

OUTSOURCING OPERATION AND MAINTENANCE OF IRRIGATION AND DRAINAGE NETWORKS IN IRAN

EXTERNALISATION DE L'EXPLOITATION ET DE LA MAINTENANCE DES RESEAUX D'IRRIGATION ET DE DRAINAGE EN IRAN

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ABSTRACT

Iran has a long history of irrigation. The development of irrigation and drainage networks has been accelerated by establishing independent irrigation companies since 1943. There are 85 modern irrigation and drainage networks under operation covering more than 1.8 million hectares. They have been operating under the policies and management of the Ministry of Energy. By establishing such companies that are affiliated to the Ministry of Energy, the operation and maintenance activities of networks have been transferred to them as contractors in order to serve the beneficiaries. In the recent years the policies in this field have been changed based on some legislations and regulation. In addition, the operation and maintenance of irrigation networks must be transferred to the companies that are completely private and also certified. Thirty nine private companies have been certified for operation and maintenance by the Ministry of Energy. This paper is based on a correlation research method using eight indicators to evaluate the factors, which are effective in transferring irrigation and drainage system operation and maintenance activities to private certified companies. The population of such companies was represented by the sample of 39 qualified companies. We have recognized that lack of financial resources in the Ministry of Energy for out sourcing the operation, distrust of the contractors specially the local and small contractors to this new approach, and irrational definition of activities in operation are the most significant obstacles of making progress in this policy.

Key words: *Outsourcing, operation companies, private sector, operation and maintenance, Irrigation and Drainage Networks.*

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RESUME ET CONCLUSIONS

Politique de physique est l'une des stratégies appropriées pour le développement rural et agricole. Les programmes de développement définis de spécialité dans les réseaux d'irrigation et de drainage sont l'une des politiques définies. Les réseaux d'irrigation et de drainage ont été construits et exploités de manière à avoir un développement durable et ont également une exploitation optimale de nos ressources en eau et du sol. Augmentation de l'efficacité d'irrigation, le développement des zones rurales, et améliorer les rendements des récoltes agricoles sont quelques-uns des objectifs les plus importants de l'irrigation et la construction de réseaux de drainage. Bien que profitant des systèmes d'irrigation a une longue histoire en Iran, le développement des réseaux d'irrigation et de drainage ont été accélérée par la création de l'agence indépendante d'irrigation depuis 1943. Il ya 85 modernes d'irrigation et de drainage des réseaux en fonctionnement qui couvrent plus de 1,8 million d'hectares. En outre, il existe 385 réseaux d'irrigation semi-modernes qui couvrent plus de 458000 hectares. Ils ont été exploitation en vertu des politiques et la gestion du ministère de l'Énergie. En établissant des sociétés d'exploitation qui sont affiliés avec le ministère de l'Énergie, l'exploitation et la maintenance des réseaux ont été transférés à eux comme des entrepreneurs dans le but de préparer les services aux bénéficiaires. Ces dernières années, les politiques dans ce domaine ont été modifiés sur la base des législations et la réglementation. En outre, l'exploitation et l'entretien des réseaux d'irrigation doivent être transférées aux sociétés qui sont entièrement privés et également certifié. Améliorer la qualité des services techniques par ces nouvelles entreprises dans un environnement concurrentiel est l'un des objectifs les plus importants de cette politique. 39 entreprises privées ont été certifiées pour un fonctionnement et d'entretien du ministère de l'Énergie. Ils ont été autorisés à travailler dans ce domaine jusqu'à présent. D'autre part, dans la pratique il ya seulement cinq entreprises certifiées qui ont réalisé les activités d'exploitation et d'entretien des réseaux d'irrigation dans un peu au cours des trois dernières années. Dans cet article, qui a un objectif pratique et est basée sur une méthode de recherche de corrélation, nous avons évalué les facteurs efficaces sur le transfert des activités à des sociétés privées certifiées et la sous-traitance l'exploitation et la maintenance basée sur huit indicateurs. Notre communauté de recherche statistique comprend 39 entreprises qualifiées. Nous avons reconnu que le manque de ressources financières au ministère de l'Énergie de la sous-traitance l'exploitation, la méfiance des entrepreneurs spécialement les entrepreneurs locaux et les petits à cette nouvelle approche, et irrationnelle activités définies à l'opération sont les obstacles les plus importants de faire des progrès dans ce la politique.

