

Training, motivation, and performance: The case of human resource management in construction projects in Mashhad, Iran

Amin Akhavan Tabassi*, A.H. Abu Bakar

School of Housing, Building and Planning, Universiti Sains Malaysia (USM), 11800 Penang, Malaysia

Received 8 January 2008; received in revised form 5 August 2008; accepted 12 August 2008

Abstract

An enterprise's productivity is closely correlated with its people and strategies; therefore, a forceful human resource management system is the most valuable asset of the current century construction companies.

Purpose/design/methodology/approach: Based on a combination of literature review and questionnaire surveys, this paper explores the execution of construction workers training and motivation methods in HRM practices by the survey respondents' companies and the effects on the companies' performances. The research was conducted by sending 120 sets of questionnaires to the nominated companies and firms in Mashhad, Iran. A quantitative research approach was adopted requiring the development and dissemination of a questionnaire survey. The analysis method in this research is mainly descriptive and the type of investigation is co-relational study.

Findings: The research exposes some barriers in the training and motivation of the construction workers and provides solutions for the government and companies in Iran. Also, it reveals the effects of unskilled labour on the quality of construction projects in Mashhad.

Research limitations/implications: Future research should be under taken to address how companies and governments adapt to and shape the environmental and organizational settings in such a way that the context optimally stimulates workers motivation and participation in training courses and effects on increasing the quality of construction.

© 2008 Elsevier Ltd and IPMA. All rights reserved.

Keywords: Human resource management; Construction; Performance; Earthquake; Mashhad; Iran

1. Introduction

Iran, being located in the active Alpine–Himalayan seismic belt, as one of the most active tectonic regions of the world, is an earthquake prone country that has experienced more than 130 strong earthquakes with a magnitude of seven or more in past centuries. Just in the last century, around 25 huge earthquakes have killed more than 200,000, destroyed many towns and thousands of villages, and caused extensive economic damage [1,2]. According to Table 1, earthquakes in Iran have shown the seismicity of Iran as well as its vulnerability to earthquakes in the last

few decades [3]. In most of these earthquakes, generally the malfunction of structures, which for the most part were inconsistent with the level of earthquake hazard, caused human and economic losses [1,2].

Considering the significance of these issues, one's mind might be occupied by the question of why many buildings were destroyed during these past earthquakes in Iran. Some of the destruction is said to be due to inefficient design and lack of standard materials [1,3,4] while many of the buildings with standard materials and proper design were destroyed during the earthquakes because of low quality of construction [5,6,2,7]. This places blame on the lack of skilled labour in construction projects. However, most of the researches conducted after each earthquake concentrated on the lack of proper design and materials [8,2], and little attention was given to unskilled workers in construction sectors. Therefore, it seems human resources,

* Corresponding author. Tel.: +60174709240.

E-mail addresses: aminakhavan2000@yahoo.com (A.A. Tabassi), abhassan@usm.my (A.H. Abu Bakar).

Table 1
A brief history of huge earthquakes of Iran from 1957

No.	Date	Magnitude (Richter scale)	Location	No. of dead
1	07/02/1957	7.4	Northern of Iran	2000
2	12/13/1957	7.3	Hamadan and Kermanshah	2000
3	09/01/1962	6.9	Buin–Zahra, Qazvin	12,225
4	08/31/1968	7.3	Khorasan	12,000–20,000
5	04/10/1972	7.1	Southern Iran	5054
6	11/24/1976	7.3	Northwestern Iran	5000
7	03/21/1977	6.9	Bandar Abbas	167
8	06/07/1977	6.5	Isfahan province	352
9	12/21/1977	6.2	Zarand in Kerman Province	521
10	09/16/1978	7.8	Tabas	25,000
11	1980	5.6	Ghaen	1500
12	06/11/1981	6.9	Golbaf (Kerman Province)	3000
13	07/28/1981	7.3	Kerman Province	1300
14	03/14/1989	5.4	Golbaf (Kerman Province)	5
15	06/20/1990	7.4	Rasht–Qazvin–Zanjan–Rudbar–Manjil	40,000–50,000
16	06/21/1990	5.8	Lowshan–Manjil	20
17	02/04/1997	6.5	Bojnood	100
18	02/28/1997	6.1	Northwestern Iran	1567
19	05/10/1997	7.1	Ghaen–Birjand	1700
20	06/22/2002	6.5	Western Iran	261
21	12/26/2003	6.6	Bam	31,000–43,000
22	2/ 22/2005	6.4	Central Iran, Zarand	612
23	01/31/2006	6.1	Darb_e_Astaneh (Western Iran)	66
Total people approximately killed during above stated earthquakes				175,450
Total people left homeless following above stated earthquakes				750,000
Total estimated damages				Several billion USD

Source Akhavan, 2006.

particularly in the area of skilled labour, play a crucial role in the quality of construction projects [1,2,5].

According to the report of the Ministry of Housing and Urban Development (HUD) of Iran, the useful life of building in Iran is about 20–30 years, whereas, it is estimated about 80–100 years in the matter of developed countries [9]. This indicates that the low quality of construction in Iran is a vital flaw that can be overcome.

