Exploring Worker’s Absence Pattern in the Construction Industry in Iran

Amin Alvanchi¹,* and Amirhosein Hashemi²

¹Amin Alvanchi, Assistant Professor, Department of Civil Engineering, The Sharif University of Technology, Tehran, Iran, Tel: +982166164221, alvanchi@sharif.edu

²Amirhosein Hashemi, M.Sc. Student, Department of Civil Engineering, The Sharif University of Technology, Tehran, Iran, Tel: +982166164221, amir.hashemi@alumni.ut.ac.ir

*Correspondence concerning this paper should be addressed to Amin Alvanchi, #427, Department of Civil Engineering, The Sharif University of Technology, Azadi Street, Tehran, Iran. Postal Code: 14588-9694, E-mail: alvanchi@sharif.edu, Tel: 0098-21-6616 4221 and 0098-912-1839912, Fax: 0098-21-66014828.

ABSTRACT

The worker’s absence considerably affects the performance of the labor-intensive construction projects. Identifying the worker’s absence pattern assists construction project managers in preparing the proper project organization, reducing the absence rate, and improving the project performance. Despite its critical role, no study has investigated the absence pattern in the construction industry in Iran. This study addresses this gap by identifying the worker’s absence pattern and providing recommendations to reduce the absence rate. First, a comprehensive literature review is conducted on the impacts and influential factors of the worker’s absence. Then,
a questionnaire-based survey is designed and distributed among project managers, work
supervisors, and human resource experts in different construction companies. The absence rate of
seven percent achieved for the construction industry in Iran is among the high rates compared to
the rates reported for other countries. The organizational policies, the national holiday season and
the size of the working groups are among the main influential factors. Enhancing teamwork spirit,
enforcing severe implications for the worker’s absence, and increasing managers’ site visits are
among the recommended policies for reducing the absence rate. The identified pattern in this
research is applicable for evaluating and improving the performance of construction companies in
Iran.

Keywords: Absence pattern; Absenteeism; Human resource management; Construction
management; Iran.

1- INTRODUCTION

Human resources (HR) management is a challenging job in labor-intensive and the dynamic nature
of construction projects. Various worker-related influential factors to the construction project
productivity have been identified in past research [1]. The worker’s absence is one of the main
influential factors frequently reported in the past research efforts (e.g.,[2–5]). Compared to the
planned vacation days, the worker’s absence involves an unplanned element. The absence can
happen due to 1) excusable reasons such as illness, injury, or bereavement, or 2) non-excusable
reasons such as attending a football match, going on a pleasure trip, or not feeling to work.
Inexcusable absence is also called absenteeism [6].
Past investigations have evaluated significant impacts of the worker’s absence in the construction industry in multiple directions. The business roundtable [7] estimated that an absence rate of 10 percent could cause a 15 percent loss in the profitability of the construction projects in the United States. Ferguson et al. [8] reported that the reduced safety level and the increased number of accidents are two effects of a worker’s absence. Hanna et al. [9] evaluated the negative impacts of the worker’s absence on the productivity of the construction projects about 9 percent. Nicholson et al. [10] found the median cost of a worker’s absence 1.28 times of the original wage in 35 different jobs in the United States. In this research, the cost of the construction engineer’s absence was the highest. Sichani et al. [11] found work delay, increased overtime, increased cost, and reduced safety among direct and indirect impacts of the worker’s absence in the construction projects. Strömberg et al. [12] estimated that the average cost of an absent construction worker is 2.17 times the wage in Sweden. Leaker [13] estimated a capital loss of 19.2 billion dollars in different industries in England as a result of the worker’s absence. In Belgium, Grinza and Rycx [14] found that 1.0 percent of the worker’s absence results in a productivity loss of 0.24 percent.