Mots clés : Externalisation, sociétés d'exploitation, secteur privé, exploitation et maintenance, réseaux d'irrigation et de drainage.

(Traduction française telle que fournie par les auteurs)

1. INTRODUCTION

More than 75 percent of Iran's area is located in arid and semiarid zones and water had been one of the main challenges of Iran's agriculture since past centuries. People have built a lot of hydraulic structures for agricultural activities since then and now a day's everyone are able to see the effect of those structures (Heydarian, 2009). Sound policies addressing agricultural development is the key to a successful and sustainable agriculture. To meet this goal, irrigation

and drainage networks have been constructed and operated in Iran for optimum exploitation from soil and water resources (Jangi Marani and Omid, 2010).

Increasing irrigation efficiency, developing rural areas and sustainable agricultural production are some of the goals of these networks. Although governments and credit institutions have invested heavily in the construction and operation of irrigation and drainage networks, their efficiency has been lower than expected. Evidences show that agricultural productivity in groundwater irrigated lands is about twice that of the surface water irrigated land under the networks. It seems there is a strong need for improving the operation and maintenance of the irrigation and drainage networks (Ghaheeri, 2004).

Although irrigation has a long history in Iran, the concept of networks development has been accelerated by establishing the independent irrigation companies since 1943 (Jangi Marani, et al, 2010). During recent decades, huge investments have been made in developing and operation of irrigation and drainage networks construction projects hoping for a better water supply and demand management. Most of the consulting and construction companies have gained valuable practical experience in irrigation and drainage networks design and construction (Jaefari, 2008, Mirkiaee, Razmjoo, Ramezani and Jangi Marani, 2009). Based on experts opinion, total Iranian operating hydraulic structures (including dam, network) is estimated to be worth about 650 billion Rials. Setting aside the major infrastructure cost, the irrigation and drainage networks of the country is worth over 250 billion Rials.

As most parts of Iran are in the arid and semi-arid zones, optimum use and reduction of consumption of water is one of important goals of the country (Jangi Marani et al 2011). There are 85 modern irrigation and drainage networks under the Ministry of Energy (MOE) of Iran covering more than 1.8 million hectares (Mha) and 385 semi-modern irrigation networks covering 0.49 Mha (Jangi marani, Ramezani and Samani, 2010). The operation companies were established in 1993 and since then, the operation and maintenance activities of networks have been transferred to them as contractors to provide services to the beneficiaries (Mirkiaee et al, 2009).

Research Issue

Among the 39 companies, just 5 companies are working as contractors now. These companies often operate and maintain the semi modern networks which cover less than 5000 ha area. Other companies are not working now. The aim of this research is investigation and identification of the effective factors on out sourcing operation and maintenance of irrigation and drainage networks in Iran.

2. RESEARCH METHODOLOGY

The study is based on correlation analysis of factors considered to have impact on out sourcing. The relevant information for the year 2010 were gathered form field and documented information. Questionnaires are the main tools of this research. Effective factors of out sourcing operation and maintenance of irrigation and drainage networks in Iran have been investigated through 8 indices representing techno- economic and social aspects. The responses to the investigated indices were: too low, low, moderate, high and very high.

Data Analysis

All field data (questionnaires) were analyzed at descriptive statistic framework. In descriptive statistic, frequency distribution and data percentage were investigated. The goal of this analysis is to find the specifications of factors. The results show that 43% of the respondents believe that low water tariffs in irrigation and drainage networks has the high and very high effect on outsourcing (Figure 1).