The authors conducted some interviews with the managers of Khorasan Rzavi Technical Vocational Training Organization (TVTO), Khorasan Rzavi HUD Organization, and Khorasan Rzavi Management and Planning Organization. Unfortunately, there are no worthwhile reports or statistics in regard of the number and percentage of skilled and unskilled labour, who have worked in construction industry of Iran.

2. Background of HRM

Human resource management (HRM) has been broadly defined as a field of organizational activity and professional practice. It has remained a complex and obscure entity, variously interpreted by practitioners and researchers [10]. Slotte et al. understood HRM as “covering functions related primarily to training, career development, organizational development, and research development. In addition to other organizational HR functions where these are intended to foster learning capacity at all levels of the orga-

nization, to integrate learning culture into its overall business strategy and to promote the organizations efforts to achieve high quality performance” [11].

HRM as an academic discipline includes the development of knowledge and expertise, and the enhancement of performance nowadays [12]. A forceful HRM system is also the most valuable asset of 21st century construction companies, as an enterprise’s productivity is closely correlated with its strategies [13]. The development of people, their competencies [aspects of successful professional performance (see Moore et al. [14])] and the process development of the total organization are the main concerns of HRM. With rapid changes in technology, worker’s needs, current market, and competitive environment, planning for human resources have become an important and challenging task for development. HR planning involves plans for future needs of employees, their required skills, acquisition of employees, and personnel development [15].

A quality HR program, personnel examination, and HR appraisal are the three basic areas of concern for modern enterprise HRM [16]. From a UK perspective, the purpose(s) of HRM can be defined as: “Supporting and facilitating the learning of individuals, groups, and organizations...” [17]. According to Sally, American researchers note that, “The purpose of HRM is to enhance learning, human potential, and high performance in work-related systems”. This definition suggests the performance orientation. Therefore, it is possible to identify different discursive

resources being employed to define this complex, dynamic and emerging range of activities, and the dichotomy between learning and performance [18]. This research evaluates the execution of training and motivation methods in HRM practices as well as the performance of the respondent companies. Consequently, the HRM definitions by the American researchers are appropriate for the research.

On the other hand, HRM can be conceptualized as all those activities that seek to facilitate all forms of learning and development at all levels within organizations [19]. HRs have been considered as a means of strategic contribution in an enterprise since the 1990s. Therefore, many theories and methods of the strategic management of HR have been developed. To some degree, training and development of HR becomes the strategic component of the program. How to treat, determine, and develop the value of HR, has become an important area of research in the strategic management of an enterprise [20–23].

According to the PMBOK, project HRM includes: organizational planning, staff accusation, and team development. However, training and motivation are the two main parts of team development practices [24]. In turn, the focuses of the research are the methods and practices of training and motivation tactics, which are beneficial for the construction labour.

3. Training

Training and development is defined as a process of developing work-related knowledge and skills in employees for the purpose of improving performance systematically [25]. Managers, executives, and supervisors can have a significant constructive impact on the transfer of knowledge and skills [26]. The training of extension personnel contributes directly to the development of human resources within extension organizations. Training has to start with the recognition of training needs through job analysis, performance assessment, and organizational analysis. Once the training needs of extension personnel have been identified, the next step is to organize training programs. Methods such as role-playing, simulation exercises, and case studies can be used in the extension construction industry to create learning situations based on experience.

One of the most important factors in implementing HRM in construction industry is the need for effective training. Managers also need to develop ways to measure the performance of their workers. As indicated by Nesan and Holt, a system of “performance measures” is needed

in order to monitor improvements (or lack of improvements) among construction teams. They advice managers to display “quality indicators” on-the-job site, “which creates awareness among and encourages the participants to achieve improvement” [27].

On the other hand, the construction sector is considered as one of the most dynamic and complex industrial environments [28–30]. The changing requirements of construction work necessitate the formation of bespoke teams each time a new project is awarded. The external sources of labour (subcontractors, agency temporaries, and self-employed) are very common in construction industry [31–33]. In fact, it is accepted that construction firms face a lot of difficulties in the training and development of labour and staff [30,34]. Two significant methods of training construction workers are on-the-job and off-the-job training [35].

3.1. On-the-job training

In the traditional model of on-the-job training (OJT), to promote new practices, workers would typically receive a pre-prepared course on the new regulations, procedures, or processes, often at a different location than their place of work, and be expected to apply this abstracted knowledge later in their workplace.

OJT and experience are probably the most common methods of employee development used at all levels of the organization. Where organizations utilize a large number of “skilled” bricklayers, carpenters, plumbers, armature workers, welders, etc. they may utilize a special type of OJT called apprenticeship training. This training is mostly done under standards which are established (i.e. curriculum, number of hours, and affirmative action goals) by governmental parts [36]. Popular OJT methods include job rotation and understudy assignments. Job rotation involves lateral transfers that enable employees to work at different jobs. Both job rotation and understudy assignments apply to the learning of technical skills. Interpersonal and problem-solving skills are acquired more effectively by training that takes place off the job.