In Iran, construction is a major industry with approximately 9 percent share in the country’s gross domestic product (GDP) [15]. Construction projects, however, suffer from high project delays and cost overruns in Iran [16–19]. Labor-intensive structure of construction projects in the country puts labor productivity forward as a key contributor [20,21]. Meanwhile, the worker’s absence has been identified as an effective factor in the construction projects’ labor productivity in Iran [22]. Identifying the worker’s absence pattern and its influential factors in the country can assist construction managers in adjusting their policies to reduce the worker’s absence and ultimately improve labor productivity. Many past research efforts have investigated the construction worker’s absence pattern in different regions. Their achieved results, however, are not necessarily applicable
to the specific condition of Iran since regional factors can affect this pattern. Country-specific characteristics were found the main contributors to the absence pattern in a research conducted by Langenhoff [23] for modeling absence pattern in different European countries. Reported rates of construction the worker’s absence represent a wide range in different countries. This rate is 2.8 percent in Europe for the average of all industries [24], 2.4 percent in the United States [25], 8.4 percent in Canada [26], 2.1 percent in the United Kingdom [27] and 5.9 percent in Lebanon (based on the weighted averaging of unskilled workers, skilled workers and foremen)[28]. Nevertheless, research efforts that explore the worker’s absence pattern in the specific condition of Iran are still missing.

Therefore, the current study was conducted to identify the absence pattern and the main influential factors of the worker’s absence in the construction industry in Iran. The identified pattern can be used for construction managers in the country to evaluate their standing, alleviate their negative impacts and adjust their policies to address the influential factors. First, influential factors on the worker’s absence identified in the past research are reviewed. Then, different stages of the adopted survey-based method for extracting the worker’s absence pattern in the construction industry in Iran are explained. Next, the survey questionnaire design and the questionnaire distribution results are presented. Following that, the extracted absence pattern is discussed and analyzed for the construction projects in Iran. Finally, the research outcome is concluded, and recommendations are provided for future research efforts.

2- PAST RESEARCH

Significant impacts of the worker’s absence on the construction project performance have encouraged researchers to investigate its influential factors. A review of the past research
represents a wide range of influential factors on the worker’s absence. These influential factors can be divided into two internal and external categories. The internal factors originate from the internal project sources which can be handled by the project manager. However, the external factors initiate from the sources out of the project manager’s reach. Table 1 summarizes the identified influential factors from past research.

Identifying influential factors on the worker’s absence aimed to guide construction project managers to adjust their organizational policies and prepare for alleviating the negative impacts of the worker’s absence. Hanna et al. [9] studied absenteeism in electrical construction. Their recommended best practices for reducing absenteeism were redefining the overtime condition, using flexible schedules, improving safety, promoting an “open-door” policy for the managers, and publicly announcing workers' attendance. To reduce the worker’s absence rate, Langenhoff [23] in Portugal recommended organizational managers to incorporate workers' absence control policy during the recruitment process, provide both part-time and full-time contract options, and provide daycare centers. In the research conducted by Sichani et al. [11] in Canada, they found that the use of disciplinary actions to the worker’s absence is effective when the employment rate is low in the country. They also found that announcing the job-sites average absence rate is an effective strategy in reducing the worker’s absence.

Biron and Bamberger [29] found frontline supervisors support and job training effective policies to minimize the worker’s absence rate in a large municipality in the United States. Bhosale and Biswas [30] proposed remedial instructions to mitigate the worker’s absence in construction projects in India. These instructions included adjusting personnel policies, providing proper medical check-ups, providing daily meals for the workers, setting organizational holidays, and reducing working hours. Loganathan and Kalidindi [31] studied migrant construction workers in
India. Supporting workers with the on-site accommodation, sanitation facilities, daily meals, medical facilities, on-time payment, safety training, adequate materials, and tools, and festivals and the harvest season vacations are among the strategies recommended by Loganathan and Kalidindi [31]. Srour et al. [28] studied absenteeism in Lebanon and recommended the use of small working groups and proper training for reducing the worker’s absence rate.