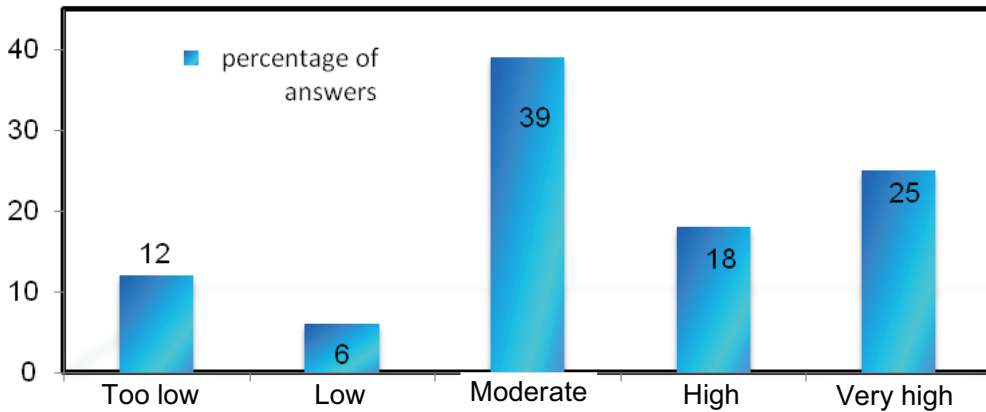


Fig. 1. The effect of low cost of water tariffs in irrigation networks of country (L'effet du faible coût des tarifs de l'eau dans les réseaux d'irrigation du pays)

Figure 2 shows that 44 percent of respondents believe that lack of clarity on the authority and the eligibilities of the companies had high and very high effect on lack of outsourcing.

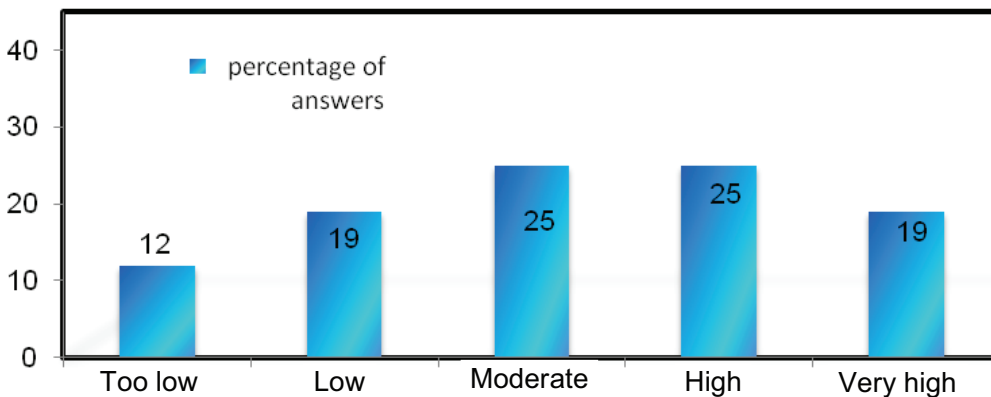


Fig. 2. The effect of lack of clarity on the authority of qualified companies as a reason to not operation and maintenance of irrigation and drainage networks (L'effet de l'absence de présentation de la puissance des entreprises qualifiées comme une raison de ne pas l'exploitation et l'entretien des réseaux d'irrigation et de drainage)

The respondents were asked to rate the novelty of government's policy of selecting competent companies and the level of distrust on the company's ability to deliver the desired result. As Figure 3 shows, this factor has high and very high effect and it is interesting that to know just 6% of respondents choose low and very low option.