3.2. Off-the-job training

There is a number of off-the-job training methods that managers may want to make available to employees. The most popular methods are classroom lectures, films, and simulation exercises. Classroom lectures are well suited

Table 2
Off-the-job training versus on-the-job training

	Off-the-job training	On-the-job training
Emphasis on	Learning basic facts and skills	Getting the job done
Ultimate goal	“Knowing”	Developing “best practices”
Knowledge	Static, decontextualized, general	Dynamic, situated, practice-oriented
Topics/problems	Given by curriculum	Arise from and embedded in work situation
Scope of learning	Primarily individual	Individual, group, organization

for conveying specific information. They can be used effectively for developing technical and problem-solving skills. Films can also be used to explicitly demonstrate technical skills. Table 2 makes a comparison between off- and on-the-job training. It indicates the essential parts as well as the differences between these two methods of training. For more details about on- and off-the-job training, see Refs. [37–39].

4. Motivation

Motivation may be defined as the characteristic of an individual willing to expend effort towards a particular set of behaviours. In a training context, motivation can influence the willingness of an employee to attend the training program [40,41], to exert energy toward the program, and to apply what they learn in the program onto the job. Thus, it is likely that trainees cannot reap the full benefits of training without the consideration of training motivation [42]. Cheng and Ho reviewed studies conducted in the past decade and concluded that training motivation influences trainees' training performance and transfer outcomes [43]. Colquitt et al. suggested that even if trainees possess the ability to learn the content of a course, they might fail to benefit from the training because of low motivation [44]. The key to motivating employees is to find proper ways to satisfy their needs. Each individual has different needs. These needs can be broken down into a few basic categories: workers participation, recognition, and team belonging. For workers participation, many employees are motivated when they are "empowered" and feel that their participation is important in making the company successful. When employees feel empowered in such ways, they will work in ways that not only meet their own needs but also the needs of the company as a whole. In the words of Nesan and Holt: "The participative approach addresses development of good supervisor–subordinate relationships and cohesive work groups in order to satisfy both social needs and the needs of business demand" [27]. To encourage worker participation, managers are advised to use a system that identifies and rewards workers who do a good job. For example, construction workers can receive a financial bonus for identifying ways to improve the quality of their company's operations [45]. Olomolaiye et al. asserted that money is a powerful motivator and claimed that a well-designed reward system will "lead to higher productivity for the employer and extra pay for the employees for their efforts" [46].

Recognition, aside from financial inducements, is also regarded as a powerful means to inspire enthusiasm among employees. Nesan and Holt note that "positive reinforcement" is especially effective when it is applied to teams, rather than individuals, and they recommend, for example, giving an award of recognition to the "Crew of the Month". According to these authors, although financial incentives are useful in motivating construction employees, their studies have also revealed that "several people had

achieved significant success with recognition as opposed to rewards" [27].

Finally, team belonging is another powerful motivator in construction workers. According to Bart [45], workers feel more motivated when they belong to a team where they are free to make suggestions, because the feeling of participating in a group is one of the basic needs of the human soul. Nesan and Holt [27] note that teams are especially motivated when they are given the opportunity to "self-manage". This situation "allows participation among the group members, while the group as a whole is given increased responsibility for decision making". A related concern is that of cultivating good relationships among all the members of an organization.

Accordingly, the success of a construction organization largely depends upon the quality and morale of its people [47]. Thus, human assets are becoming the most important wealth of an organization if they are adequately nurtured and their potential is efficiently developed. Companies should ensure that all learning achievements by their staff are recognized by publicity, appropriate promotion, and reward [48].

Many cases can be found that show successful construction organizations making use of the principles of training and motivation in HRM practices. According to Kopochinski, 2000, Leonard, 1998, Palmeri, 1999, Krizan, 2000, and Lubka and Kleiner, 2001, the successful secret of construction organizations in the US, such as S.J. Amoroso, BE&K, Centex Corporation, TD Industries, Webcor Builders, and Thompson–McCully, is their terrific employees and the utilization of training and motivation practices [49–53].

5. Research questions

Mashhad is the second largest city in Iran in terms of population and area. Also, it is located in the area with the highest risk of earthquakes [54]. There are various construction projects like residential, official, recreational, entertainment, religious, and hotel buildings. Thus, the results of this study have a significant impact on construction projects of Iran and can be used and developed to other countries as well. Accordingly, the objective of the study is to determine the answers for these questions:

1. Are the HRM practices in training labour used by construction firms in Mashhad, Iran?
2. Is there any damage to the construction projects in Mashhad because of using unskilled labour?

6. Methodology

The purpose of this research is to find out whether training and motivation of labour could play a significant role in increasing the quality of construction projects especially in Mashhad. The research variables are: quality of con-

struction (dependent variable) and training and motivation (independent variables). Because of the large number of companies which were chosen for this research (120), and difficulties of face to face interviewing, a quantitative research approach of developing and disseminating a questionnaire survey was used. In addition, a questionnaire survey was utilized due to the population of this research being too difficult to be quantified, as the main targeted respondents would include all personnel who have direct managerial experiences in the construction field.

The research was conducted through structured questionnaires that were sent to the particular “qualified” respondents. The respondents were approached through their companies and firms, which were registered in the Khorasan Civil Engineering System Organization (KCESO). According to the statistics report of KCESO, 332 companies were registered as qualified companies. The companies were ranked by the number of engineers, project managers, and/or architects who were on the board of the company. The companies with 14 or more of those people got the top grade (1.75). These companies allowed participation in designing, building, managing, and consulting of any kind of residential, commercial, hotels, industrial, and official buildings in Mashhad. Regarding KCESO statistics, 120 companies were registered as the top grade companies. The research chose these groups of respondents as qualified because of their direct participation in construction projects. For more credibility and exhaustivity, the research investigates the problem through covering different aspects from various viewpoints of the people involved in the construction industry (contractor, developer, consultant, and project management companies).