Review of the past research indicates regional and cultural conditions as the main contributor in the worker’s absence influential factors and the mitigation strategies. For example, alcoholism was identified as an influential factor in the worker’s absence in India [30] and Hong Kong [32]. However, this factor may not be among the important factors here in Iran, since liquor trade is prohibited in the country. Therefore, an identical mitigation strategy cannot be globally prescribed for reducing the worker’s absence rate. Instead, dedicated efforts are required for analyzing absenteeism in different regions. To fill a part of the existing gap for dedicated research on the worker’s absence in Iran, this research aimed to identify the absence pattern and its main influential factors in the construction industry in Iran. The focus of this research was on internal influential factor.

3- METHODOLOGY

Direct data collection was adopted due to the lack of credible construction worker’s absence information in the country. Target statistical population was defined as laborers’ supervisors, department managers, HR specialists, HR managers, and company chief executive officers (CEOs).

1 The HR specialists or human resource specialists refer to the construction company employees who work in the human resource departments. The HR specialists were considered among the statistical population of the survey since they are normally involved in the process of accounting the employees’ compensable and non-compensable absence.
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Working group supervisors and department managers were selected as the main parts of the target population due to their overall insights regarding the absence pattern of the workers working under their supervision. The exact size of the statistical population was unknown. However, according to the National Center of Iranian Construction Contractors (NCICC) [33] in 2018, approximately 25,000 active construction companies were registered with the NCICC. Considering multiple eligible respondents in each construction company, the population size of the statistical society easily goes beyond 100,000. A questionnaire-based survey method was adopted for the data collection due to the large population of the statistical society. A questionnaire was designed to capture different aspects of the worker’s absence pattern. A pilot survey was performed to test the validity of different questions and estimate the required sample size before the actual questionnaire distribution. The actual data collection was performed by randomly contacting construction companies from the list until the required number of valid questionnaires was returned. The collected data were then statistically analyzed to identify different aspects of the construction worker’s absence pattern including the most important influential factors. Figure 1 presents the different stages of the conducted research.

4- QUESTIONNAIRE DESIGN

The designed questionnaire contained 30 questions and was categorized into three main parts, including 1) the respondent’s general information, 2) the worker’s absence definition and
frequency, and 3) the absence pattern. The third part of the questionnaire aimed to identify the main internal influential factors. The research team took the list of internal influential factors identified from different research efforts (Table 1) for designing this part of the questionnaire. Further explanation regarding the presented questions in three different parts of the questionnaire follows.

4-1- Part 1: general information

In this part, four background questions were asked. These questions were designed to collect the respondent’s job position, years of experience, experience in the current organization, and the size of the respondent’s working group. These questions were outlined in the questionnaire’s heading and were not numbered.

4-2- Part 2: absence definition and frequency

The worker’s absence during a working day has a wide range from several minutes to an entire day. Before collecting the respondents’ responses to different questions about the worker’s absence, their perceptions regarding an absent worker was asked in the first question of this part. Here, respondents were asked to determine the minimum hours of a worker’s absence significantly affecting the workers’ performance during the day. In the second question, the minimum number of days of absence per month with a considerable impact on a worker’s performance was asked. In the research workers with the number of absent days per month equal to or higher than the minimum absent days per month were identified as frequent absentees. The next three questions in this part were used to collect the frequency of the worker’s absence and absenteeism in the
construction projects. Percentage of the frequent absentees, the average workers’ absent days, and the frequency of the workers’ absenteeism were asked in the next three questions of this part.

4-3- Part 3: absence pattern

This part of the questionnaire was categorized into five different categories to capture the absence pattern in five various aspects. These aspects are 1) in-advance notification, 2) the management policy, 3) the specific occasions, 4) the size of the working groups and 5) the worker's characteristics. Further discussion about the designed questions in each category follows.

1) In-advance notification. The unplanned cause of the worker’s absence may occur several days before the day of the absence. Therefore, the absentee might have a short time to give an in-advance notice of the absence to the supervisor. This short notification from the absentee can provide a chance to mitigate the resulting disturbances and to minimize productivity loss [11]. Here, questions were asked about the possibility of in-advance notifications and their impacts on job productivity.