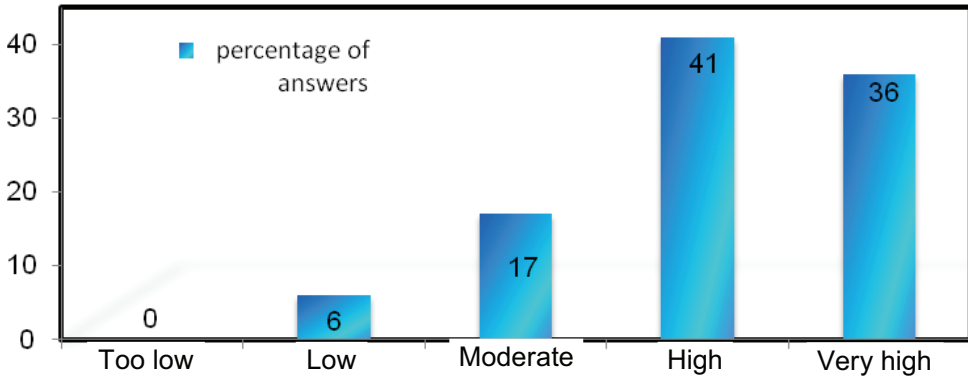


Fig. 3. The effect of novelty of the use of competent companies' policy and level of distrust for this policy (L'effet de nouveauté de l'utilisation de la politique des entreprises compétentes et de faible estime de fonctionnaires de cette politique)

On the lack of funds with the government, more than 57% of the respondents believe that it was very important issue and 18% percent believe that it has low to very low effect on out sourcing operation and maintenance of irrigation and drainage networks.

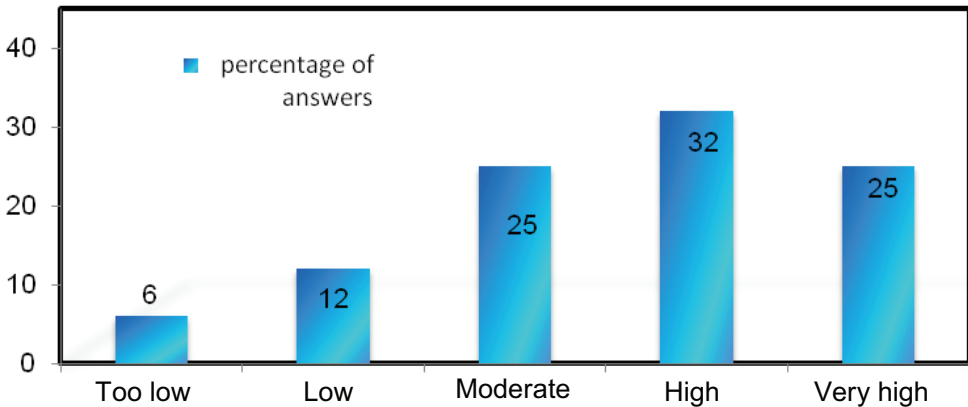


Fig. 4. The effect of lack of financial resources of regional water organization outsourcing of operation and maintenance of irrigation and drainage networks (L'effet du manque de ressources financières de l'organisation régionale de l'eau sous-traitance de l'exploitation et l'entretien des réseaux d'irrigation et de drainage)

On societal aspect, 29% of the respondents believe the official support to the companies is of high to very high importance (Figure 5).

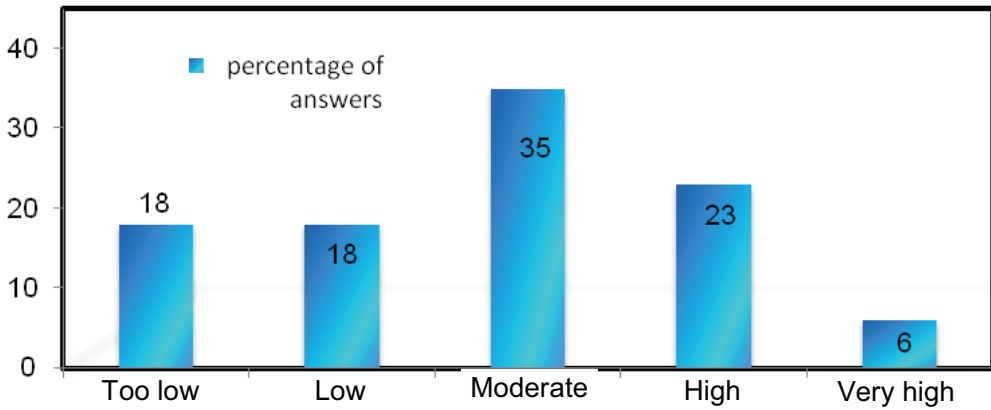


Fig. 5. Company in outsourcing of operation and maintenance of irrigation and drainage networks. (Société de l'externalisation de l'exploitation et l'entretien des réseaux d'irrigation et de drainage)

It was found from analysis that 56 percent of respondents strongly believe that Lack of trust on the companies and clarity in defining the power and authority vested with them were strong reasons for not supporting the outsourcing plan and policy (Fig. 6).