The survey was conducted where 120 set of questionnaires were sent out to groups of respondents by postal mail for periods of 3 months and 52 sets (43.3%) were returned. After all the primary data had been collected and processed, appropriate analysis methods were applied. The analysis method in this research is mainly descriptive and the type of investigation is co-relational study. The analysis of the survey results made use of SPSS software.

7. Data analysis and discussion

Most construction projects depend heavily on labour and HRs, which are working there. Various types of HRs work in construction projects, such as engineers, project managers, counsellors, architects, and labour, but this research emphasizes the role of skilled labour and the ways companies or government can train them. However, the link between training labour and project effectiveness has not been considered sufficiently by the Iranian researchers. Most symposiums, researches, and surveys are done after an earthquake or some other disaster occurs. Unfortunately, as time passes many things are forgotten. Previous research indicates that there were many damages to the buildings during the earthquakes due to bad quality of construction [6,2,7,5]. It could be due to the lack of sufficient

supervision [8,2], low quality materials [1,3,4], unskilled labour, etc. In many cases, the destruction of buildings during the Bojnoord, Ardekul, Bam, etc. earthquakes in Iran, was mainly the result of unskilled labour. This shows that unskilled labour was the main reason for the low quality of construction of many buildings which were destroyed during the past earthquakes [1,2].

Regarding the above discussion, it seems necessary to research the lack of skilled workers in construction projects in different parts of Iran. In turn, this research concentrates on unskilled labour, and the methods, barriers, and practical solutions of training them. Regarding the large extent of construction projects and companies in Iran, the research was conducted based on information from selected construction companies (as mentioned earlier) in Mashhad.

Discussions regarding the research findings will be carried out as mentioned above. First of all, the study describes the organizational background and respondents' occupations; because all analyses were based on respondents' qualifications. This research has targeted top management levels in construction organizations.

As indicated earlier, the companies which have been surveyed in this research were registered in KCESO as the top grade companies. They were of four categories: governmental, semi-governmental, private, and others. Most of the respondents (69.9%) were in private companies. In contrast, 17.3% were in governmental companies, 1.9% in semi-governmental companies, and the rest (3.8%) in other areas. In addition, most of them (43.6%) were contractor companies, 23.6% were developers, 20% were consultants, and 12.7% were the project management companies. Consequently, most of the companies in this survey are private and contractor companies. In addition, the occupations of the respondents were 36.2% supervisors, 5.2% counsellors, 22.4% project managers, and 13.8% company managers. Other responsibilities (22.4%) make up a large group of the respondents, as they did not mention their responsibilities. The results show that most of the respondents in this survey are supervisors who are directly related with construction workers. Therefore, their responses and ideas have a momentous effect on this survey and confirming the credibility of the results of the study.

8. Research question one

8.1. Are the HRM practices in training labour used by construction firms in Mashhad, Iran?

The respondents of this survey were mostly private contractor companies with various building classifications such as official (27%), commercial (23%), and residential buildings (21%). Regarding **Chart 1**, the percentage of different types of labour in construction projects per day, skilled labour formed only 20% of Mashhad construction worker practitioners. In contrast, 50% of the labour forces were unskilled and 20% were semi-skilled. This implies that most

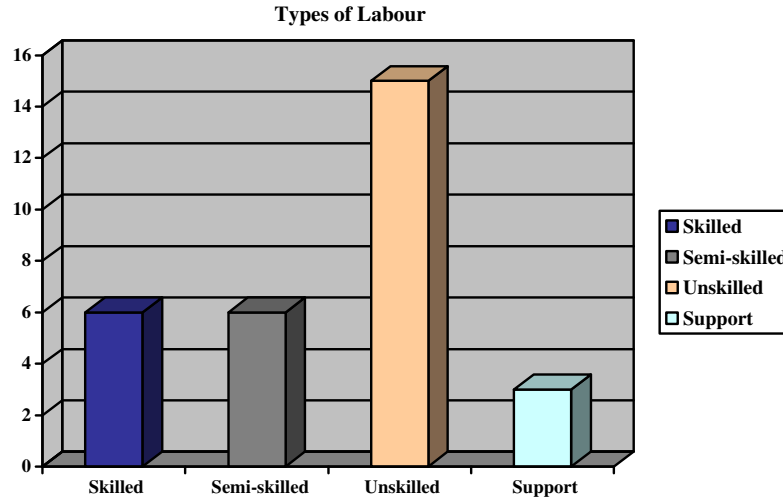


Chart 1. Median bar-chart of the type of labour in the projects.

of the workers involved in the construction projects of Mashhad were unskilled.

During the survey the respondents were asked about their programs for training the labour. The findings show that the percentage frequencies of the companies training programs were: 26.5% of the companies had specific training courses and programs for their labour, and 73.5% declared that there were no specific training courses or programs in this regard. According to the declaration of respondents, the most important company training programs were professional short-time courses on the site, sending some of the labour to TVTO construction industries training centres, and providing supervisors to train some of the labour during the construction.