2) Management policy. Management policy was identified as an influential factor in the worker’s absence rate [34]. Visiting the job-sites regularly [23], encouraging the teamwork spirit, publically announcing the absentees [11] and enforcing serious implications for the absentees [34] were reported as some management policies. In the survey, respondents were asked to rank the impacts of different management policies on the worker’s absence rate.

3) Specific occasions. The trend of the worker’s absence is likely affected by specific occasions and seasons over the year. These occasions vary in different countries with different cultures and work environments. Here, respondents were asked to mark specific occasions with high absence rates over the year.
4) Size of the working groups. It is expected that a low level of supervision is applied to large working groups. Therefore, expectedly the worker’s absence rate is relatively high in large working groups. Identifying the impact of the working group sizes on the worker’s absence can assist construction project managers to efficiently adjust the size of the working groups and the project organization. Here, a set of questions was designed to capture the impacts of the size of the working group on the worker’s absence. Group supervisors were asked to indicate the average number of workers working under their supervision. They were also asked to specify the average absence rate of their working groups. Further, they were directly asked to rank the impacts of the working group size on the worker’s absence. The last question in this part was meant to represent a relatively similar response implied from the first two questions. This question was used for testing the validity of the respondents’ answers.

5) Workers characteristics. Workers with specific traits may frequently become absent as results of the issues they struggle with. Identifying these characteristics helps construction project managers to focus on the source of the problems and plan for addressing them effectively. Therefore, in this part of the respondents of the questionnaire were asked if they can name specific characteristics of the frequent absentees.

5- PILOT STUDY

The pilot study was conducted with the participation of 20 respondents. The validity of the questions was tested in consultation with the pilot group. Several questions were revised according to the feedback received from the experts who participated in the pilot study. The minimum number of samples was also estimated according to the Cochran [35] sample size equation. The
minimum adequate sample size was estimated at 124 with the maximum standard deviation of 1.13
for questions, the confidence interval of 95 percent, and an acceptable error level of 0.2.

6- DATA COLLECTION

A total number of 150 questionnaires was distributed; 127 responses were returned. The
Cronbach's Alpha [36–42] are two commonly used reliability tests for verifying the consistency of
the collected data. IBM SPSS statistics software was used for testing the reliability of the collected
data using Cronbach’s Alpha and intera-class correlation tests. The standardized items Cronbach's
Alpha of 0.722 and the average intera-class correlation of 0.708 affirmed the reliability of the
collected data.

According to the collected data, 60 percent of the respondents were working in the construction
sites, and 40 percent were in the office. Approximately 26 percent of the respondents were directly
in charge of small working groups with less than five members. 31 percent of them were in charge
of working groups of 5 to 10 members, and 37 percent were in charge of large working groups
with more than 10 members. Approximately 6 percent of the respondents were HR specialists who
were not in charge of any working groups. Department managers with 51 percent frequency
comprised the highest portion of the respondents. They were followed by laborers supervisors with
35 percent and HR staff including HR managers and HR specialists with 14 percent.

Approximately 67 percent of the respondents had overall work experience for more than 11 years.
The majority of the respondents with a frequency of 52.5 percent had up to 5 years of work
experience in their current company. Figure 2 represents the distribution of the respondents in
different aspects.
7- ABSENCE PATTERN

Achieved results revealed different aspects of the absence pattern in the construction industry in Iran. Table 2 summarizes the worker’s absence pattern in the construction projects in Iran. Further explanation about the achieved results is provided in the rest of the section.

