairs and innovation outputs.

Table (3): Test of the third hypothesis

Hypothesis	t statistics	Significance level	Situation of the hypothesis
Effect of the rational model on human resources	4.45	0.000	confirmed
Effect of the rational model on creation of new knowledge	4.12	0.000	confirmed
Effect of the rational model on transfer and application of new knowledge	3.65	0.001	confirmed
Effect of the rational model on financial affairs and innovation outputs	3.45	0.002	confirmed

4) Test of the fourth hypothesis: social policy making model affects the organizational innovation indices. Considering Table (4), since the level of meaningfulness of effectiveness of the social model on human resources, creation of new knowledge, transfer and application of new knowledge and financial affairs and innovation outputs is less than 0.05, it can be concluded that the social model has meaningful effect on human resources, creation of new knowledge, transfer and application of new knowledge and financial affairs and innovation outputs.

Table (4): Test of the fourth hypothesis

Hypothesis	t statistics	Significance level	Situation of the hypothesis
Effect of the social model on human resources	4.22	0.000	confirmed
Effect of the social model on creation of new knowledge	3.15	0.01	confirmed
Effect of the social model on transfer and application of new knowledge	4.10	0.000	confirmed
Effect of the social model on financial affairs and innovation outputs	3.67	0.001	confirmed

XII. Ranking of Level of Effectiveness of Policy Making Models on Innovation Indices

Table (5) shows the following results:

1. The critical model has the most effect on the indices of financial affairs, innovation outputs and human resources and has the least effect on the index of creation of new knowledge.
2. The incremental model has the most effect on indices of human resources, transfer and application of new science and the least effect on the indices of financial affairs and innovation outputs.
3. The rational model has the most effect on indices of human resources, financial affairs and innovation outputs and the least effect on the index of creation of new knowledge.
4. The social model has the most effect on indices of human resources and transfer and application of new knowledge and the least effect on the index of creating new knowledge.

Table (5): Ranking of level of effect of policy making models on innovation indices

Model	Organizational innovation index	Friedman coefficient	Rank
Critical	Human resources	4.51	2
	Creation of new knowledge	2.85	4
	Transfer and application of new knowledge	3.66	3
	Financial affairs and innovation outputs	4.89	1
Incremental	Human resources	4.75	1
	Creation of new knowledge	3.66	3
	Transfer and application of new knowledge	4.12	2
	Financial affairs and innovation outputs	3.01	4
Rational	Human resources	4.52	1
	Creation of new knowledge	3.12	4
	Transfer and application of new knowledge	3.25	3
	Financial affairs and innovation outputs	4.14	2
Social	Human resources	4.62	1
	Creation of new knowledge	3.98	4
	Transfer and application of new knowledge	4.45	2
	Financial affairs and innovation outputs	4.15	3

XIII. Discussion

Now a day with complexity in competition, innovation is considered one of the major advantages of every organization in facing changes and now and future needs of stakeholders. In fact, company directors and policy makers have become aware of the issue that adopting correct innovative policies can guide the organization in facing with problems in a way that it can keep and improve its responsiveness and performance by using creativity, innovation, and competitive advantage. On this basis, in this study the effects of policy making models on indices of organizational innovation have been evaluated. Considering the results of the study, it can be concluded that the critical model has meaningful effect on the indices of human resources, transfer and application of new knowledge, financial affairs and innovation outputs. Additionally, this model has the most effect on indices of financial affairs and innovation outputs. Managers of the critical method by attention to

three factors of time, level of awareness and severity of crisis try to respond only to critical situations in a hurried and immediate fashion and try to protect the present situation. With the advent of any small problem, it will be quickly solved. This method of management leads to great decrease in quality and level of company activities. As a result, this model does not consider the progress of the organization and tries to protect the present situation. Therefore, if directors select the critical policy making model, creation of knowledge will not increase much in the organization and the company's added value of market production increases more. Additionally, the incremental model has meaningful influence on indices of human resources, transfer and application of new knowledge, financial affairs and innovation outputs. This model has the most effect on the index of human resources. In this model, all choices and information are not involved in decision making calculation. Instead, all choices are for short term purposes and long term and comprehensive decisions are not made. This model also attends non economic issues and gives a lot of importance to cooperation, adaptation and agreement in regards to goals. As a result, if policy making directors use this model, they will give importance to education and their employees in the areas of research, development and innovation and will have the most influence on the index of human resources. The rational model of policy making has meaningful effect on indices of human resources, creation of new knowledge, transfer and application of new knowledge and financial affairs and innovation outputs. Additionally, this model has the most effect on the index of human resources. From the view point of a rational manager, there is always a best way for solving the problems and difficulties of an organization. All possible solutions are searched for and the best is selected based on profit-cost considerations. They consider one solution that appears the best for long term and do not pay attention to small short term problems and philosophical and social affairs. Therefore, all indices of innovation of an organization will increase based on this model. The social model of policy making has meaningful effect on the indices of human resources, creation of new knowledge, transfer and application of new knowledge and financial affairs and innovation outputs. Additionally, this model has the most influence on the index of human resources. The social model is formed by integration of the comprehensive rational and incremental models. This model by inclusion of social and philosophical considerations enables the director to resolve the problems of the organization by better understanding of truth. Additionally, considering the findings of this research, it is suggested that the directors of the Sanam public industrial company, for improving the index of human resources, use the three models of policy making of incremental, rational and social. In fact, from the view point of directors, special attention has been given to the index of innovation in human resources. Additionally, for improvement of the index of knowledge creation, the rational and social models of policy making are recommended and the critical and incremental models do not have an effect on this index. Also, for improvement in the index of transfer and application of new knowledge, the social and incremental models of policymaking are recommended and finally, to improve the index of financial affairs and innovation outputs, the critical model of policy making is recommended.

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