The question that might be raised is why the companies did not have any integrated training program for their workers. According to the respondents, some of the fundamental problems and barriers in order to have integrated training programs for the staff and workers are as follows: high expenses of construction training courses, financial problems, short-term contracts of the workers, large number and various types of construction learning points, low level of labour education, lack of incentive among the

workers for training, inadequate relations between the contractor or client and the labour, little attention from the client on the importance of skilled labour in projects, and time-consuming. On the other hand, some of the barriers in training labour referred to the personal problems of the labour themselves. Some of the crucial problems of the Iranian workers are low level of education, low income, lack of motivation, and family struggles. These barriers play an important role in inhibiting their training and learning. Regarding Pie-Chart 2, most of the respondents believed that more than one of these items affected the training of labour. It shows 26.8% of the respondents believed that the low level of education of the labour force is the most important barrier to train them. Also, low income by 25%, no motivation (21.4%), and family struggles (17%) were the other important barriers according to the respondents' views. In addition, some of the respondents mentioned other problems and barriers in training labour such as low culture, inadequate obligation to train labour on the government's part, and low control by the government ones the use of skilled or unskilled labour in projects. Unfortunately, the incomes of the workers are low and most of them have populous families with high

Barriers on Labour Training

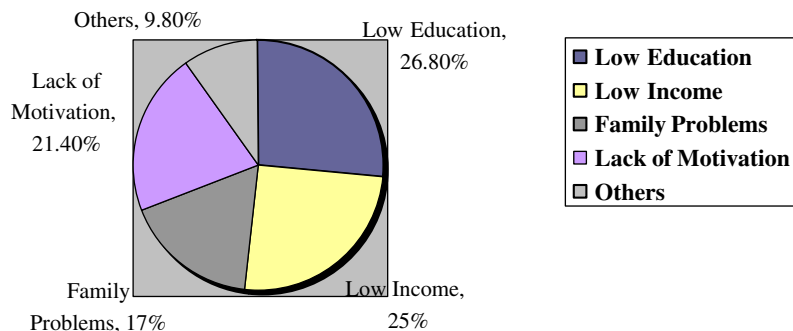


Chart 2. Percentage frequency of barriers on training of the labour.

expenditures. For this reason, they faced lots of family problems such as fostering and educating their children, exercise and recreation, and addiction. All the above mentioned barriers caused the companies not to be able to play an important role in training labour.

9. Research question two

9.1. Is there any damage to the construction projects in Mashhad because of using unskilled labour?

From 1978 to 1990 after the earthquakes in Tabass (1978), Ghaen (1980), Golbaf (1981) and Manjil (1990), the damaged cities and villages were reconstructed with different policies and engineering designs [55,8,4]. However, in the two cases of Golbaf and Ghaen, the re-occurrence of earthquakes in May 1997 and March 1998, respectively, was an actual test and engineering evaluation of these reconstructions. As it was expected, these tests showed different responses. In the case of Ghaen, after the earthquake, the majority of housing units and schools were totally destroyed due to a magnitude of 6.6 earthquake and created sorrowful scenes. Poor workmanship and lack of supervision and quality control caused the tragedy. In an overall evaluation, the reconstruction of Ghaen was a failure and was the main cause of the large number of casualties during the earthquake of 1997 [1,4]. In the case of Golbaf (500 km west of Ghaen), the experience was quite different. All of the reconstructed buildings after the 1981 earthquake remained with minor damages in the 1991 earthquake. Owing to the good quality of reconstructed buildings, 1500 deaths in 1981 were reduced to five people in 1991, even considering that the earthquake happened at night, when most people were at homes. The design of the reconstructed units in Golbaf was similar to those of Ghaen. The positive differences in Golbaf were due to good workmanship, supervision, and people's consciousness of the dire need to build safer structures [1,56,57]. In the case of Bam earthquake (December 26, 2003, magnitude 6.6), many steel and concrete structured buildings were destroyed because of lack of skilled and expert workers [8].

All of the above examples indicate a predominance of low quality construction due to a lack of skilled labour, therefore causing a lot of damage in various parts of Iran. Regarding Table 3, nearly 53% of the respondents stated that they faced a lack of skilled labour in their projects while less than 12% did not face the problem. This statistic shows that the construction projects in Mashhad do not have enough skilled labour. On the other hand, the respondents were asked about the damages which they faced during construction by the use of unskilled labour. Accordingly, 92.2% of the projects faced damages due to unskilled labour and just 7.8% did not face any damage despite this matter. According to the respondents, sort of damages were delays, increased prices of the project (extra costs), and low quality of construction.

Table 3

Frequency of whether skilled labour in the projects were sufficient or not

	Frequency	Percent	Valid percent	Cumulative percent
Skilled labour sufficiency				
<i>Valid</i>				
Str. agree	2	3.8	3.9	3.9
Agree	4	7.7	7.8	11.8
Abstention	18	34.6	35.3	47.1
Disagree	13	25	25.5	72.5
Str. disagree	14	26.9	72.5	100
Total	51	98.1	100	
<i>Missing</i>				
System	1	1.9		
Total	52	100		

Also, the results indicate that nearly 56% of the projects faced low quality construction due to the use of unskilled labour. This shows that many construction projects in this survey had low quality construction by entrusting the work to inexperienced work forces.