7-1- Definition of the absent worker

Almost 70 percent of the respondents indicated that up to four hours of the worker’s absence per day ruins the entire day’s performance. In this situation, the workers can be deemed absent for the entire day. Almost 51 percent of the respondents indicated that a minimum of two days of the worker’s absence in a month has a considerable impact on the worker's performance. Therefore, workers with an average absence rate for more than two days a month were considered frequent absentees. The one way ANOVA (analysis of variance) test with the significance level of 0.05 was conducted on the collected data for the impacts of job position and work experience on the worker’s absence rate evaluation using IBM SPSS statistics software. Job position and work experience were selected as independent factors, and the worker’s absence rate evaluation was set as the dependent variable. Table 3 represents the result achieved for the impact of job position and Table 4 represents the result achieved for the impact of work experience on the worker’s absence rate evaluation. In both cases, the achieved statistical significance values represent higher values than the significance level of 0.05 set for the ANOVA. Therefore, neither the job position nor the work experience was identified as a contributing factor to the worker’s absence rate.
7-2- Absence rate

On average, respondents identified that 25 percent of workers are frequent absentees. The overall average worker’s absence rate came to 1.56 days a month or approximately 7 percent of the working time. Almost 55 percent of the respondents estimated the average worker’s absence rate in their company equal to or more than two days a month. Finally, the respondents indicated on average about 30 percent of the worker’s absence is due to inexcusable reasons, i.e., absenteeism.

Figure 3 compares the worker’s absence rate reported in the literature for the construction industry in different countries. The average absence rate of 7 percent in Iran represents the second-highest rate after Canada with the absence rate of 8.4 percent.

7-3- In-advance notification

Approximately 95 percent of the respondents believed in-advance absence notification could highly or fairly reduce the negative impacts of the worker’s absence. Meanwhile, it was estimated that on average 45 percent of the absent workers could give in-advance notification for at least one day before their absence. About 87 percent of respondents indicated that the top management support for in-advance notification could highly or fairly increase the number of in-advance notifications.

7-4- Management policies

Approximately 84 percent of respondents believed that the proper management and organizational policy has a high or fair impact on reducing the worker’s absence rate. Figure 4 presents the impacts of the four different management policies on the worker’s absence evaluated in the survey. Three of the policies were identified with high or fair impacts on the worker’s absence rate by more than 90 percent of the respondents. These management policies include 1) encouraging
teamwork spirit, 2) enforcing serious implications for absent workers and 3) visiting the job-sites regularly. The fourth policy, i.e., publically announcing workers’ days of absence, however, received a narrow majority of 53 percent. Meanwhile, only 20 percent of respondents identified currently enforced worker’s absence policies fairly or quite suitable.

7-5- Specific occasions

About 47 percent of the respondents identified the first, and 33 percent of respondents indicated the last month of the Persian New Year as an occasion with high worker’s absence rates. Around 10 percent of the respondents mentioned the beginning of the school year, and 7 percent of them identified the end of the school year as occasions with high absence rates. In total, 87 percent responded work productivity is highly or fairly reduced during these special occasions.

7-6- Size of the working groups

Around 81.5 percent of the respondents indicated the absence rate is higher in the large working groups than the small working groups. Almost 83 percent of the respondents indicated that breaking large working groups into several small groups can reduce the worker’s absence rate. As presented in Figure 5, the worker’s absence ranges from 0.98 days a month in small working groups of up to five members to 1.89 days a month in large groups with more than ten members. Achieved results illustrate that the size of the working groups linearly relates to the number of the worker’s absence rate. One way ANOVA test was performed with the significance level of 0.05 for testing the relation between working group size, as an independent factor, and the working group absence rate, as the dependent variable. The statistical significance value of zero achieved in the test (the last column in Table 5) affirmed the relation.
7-7- Workers characteristics

Workers with a chronic disease with a frequency of 42 percent, non-domestic workers with a frequency of 26 percent, and new or rooky workers with a frequency of 23 percent, respectively, represented the highest absence rates among different groups of the workers. Identifying sickness absence as the most important personal reason for the worker’s absence conforms to the results reported in the past research (e.g., [30,31,43,44]). The job location was also identified as a contributing factor to the worker’s absence rate in the construction projects. The achieved significance value of 0.001 in the conducted one way ANOVA test affirmed the worker's job location, i.e., office or job-site, as a contributing factor to the absence rate (Table 6). The average absence rate was achieved 1.27 days a month for the office workers and 1.79 days a month for the on-site workers.

