

Original Article (Mixed)

Providing a paradigmatic model of return on investment in the training of employees in the petrochemical industry

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Abstract

The current research was conducted with the aim of providing a model of return on investment in the training of employees in the petrochemical industry. This research was based on an empiricist philosophy, fundamental from the goal point of view, and with a deductive-inductive approach with a mixed research method. The research data in the qualitative part was collected through interviews with 17 management professors (theoretical experts) and managers of the petrochemical industry (experimental experts) who were selected by purposive sampling. Also, the indicators identified by fuzzy Delphi method with the participation of qualitative department experts were validated and prioritized by fuzzy Swara method. Finally, the final research model was presented. To achieve the objectives of the research, by analyzing the interviews with experts, a set of useful indicators of return on investment in employee training was identified. The main categories of this research are indicators of return on investment in employee training, grouped in the form of eight main categories: organizational infrastructure, strategic alignment, training and development of human resources, incompatibility of human resources, employee empowerment, process-oriented strategy, return on investment to Company, and gain competitive advantage. The findings have shown that training and development of human resources is an underlying variable that affects the empowerment of employees and process-oriented strategy. In the meantime, it is important to strengthen the organizational infrastructure and create strategic alignment to achieve return on investment in employee training. By implementing the mentioned items, the return of capital to the company and gaining a competitive advantage will be achieved. The ranking of indicators of return on investment in employee training with the Swara Fazi method showed that the support factors of senior management, informing employees of the results of training goals, continuous training with wide applications are of the highest importance.

Keywords:

Investment return,
employee training,
petrochemical industry,
human resource
development

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Extended abstract

Introduction

In order to find out the adequacy of the training and improvement programs of the organization's employees, their effectiveness should be evaluated. One of the important factors in this field is to pay attention to the return of training investment, which is considered as an important model in evaluating the effectiveness of employee training. In recent years, paying attention to the rate of return on investment in organizations has become a fundamental issue for managers (Imani, Rezaei, & Sharifi, 2020).

Despite the importance of return on investment in education, this issue is still unknown in the organizational field. This is due to issues such as the lack of evaluation tools, the inability of evaluators to involve investors, and the inability to implement inclusive approaches to education. On the other hand, few academic studies have been done in this field, and a deep research gap is observed in this field. In this regard, the National Petrochemical Company of Iran, which is the most efficient developmental organization in the field of petrochemicals in West Asia, faces the same problem of measuring and evaluating the practical results of training courses, which are often very expensive.

Therefore, the question that this research is trying to find an answer for is, what elements and components does the investment return process in the training of petrochemical industry employees include, what conditions are it affected by, and what are the quantitative and qualitative criteria for evaluating the results of the training?

Theoretical framework

The return on investment of training and measuring the effectiveness of training was first introduced as a model in the United States Journal of Development and Education in 1959 by Donald Kirkpatrick. This important model includes four levels or aspects of training; the first level is comprehensive and measures the feelings of the participants in relation to the attractiveness, usefulness and relevance of training to their needs; the second level is learning and the effect of training in terms of progress in Skills, knowledge and attitudes, and in other words the realization of learning goals are measured; At the third level, the actual effect of training, i.e. behavioral changes after learning, is measured; and finally, at the fourth level, the final results of training are analyzed. Due to the increasing importance of evaluating the effectiveness of training, Jack Phillips developed the model and added a fifth level to it and called it ROI (Urbancova, Vrabcova, Hudakova & Petr, 2021), which stands for return on investment. At this level the monetary value of the employee training program is evaluated and the information (quantitative and qualitative) of the fourth level is covered in monetary form.

Phillips recommended that ROI studies be conducted only for programs based on a comprehensive needs assessment. Effectively, measuring return on investment training is a fundamental need for organizations; otherwise, organizations will never understand how valuable their efforts are. Do they use the budget and time efficiently? Is training profitable? or how (and whether) organizations can improve their performance? (Nemec, P. B, 2018.)

Return on investment can be in the form of a number of criteria, including:

- _ Added value resulting from activities due to skill acquisition and improvement; greater flexibility among employees who can perform a wide range of tasks; reducing general costs for the company, such as more efficient use of existing facilities, reducing consumption costs and reducing human resource costs; greater ability to innovate in terms of adopting new technology and introducing better forms of work organization;

This means that companies should be aware of a wide range of factors for measuring the return of employee training investments and create a tool to measure them (Nemec, P. B, 2018.)