The following statements indicate the other problems that the projects faced in this matter:

9.2. Extra costs of projects

The research reveals that 77% of the projects faced financial problems due to the use of unskilled work forces. In contrast, 23% of the projects, which entrusted their work to skilled labour, had less additional costs. It shows that skilled labour plays an important role in decreasing extra expenses in construction projects. Referring to the respondents, most of the projects additional costs related to rework activities due to inadequate skilled work forces.

9.3. Delay

The respondents' statements indicate that 36.5% of the projects faced delays while 63.5% of them did not have any delay regarding the use of unskilled labour. This indicates that unskilled work forces had less effect on the delay of their projects.

9.4. Other damages

About 94.2% of the respondents believed that their projects did not face other damages.

In summary, these findings suggest that the construction projects in Mashhad faced two main problems because of the use of unskilled labour: low quality and additional costs of construction.

10. Findings

Regarding the previous sections, one of the main problems which most of the construction projects in Mashhad face, is the lack of expert workforces. As mentioned earlier, the companies faced many barriers and problems in training

their staff and workers. However, most of the respondents point to the government as the main reason for these problems. Of course, the government plays an important role in solving the problems but some of the mentioned difficulties can be solved or reduced by the companies and managers as well. For instance, the companies can make a friendly environment in which the managers, staff, and workers can discuss and learn from each other. This will create a work environment that influences employees' innovative and personal commitment [58], as it uses incentives such as workers' participation, recognition, and team belonging for the staff and workers' motivation, introducing and recommending TVTO centres to their workers, and encouraging them to participate in the courses.

The need for effective training is another important factor in implementing HRM in construction projects. Managers also need to develop ways to measure the performance of their workers. As indicated by Nesan and Holt [24], a system of "performance measures" is needed in order to monitor improvements (or lack of improvements) among construction teams. Besides, the government can play an important role in increasing the quality of construction projects by improving the training methods and preparing proper facilities for labour to encourage them to attend training courses.

The research found some of the main problems, which the Iranian construction workers faced were low levels of education, low income, lack of motivation, and family struggles. The government, by legislating new rules and regulations to support labour, can play an important role in improving their state of affairs. Some of the endeavours that the government can apply are as follows: increasing social security, paying towards their costs of living, requiring companies to use labour with certification of fitness of occupation, social insurance, etc. Also, training institutes, in both private and governmental sectors, should be developed by the government. In the interim, TVTO can apply momentous effects on training construction workforces. Some useful methods which can be utilized by training organizations to educate construction workers are as follows:

- i. Short term training courses at fixed centres (off-the-job training): In this case, the government must prepare facilities for workers to pay their essential cost of living. Most of them face many problems and without this incentive they will not be motivated to learn. This method needs a lot of training facilities and spaces.
- ii. Send trainers to the construction sites (on-the-job training): Until now, training and development have been largely restricted to local and regional efforts. Furthermore, an increasing emphasis should be placed upon internal training and the use of OJT, rather than external courses. This method is less expensive than the previous one. In this case, training organizations send trainers to the construction sites and offer OJT as well as facilities.
- iii. Self-learning and taking part in standard exams: There is a greater need for motivation in this method compared to the others. In this regard, the government can use effective incentives such as increasing the wages of labour with technical and vocational certificates and/or requiring the companies to entrust the works to skilled workers. The labour can learn independently and take an examination to assess their ability to meet the standards of authoritative organizations like TVTO.

11. Conclusion

Mashhad is the second largest city of Iran in terms of population, area and construction projects. Also it is located in the territory with the highest risk of earthquake activity. It has many construction projects in various categories. Consequently, many construction workers are allocated there. This research attempted to send questionnaires to an assorted number of companies involved in different responsibilities and various projects. Therefore, the results of the survey can be extended to other parts of Iran and other countries with the same scope as this research. Some of the main results which are found by this research are as follows:

- Many of Iranian labour have low levels of education, low income, lack of motivation, and family problems.
- The Iranian government, by legislating new rules and regulations to support labour, can play an important role in improving their state of affairs. Some of the endeavours, which can be applied by the government, are as follows: increasing social security, paying some of their costs of living, requiring companies to use labour with certification of fitness of occupation in the projects, and social insurance.
- Training institutes should be developed in both private and governmental sectors.
- Friendly environment should be made through which managers, staffs, and workers can discuss and learn from each other.
- A work environment should be created to influence employees' innovative and personal commitment.
- Using incentives such as workers' participation, recognition, and team belonging for motivating staff and workers
- Introducing and recommending TVTO centres to the workers and encouraging them to participate in their courses.

In addition, some profitable methods which may be utilized by training organizations can be summarized as follows:

- Short-term training courses at fixed centres.
- Sending trainers to the construction sites (OJT).
- Self-learning and taking part in standard exams.

Moreover, the results showed that the quality of construction projects have a strong correlation with the training of labour in HRM practices. Lastly, it is hoped that this study makes the government, companies, and managers of disasters aware of the aftermath in different parts of Iran of low quality construction and lack of skilled workers and lead them to apply proper ways to prevent probable damages.