8- DISCUSSION AND ANALYSIS

A part of the reduced performance in the construction projects in Iran returns to the high rate of absence compared to other countries. It was identified that the current organizational policies fall short in properly addressing the worker’s absence. Nearly 30 percent of the worker’s absence was due to the inexcusable reasons and could be reduced by proper organizational policies. Enhancing teamwork spirit among the workers, enforcing serious implications for inexcusable absence, and setting regular site visits by managers are among the policies found useful. The main portion of the high absence rate in the construction projects was directed to 25 percent of the frequent absentees. Close to 70 percent of the worker’s absence was due to excusable reasons such as chronic disease, overwhelming issues in the new society far from the homeland, or being swamped in the new work environment. Therefore, construction project managers are recommended to pay
attention to the specific condition of these groups of workers. It is expected that the increased
organizational sensitivity and support for the excusable worker’s absence can result in the reduced
worker’s absence rate. Providing complementary medical and accommodation benefits, and
holding proper orientation and mentoring programs are options for reducing excusable worker’s
absence.

The absence rate is higher for on-site workers than office workers. Harsh weather condition and
high work pressure are two elements of the construction job-sites which have been previously
reported as influential factors to the worker’s absence in the literature (e.g., [11,31,45]). These two
factors might have played roles in increasing the worker’s absence here as well. The project
managers are recommended to pay particular attention to on-site policies and supports. However,
it should be noted that both excessive pressure and extra encouragement for the worker’s
attendance can result in the workers’ presenteeism. Presenteeism or attending the job with
improper conditions such as sickness or anxiety can reversely result in reduced performance [46].

Many project managers are reluctant to increase the number of highly paid work supervisors who
are in charge of supporting tasks that do not directly contribute to the project progress. This
tendency, however, can ultimately result in forming large working groups in the construction
projects. According to the results achieved in this study, large working groups have higher absence
rates than small groups. The identified relationship between the size of the working groups and the
worker’s absence rate is also seen in the past (e.g., [14,23,26,34,47]). It should be noted that the
reduced worker’s absence and its consequent performance increase can justify additional payments
to the work supervisors in many cases.
9- SUMMARY AND CONCLUSION

This research was the first investigation conducted to explore the worker’s absence pattern in the specific condition of construction projects in Iran. An overall perspective of the construction worker’s absence pattern was drawn in the country, and the country’s standing was compared with several other countries. Unlike many other performance indicators, calculation of the worker’s absence rate and its other related indicators in an organization is relatively simple only by using the worker’s payroll. Therefore, the identified absence pattern in this investigation can be used by construction managers to compare their organizations’ standings. Provided recommendations can be used for them to adjust their organizational policies. Investigating impacts of these recommendations on the worker’s absence in real cases, however, can be followed in future research. The focus of the conducted investigations was on the intra-organizational and personal aspects of the worker’s absence in the construction projects. External influential factors can also affect the worker’s absence rate in the construction projects which have not been investigated here. New research efforts are encouraged to examine these factors. Especially, Iran’s labor law is quite notorious among the construction project contractors to be one-sided in favor of workers. New investigations on the possible impacts of the current labor law on the worker’s absence can clarify the fact.

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Figure 1. Different stages of the research
Figure 2. Distribution of the respondents in different aspects
<table>
<thead>
<tr>
<th>Country</th>
<th>Absence Rate</th>
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</thead>
<tbody>
<tr>
<td>Iran</td>
<td>0.7%</td>
</tr>
<tr>
<td>Canada¹</td>
<td>8.4%</td>
</tr>
<tr>
<td>Netherlands²</td>
<td>0.4%</td>
</tr>
<tr>
<td>United States³</td>
<td>0.2%</td>
</tr>
<tr>
<td>Lebanon⁴</td>
<td>0.6%</td>
</tr>
<tr>
<td>United Kingdom⁵</td>
<td>0.2%</td>
</tr>
</tbody>
</table>