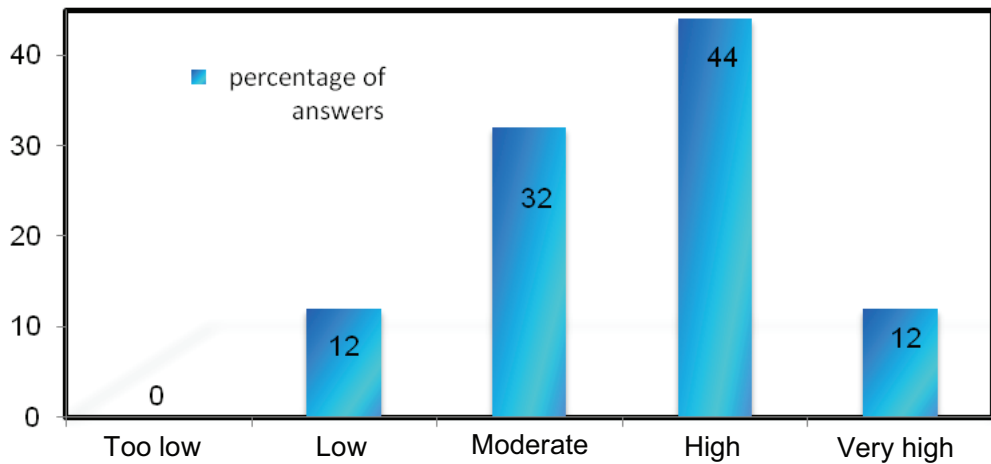


Fig. 6. The effect of distrust of regional water organization in technical & constructional power of as a reason for lack of private company calls (L'effet des croyances faibles de l'organisation régionale de l'eau de la puissance technique et la structure d'une raison pour l'absence de société privée appels)

Logic and optimum services expectations of employers (regional water organizations) show that 76 percent of respondents believe in high and very high effects this index and they think it is a serious barrier in outsourcing of activities. The range of answer is shown in figure 7.

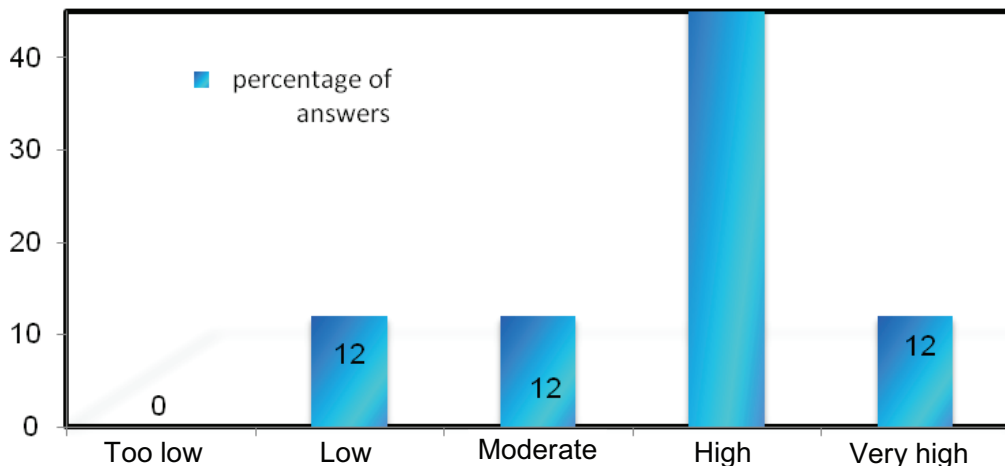


Fig. 7. The effect of lack of logic and optimum services expectations as a barrier in outsourcing (L'effet de manque de logique et optimale les attentes des services comme un obstacle à l'externalisation)

The result of investigations on societal aspect, i.e., negative effect of lack of placing a high social and economical priority on research and development schemes instead of operation and maintenance works of irrigation and drainage networks as a area, for non entering of companies in operation and maintenance area, show that 35 percent of answers take high and very high effect for this factor (Figure 3).