12. Limitations and future research

The current study has some limitations that offer an agenda for future research. As the research has been confined to quantitative techniques, a large-scale follow-up survey would be useful to find out which of the identified training and motivation methods have the proposed connection with construction workers. A range of training and motivation methods in HRM practices have been revealed that play a role, but which methods are most relevant is not yet clear. It seems unlikely that all practices can be treated as atomistic ingredients that have an additive enhancing effect on idea generation and/or application on the quality of construction.

Another limitation is the exclusive focus on top grade construction companies in Mashhad. Perhaps some different viewpoints might be found in other respondents such as same grade companies in other parts of Iran, construction workers and labour viewpoints. Future research can be conducted in other countries and a comparison can be made with the results of this study.

It is necessary to say that, the questionnaire was limited to supervisors, counsellors, project managers, and company managers, as a source of relevant respondents. Although, some respondents elaborated their experiences as an employee or construction worker, additional questionnaires and/or interviews with subordinates may provide a more comprehensive picture of relevant training and motivation methods in HRM practices.

Thus, future research should also try to address how companies and governments adapt to and even shape the environmental and organisational settings in such a way that the context optimally stimulates workers motivation and participation in training courses and the corresponding effects on increasing the quality of construction.

References

- [1] Ghafory-Ashtiany M, Eslami AA. Earthquake activity and hazard mitigation in Iran historical and pre-historical earthquake in the Caucasus. Tehran: Kluwer Academic Publisher; 1997.
- [2] Mehrabian A, Haldar A, Reyes-Salazar A. Seismic response analysis of steel frames with post-Northridge connection. *Int J Steel Compos Struct* 2005;5(4).
- [3] Berberian M, Yeats R. Patterns of historical earthquake rupture in the Iranian plateau. *Bull Seismol Soc Am* 1999;89(1):120–39.
- [4] Allamehzadeh M, Mokhtari M. Prediction of aftershocks distribution using self-organizing feature maps (SOFM) and its application on the Birjand–Ghaen and Izmit earthquakes. *JSEE* 2003;5(3):1–15.
- [5] Akhavan TA. Studying the effects of labour training and motivation in HRM practices on the quality of construction projects in Mashhad. Unpublished MSc Dissertation. Penang: USM; 2006.
- [6] Berberian M. Opinion: earthquake management in Iran. *Iran Anal Quart* 2004;1(2).
- [7] Mehrabian A, Haldar A. Some lessons learned from post-earthquake damage survey of structures in Bam. Iran earthquake of 2003. *Struct Survey* 2005;23(3):180–92.
- [8] Eshghi S, Zare M. Bam (SE Iran) earthquake of 26 December 2003, Mw6.5: a preliminary Reconnaissance Report. First (online) Edition 29/12/2003, Tehran, Iran: International Institute of Earthquake Engineering and Seismology; 2003.
- [9] <<http://www.icic.gov.ir>>.
- [10] Sharon M, Philip W, Brenda S, David S, Chris R, Francine W. Developing “new commons” between HRD research and practice Case studies of UK universities. *J Eur Indust Training* 2007;31(1): 4–18.
- [11] Slotte V, Tynjala P, Hytonen T. How do HRD practitioners describe learning at work? *Human Resour Dev Int* 2004;7(4):541–4.
- [12] Garavan TN, Morley MJ. Re-dimensionalising boundaries in the theory and practice of Human Resource Development. *Learn Intellect Capital* 2006;3(1):3–13.
- [13] Liang-Hsuan C, Shu-Yi L, Tzai-Zang L. Using an HRM pattern approach to examine the productivity of manufacturing firms – an empirical study. *Int J Manpower* 2003;24(3):299–318.
- [14] Moore DR, Cheng M-I, Dainty ARJ. Competence, competency and competencies: performance assessment in organisation. *Work Study* 2002;51(6):314–9.
- [15] Werther Jr WB, Davis K. Personnel management and human resources. Tokyo: McGraw-Hill International Book Company; 1982.
- [16] Liu X, Ruan D, Xu Y. A study of enterprise human resource competence appraisal. *J Enterprise Inform Manage* 2005;18(3): 289–315.
- [17] McGoldrick J, Stewart J, Watson S. Understanding human resource development: a research-based approach. London: Routledge; 2002. p. 396.
- [18] Sally S. A “critical” time for HRD? *J Eur Indust Training* 2004; 28(8/9):611–24.
- [19] Sambrook S, Stewart J. HRD and learning organisations in Europe. London: Routledge; 2002. p. 178–87.
- [20] Baron RA. Human resource management and entrepreneurship: some reciprocal benefits of closer links. *Human Resour Manage Rev* 2003;13(2):253–6.
- [21] Dennis BA, Debra AL, Charlie M. Using job satisfaction and pride as internal-marketing tools. *Cornell Hotel Restaurant Admin Quarterly* 2002;43(2):87–96.
- [22] Pinker EJ, Larson RC. Optimizing the use of contingent labour when demand is uncertain. *Eur J Operation Res* 2003;144(1):39–55.
- [23] Wang Y, Yao YD. Sources of China’s economic growth 1952–1999: incorporating human capital accumulation. *China Eco Rev* 2003;14(1):32–52.
- [24] Duncan WR. A guide to the project management body of knowledge. USA: Project Management Institute; 1996.
- [25] Swanson R. HRD theory, real or imagined? *Human Resour Dev Int* 1999;2(1):2–5.
- [26] Jong Jan A de, Leenders Frieda J, Thijssen Jo GL. HRD tasks of first-level managers. *J Workplace Learning* 1999;11(5):176–83.
- [27] Nesan LJ, Holt GD. Empowerment in construction: the way forward for performance improvement. England: Baldock, Hertfordshire, Research Studies Ltd; 1999.
- [28] Druker J, White G, Hegewisch A, Mayne L. Between hard and soft HRM: human resource management in the construction industry. *Construction Manage Eco* 1996;14:405–16.
- [29] Wild A. The unmanageability of construction and the theoretical psycho-social dynamics of projects. *Eng Construction Architect Manage* 2002;9(4):345–51.
- [30] Loosemore M, Dainty ARJ, Lingard H. Human resource management in construction projects. Strategic and operational approaches. London: Spon Press; 2003.