1-Source: Statistics Canada [26]
2-Source: de Best [48]
3-Source: BLS, [25]
4-Source: Sourd et al. [28]
5-Source: Downey [49]

Figure 3. The worker’s absence rate in the construction industry in different countries
Figure 4. Impacts of different management policies on the worker’s absence

- **a. Encouraging team work**
  - Possible impacts, 9%
  - Fair impacts, 31%
  - High impacts, 59%

- **b. Enforcing serious implications**
  - No impacts, 4%
  - Fair impacts, 6%
  - High impacts, 48%

- **c. Regular on site visits**
  - No impacts, 16%
  - Fair impacts, 45%
  - High impacts, 49%

- **d. Posting workers’ absent days**
  - Possible impacts, 29%
  - Fair impacts, 39%
  - High impacts, 14%
Figure 5. Average absence days in working groups with different sizes
<table>
<thead>
<tr>
<th>Influential Factors</th>
<th>Internal</th>
<th>External</th>
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<tbody>
<tr>
<td>Accommodation support</td>
<td>Hinze et al. [34]; Srour et al. [28]</td>
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<tr>
<td>Contract type</td>
<td>Drago and Wooden [50]; Cucchiella et al. [51]</td>
<td></td>
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<tr>
<td>Job satisfaction</td>
<td>Drago and Wooden [50]; North et al. [52]</td>
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<td>Hinze et al. [34]; North et al. [52]; Lusinyan and Bonato [24]; Srour et al. [28]</td>
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<td>Size of the working group</td>
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<td>Team work spirit</td>
<td>Hinze et al. [34]; Drago and Wooden [50]; Grinza and Rycx [14]</td>
<td></td>
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<tr>
<td>Training</td>
<td>Lattouf et al. [45]; Srour et al. [28]</td>
<td></td>
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<tr>
<td>Work pressure and overtime</td>
<td>TBR [7]; Langenhoff [23]; Loganathan and Kalidindi [31]</td>
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<tr>
<td>Workers tenure</td>
<td>Drago and Wooden [50]; Srour et al. [28]; Grinza and Rycx [14]</td>
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<tr>
<td>Alcohol</td>
<td>Bhosale and Biswas [30]; Loganathan and Kalidindi [31]</td>
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<td>Gender</td>
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<td>TBR [7]; Hinze et al. [34]; Sichani et al [11]; Srour et al. [28]</td>
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</tr>
<tr>
<td>Salary level</td>
<td>Drago and Wooden [50]; Kim and Philips [55]</td>
<td></td>
</tr>
<tr>
<td>Unemployment rate</td>
<td>North et al. [52]; Kim and Philips [55]</td>
<td></td>
</tr>
<tr>
<td>Job safety</td>
<td>TBR [7]; North et al. [52]; Sichani et al. [11]; Biron and Bamberger [29]; Lattouf et al. [45]; Bhosale and Biswas [30]</td>
<td></td>
</tr>
<tr>
<td>Weather condition</td>
<td>Rhodes and Steers [56]; Sichani et al. [11]; Lattouf et al. [45]; Loganathan and Kalidindi [31]</td>
<td></td>
</tr>
<tr>
<td>Holidays</td>
<td>Lattouf et al. [45]; Bhosale and Biswas [30]; Loganathan and Kalidindi [31]</td>
<td></td>
</tr>
<tr>
<td>Social norms</td>
<td>Ahn et al. [57]; Srour et al. [28]</td>
<td></td>
</tr>
</tbody>
</table>
Table 2. Absence Pattern in Construction Projects in Iran