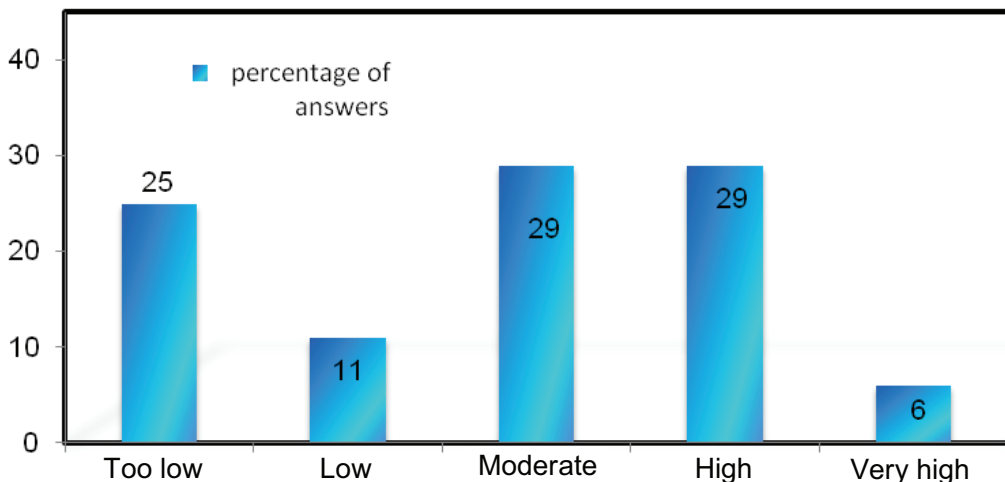


Fig. 8. The effect of priority on research and development schemes by private companies' lack of outsourcing of operation and maintenance works (L'effet de la priorité à la recherche et des programmes de développement par le manque d 'entreprises privées de sous-traitance des travaux d'entretien et de fonctionnement)

3. CONCLUSIONS

In this research, the factors considered effective for decision on outsourcing operation and maintenance of irrigation and drainage networks are presented. These factors include: placing priority on research and development schemes instead of operation and maintenance activities by certified companies, low costs of water tariffs', novelty of policy of using of non-governmental companies and distrust of regional water organizations to this new policy, lack of clarity in the policy, doubt of regional water organizations on the technical and constructional capabilities of the companies, lack of logical and optimum services expectations, shortage of funds and official patronage.

According to the analysis result of the relevant data, there are three important factors including: 1) novelty of policy of using of non-governmental companies and lack of belief of officials (especially Regional Water Organizations - RWO in this policy. 2) Lack of logical and optimum services expectations of RWO commensurate with the funds. 3) Shortage of financial resources in MOE for outsourcing operation and maintenance of networks are recognized as the most effective factors in this research. Based on the results, 77% respondents believe that the effect of novelty of policy of using of nongovernmental companies and lack of belief of officials in this policy is high and very high; 76% of the respondents believe that lack of logical services expectations of RWO is a serious obstacle in the path of outsourcing and more than 57% of the respondents believe that shortage of financial resources has very important effects. RWOs, which are the owners of irrigation and drainage networks in Iran, generally manage this structures themselves and they do not believe in non-governmental sectors for maintenance and management of the networks.

Also supervision system in the contracts between RWO and companies is very important and sensitive and it seems that most of the companies are not ready for it according to the analysis of collected information. Lack of logical activities and services expected by RWO from the companies is also another serious obstacle in implementation of outsourcing policy. It is suggested MOE explain this policy to RWO and take a plan to staff training and capacity building in the field of operation, maintenance and management of irrigation and drainage networks. It is also necessary that financial resources for outsourcing of operation and maintenance works of irrigation and drainage networks be considered. It makes the way easy to entrance of non-governmental competent companies in this area.

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