- [31] Langford D, Hancock M, Fellows R, Gale A. *Human Resour Manage Construct*. Harlow: Longman; 1995.
- [32] Debrah YA, Ofori G. Flexibility, labour subcontracting and HRM in the construction industry in Singapore: can the system be refined? *Int J Human Resour Manage* 1997;8(5):690–709.
- [33] Winch G. The growth of self-employment in British construction. *Manage Eco* 1998;16:531–42.
- [34] Ani BR, Andrew RJD. Human resource development in construction organisations an example of a “chaordic” learning organisation? *Learn Organ* 2006;13(1):63–79.
- [35] Smith PJ. “Modern” learning methods: rhetoric and reality – further to Sadler-Smith et al.. *Person Rev* 2002;31(1):103–13.
- [36] Vought BC, Hoy F, Buchana WW. *Employee development programs*. London: Quorum Books; 1985.
- [37] VanWart M, Cayer NJ, Cork S. *Handbook of training and development for the public sector*. San Francisco, CA: Jossey-Bass; 1993.
- [38] Garavan TN, Costine P, Heraty N. *Training and development in Ireland: context. Policy and practice*. Berlin: Springer; 1995.
- [39] Reid M, Barrington H, Kenney J. *Training interventions*. 2nd ed. London: Institute of Personnel Management; 1992.
- [40] Maurer TJ, Tarulli BA. Investigation of perceived environment, perceived outcome, and person variables in relationship to voluntary development activity by employees. *J Appl Psychol* 1994;79:3–14.
- [41] Noe RA, Wilk SL. Investigation of the factors that influence employees’ participation in development activities. *J Appl Psychol* 1993;78:291–302.
- [42] Wei-Tao T. Effects of training framing, general self-efficacy and training motivation on trainees’ training effectiveness. *Person Rev* 2006;35(1):51–65.
- [43] Cheng WL, Ho CK. A review of transfer of training studies in the past decade. *Person Rev* 2001;30(1):102–18.
- [44] Colquitt JA, LePine JA, Noe RA. Toward an integrative theory of training motivation: a meta-analytic path analysis of 20 years of research. *J Appl Psychol* 2000;85:678–707.
- [45] Bart J. *McGraw-Hill’s best practices for housing construction*. New York: McGraw-Hill; 1996.
- [46] Olomolaiye PO, Jayawardane AKW, Harris FC. *Construction productivity management*. Harlow, Essex, England: Addison Wesley Longman; 1998.
- [47] Clough R, Sears G, Sears S. *Construction project management*. New York: John Wiley & Sons; 2000.
- [48] Buyens D, Wouters K, Dewettinck K. Future challenges for human resource development professionals in European learning-oriented organizations. *J Eur Indust Training* 2001;25(9):442–53.
- [49] Kopochinski L. *Millennium Contractor*. S.J. Amoroso [Interview with Paul Mason and Dana McManus]. *California Construction Link*: 2000. p. 40.
- [50] Leonard B. What do CEOs want from HR? *Human Resour Mag* 1998;43(November):80–6.
- [51] Palmeri C. Home building plus. *Forbes* 1999;163(March 8):89.
- [52] Krizan WG. Award of excellence. In: Robert M. Thompson, editor. *ENR (engineering news record)*, vol. 244; 2000. p. 52–9.
- [53] Lubka Y, Kleiner BH. Human resources issues in the construction industry. *Manage Res News J* 2001;24(March):101–5.
- [54] *Seismic Design Code for Buildings, Standard 2800*. 4th ed. Institute of Standards and Industrial Research of Iran; 2002.
- [55] Walker R, Jackson J, Baker C. Surface expression of thrust faulting in eastern Iran: source parameters and surface deformation of the 1978 Tabas and 1968 Ferdows earthquake sequences. *Int J Geophys* 2003;152:749–65.
- [56] Amini Hosseini K, Mahdavi MR, Bakhshayesh MK, Rakhshandeh M. *Engineering geology and geotechnical aspects of Bam earthquake (preliminary report)*. Tehran: IIEES; 2004.
- [57] Akhavan TA. Effects of skilled labour on decreasing damages in construction projects by refer to Ardekul earthquake in 1997, paper presented at the 8th civil engineering student conference. Tehran, Iran: Shahid Abasspoor University; 1998.
- [58] Jong JPJd, Hartog DND. How leaders influence employees’ innovative behaviour. *Eur J Innov Manage* 2007;10(1):41–64.