<table>
<thead>
<tr>
<th>Absence definition</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 4 and more hours of absence a day is equal to one day</td>
<td></td>
</tr>
<tr>
<td>- 2 days of absence a month considerably affects performance</td>
<td></td>
</tr>
<tr>
<td>- Workers with an average absence of 2 and more days a month are considered frequent absentees</td>
<td></td>
</tr>
<tr>
<td>- Job position and experience are not contributing a factor</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Absence statistics</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 25 percent of workers become frequently absent on the job</td>
<td></td>
</tr>
<tr>
<td>- Overall average of the worker’s absence is 1.56 days a month or 7 percent of the time</td>
<td></td>
</tr>
<tr>
<td>- 30 percent of the worker’s absence is absenteeism</td>
<td></td>
</tr>
<tr>
<td>- 45 percent of absent workers can give in-advance notification</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contributing factors</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>Specific occasions</strong>: Nowrooz (Iranian New Year), School year begin and end increase the worker’s absence.</td>
<td></td>
</tr>
<tr>
<td>- <strong>Management policies</strong>: Encouraging teamwork spirit, enforcing serious implications for absent workers, and regular site visits reduces the worker’s absence.</td>
<td></td>
</tr>
<tr>
<td>- <strong>Size of working groups</strong>: Absence is higher in large working groups</td>
<td></td>
</tr>
<tr>
<td>- <strong>Job location</strong>: Job-site workers have a higher absence rate compare to the office workers</td>
<td></td>
</tr>
<tr>
<td>- <strong>Workers characteristics</strong>: Workers with chronic disease, non-domestic workers, and new workers have high absence rates.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-contributing factors</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>- <strong>Job position, work experience</strong></td>
<td></td>
</tr>
</tbody>
</table>
Table 3: One-way ANOVA test conducted in IBM SPSS for the impact of job position on the workers absence rate evaluation

<table>
<thead>
<tr>
<th></th>
<th>Sum of Squares</th>
<th>df*</th>
<th>Mean Square</th>
<th>F**</th>
<th>Sig.***</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>1.033</td>
<td>3</td>
<td>.344</td>
<td>.520</td>
<td>.670</td>
</tr>
<tr>
<td>Within Groups</td>
<td>76.834</td>
<td>116</td>
<td>.662</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>77.867</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Degrees of freedom
** F- Statistics
*** Statistical Significance
Table 4: One-way ANOVA test conducted in IBM SPSS for the impact of work experience on the workers absence rate evaluation

<table>
<thead>
<tr>
<th>Q4_Absence_Rate</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2.733</td>
<td>3</td>
<td>.911</td>
<td>1.407</td>
<td>.244</td>
</tr>
<tr>
<td>Within Groups</td>
<td>75.133</td>
<td>116</td>
<td>.648</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>77.867</td>
<td>119</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 5: One-way ANOVA test conducted for the impact of the group size on the workers absence rate evaluation

<table>
<thead>
<tr>
<th>Q19_Group_Absence_Rate</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>19.377</td>
<td>3</td>
<td>6.459</td>
<td>12.176</td>
<td>.000</td>
</tr>
<tr>
<td>Within Groups</td>
<td>55.169</td>
<td>104</td>
<td>.530</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>74.546</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 6: One-way ANOVA test conducted for the impact of the working location on the working group absence rate evaluation

<table>
<thead>
<tr>
<th>Q19_Group.Absence_Rate</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>7.359</td>
<td>1</td>
<td>7.359</td>
<td>11.610</td>
<td>.001</td>
</tr>
<tr>
<td>Within Groups</td>
<td>67.188</td>
<td>106</td>
<td>.634</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>74.546</td>
<td>107</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Amin Alvanchi:

Amin Alvanchi is an assistant professor in the Department of Civil Engineering, with a specialization in construction engineering and management, at Sharif University of Technology, Tehran, Iran since February 2013. He has received his Ph.D. in construction engineering and management from the University of Alberta, Canada in 2011. His area of research focuses on construction project management, building information modeling, construction operation simulation and contract administration.

Amirhosein Hashemi:

Amirhosein Hashemi is an M.Sc. student in the Construction Engineering and Management program of the Department of Civil Engineering, Sharif University of Technology, Tehran, Iran. His research and work focus is on project management and building information modeling.