Research Methodology

The current research is of a mixed type (qualitative and quantitative) and includes two main parts of model design and model validation. In the first part, in order to design the model of return on investment in the training of petrochemical industry employees, the qualitative method of grounded theory was used according to Strauss and Corbin's point of view, using MaxQDA 20 software; and in the second part; the validation of the model, the indicators' expertise validation using the fuzzy Delphi method was discussed by coding in MATLAB environment. Finally, in order to determine the importance of return on investment indicators in employee training, Swara Fazi method and MATLAB software have been used.

Theoretical experts include university professors in the field of human resource management who have scientific publications in the form of books and articles in this field. Experienced experts also include petrochemical industry managers who have at least ten years of executive experience in this industry. Theoretical and purposeful snowball sampling method was used to select the interviewees and the number of interviewees reached 17 until the saturation level was reached.

The main tool of research data collection in the qualitative part was the semi-structured interview with six open questions. In the second part, based on the identified categories, a seven-level Delphi questionnaire was used. Finally, indicators were prioritized using Swara's questionnaire. To check the validity and reliability of the data, Holstein's coefficient and P-Scott's index were used.

Research Findings

To analyze the data collected in semi-structured interviews, the three-step coding method of Strauss and Corbin; under the title of open coding, axial coding and selective coding, was used. In the open coding stage, 356 codes were identified, with 6 paradigms, 8 main categories, and 47 indicators; which was calculated based on the researcher's perception and inference from the conducted interviews using the grounded theory method. The fuzzy Delphi approach has been used to validate the identified indicators and screen the final indicators. The seven degree range has been used for the expert's viewpoint Fuzzied. Finally, 42 indicators were selected during two rounds of the experts' point of view, and the criteria of return on investment in employee training were grouped into eight main categories, which are: organizational infrastructure, strategic alignment, training and development of human resources, incompatibility of human resources, employee empowerment, process-oriented strategy, return of capital to the company, and gaining competitive advantage.

Conclusion and Discussion

The present research was conducted with the aim of providing a model of return on investment in the training of employees in the petrochemical industry. Based on the obtained results, it was determined that the organizational infrastructure component was identified as the causal condition, and the strategic alignment component was identified as the background condition affecting the return on investment in employee training. This is mentioned in the results of the study of Phillips (2012), and from this point of view, it is consistent with the results of the present study. Also, the component of training and development of human resources as a central phenomenon and the component of incompatibility of human resources as intervening and inhibiting conditions were identified. This is in line with the results of the



study of Poudel (2022). The results showed that the components of employee empowerment and process-oriented strategy are effective as necessary strategies and measures for the return of investment in employee training. This is also mentioned in the results of the study of Annabil (2017), and this point of view is consistent with the results of the current research. Finally, it was determined that the components of return on investment to the company and gaining competitive advantage are positive consequences of return on investment in employee training, which are consistent with the results of the study of Shabahang, Hendricks, Hayek, Ryer, & Lauer (2021).

Also, the ranking of indicators of return on investment in employee training with the Swara Fuzzi method showed that the factors of support of senior management, informing employees of the results of training goals, continuous training with wide applications are of the highest importance.

Based on this, some practical suggestions are presented to the managers of the petrochemical industry for the return of investment in employee training: if the company is professional and the processes are mature and the management capabilities are improved; which leads to the elimination of unnecessary rules and regulations, the managers can provide the necessary training to the employees. Also, the managers of the petrochemical company, having faith in the topics of employee training and providing the necessary equipment for employee training along with improving the software and hardware infrastructure and finally creating an environment with training facilities in the company, can achieve the design of a distinctive human resources management system. In general, continuous training with wide applications leads to reducing conflict among employees and increasing self-confidence in them. Also, with the improvement of communication between managers and employees and the support of senior management, we can hope for an increase in the learning of human resources. What the relevant managers of the company need in order to return the investment is to review the mechanism of recruitment, training and improvement of employees, increasing the skills of employees, and employing expert and elite employees.