Proceedings of International Structural Engineering and Construction, 8(1), 2021
Interdisciplinary Civil and Construction Engineering Projects
Edited by El Baradei, S., Abodonya, A., Singh, A., and Yazdani, S.

ISSN: 2644-108X
www.doi.org/10.14455/ISEC.2021.8(1).CPM-02

FACTORS THAT AFFECT THE JOB BURNOUT AMONG ARCHITECTS AT DESIGN FIRMS

GULDEN GUMUSBURUN AYALP[1], NUR BOZHUYUK[2], and ILHAMI AY[3]

[1]*Architecture Dept, Hasan Kalyoncu University, Gaziantep, Turkey*
[2]*Atolyekraft Company, Gaziantep, Turkey*
[3]*Colemerik Vocational School, Architecture and City Planning Dept, Hakkari University, Hakkari, Turkey*

Construction industry is characterized with its complicated, risky, hazardous and demanding nature. Construction projects are comprised of variety of activities that must be completed in a timely, cost-effective, and high-quality manner. Within fast track construction projects, architects who participate at almost all phases of construction process are often expected to work erratic and long hours. Therefore, these factors can frequently result in stressful work environment. Prolonged job stress cause job burnout could decrease individuals' level of job satisfaction, productivity and increase turnover intention that consequentially lowers the organizations' performance. Emotional exhaustion, cynicism, and diminished professional efficacy were remarked to be valid in the most commonly accepted burnout model. This research aimed to investigate the factors that cause job burnout among architects working within architectural offices in Turkey. Identifying the most important burnout factors is another goal of this study. Therefore, to reach these aims a questionnaire was composed by researchers with literature review and applied to architects who are working at architectural design firms in Turkey. At the end of data collection 360 surveys are gathered. Obtained data were statistically analyzed. Consequently, six critical factors determined causing burnout among architects.

Keywords: Architectural design firms, Construction management, Construction industry, Stress, Personnel management.

1 INTRODUCTION

Construction industry is recognized as complex, and has highly working demands that cause construction industry more stressful. Completing a construction project requires several tasks on schedule, in prospect budget, and to a high standard. Construction professionals are often expected to work long and extraordinary hours as part of fast-paced construction projects, resulting in stressful and demanding work environments (Yip and Rowlinson 2009). These duties constitute stress on construction professionals. Due to stressful environment of construction industry majority of construction professionals suffers from stress (CIOB 2006, Poon *et al*. 2013). Stress has an important effect on employees and their organizations (Leung *et al*. 2011). A Prolonged job stress may provoke job burnout that influence organizations negatively and lead to time and cost overruns, and declining customer satisfaction (Poon *et al*. 2013).

Several studies have been carried on to determine the stressors of construction professionals, especially construction managers (Loosemore and Waters 2004, Leung *et al*. 2011, Yang *et al*. 2017). With the parallel of these researches, effects of stress on organizations and individuals

and coping strategies were investigated. There are limited studies concentrated on architects and factors that promote burnout. Limited available research reported that burnout is high among construction professionals in Turkey (Çivici 2016). However, research about factors that affect the burnout among architects, who wear different hats during construction process and have a highly stressful and significant role, is still lacking. For that reason, the primary aim of this study is determining the factors that cause burnout among architects who are working architectural design firms.

2 RESEARCH METHOD

The study adopted a multistage methodological process that included determining the parameters that would make up the variables, designing the questionnaire as a measuring tool, data collection and comparative analysis of the data.

The first step of the research is identifying the criteria that affect the burnout level of architects. Table 1 lists 39 burnout criteria identified after detailed analysis of existing literature, especially in the areas of construction management, design management and practice and behavior, which are considered essential to subject field. A questionnaire was formed based on a evaluation and analysis of former burnout related researches. The questionnaire contained 39 criteria that could lead to burnout, which were scored on a 5-point Likert-type scale, with 1 representing “not severe” and 5 representing “most severe”. A pilot research was performed first to explore the explicitness of the logic and language of the questions in order to assess the participants' questionnaire comprehension. The pilot research included 36 architects who have experience an average of ten years in the Turkish construction industry. All of the participants pointed out the 39 criteria that affect the job burnout encounter their assumption and expectation. After ensuring reliability, the questionnaires were conducted to 500 architects of which, 360 were fully filled in all and used for data processing.

The participants' answers were coded and evaluated with the help of the Statistical Package for Social Sciences (SPSS v. 22.0). Statistical analyses such as reliability analysis, severity index ranking, and exploratory factor analysis (EFA) were performed using SPSS.

While filling out a questionnaire with Likert scale, social scientists (Nunnally and Bernstein 2007) recommend measuring specificity to determine internal continuity between questions. The statistical reliability and validity of the participants' responses is determined using Cronbach's Alpha (α) coefficient. According to Tavakol and Dennick (2011), the α coefficient values range from 0 to 1, and the minimum suitable reliability threshold is 0.7.

It was important to determine the implicit factor structure in order to achieve the study's primary aim. To classify the key factor classes, the answers for the 39 criteria used in the questionnaire were entered into the SPSS and performed EFA using varimax rotation (eigenvalue=1 cut-off). Main factors were described as items with a factor loading greater than 0.4 (Nunnally and Bernstein 2007).

3 FINDINGS

3.1 Profile of Participants

The participants composed of architects who are currently occupied in the architectural design firms. There are twice as many female architects as male ones. Although, construction industry is male—dominated industry, the situation at architectural design firms is opposite. When sorting out participants based on their education level, major parts of (74.4%) have Bachelor’s degree.

Another significant demographic variable is working position at the design firm to measure the importance of the burnout criteria and determine the burnout factors that analyze result presents that most of the architects (61.1%) work as employee.

3.2 Reliability Analysis

According to Tavakol and Dennick (2011), threshold of Cronbach α value should be above 0.7 for strong consistency. Cronbach α value of the obtained data for 39 criteria that will comprise the factors affecting the burnout level of architects was determined as 0.967. Based on the determined value the internal consistency of the questionnaire is excellent.

3.3 Ranking of Architects' Burnout Criteria and Their Severity Index

A severity index formula was computed using Eq. (1) below to calculate participants' perceptions of the severity of each burnout criteria. The equation was reproduced from formulas developed by Kometa *et al*. (1994), and Chan and Kumaraswamy (2002).

Burnout severity index:

$$(SI) = \frac{\sum_{i=1}^{N} Si}{NS} X100 \tag{1}$$

where s denotes the severity rating given by (i^{th}) respondent on a scale of 1 to 5; i = 1, 2, 3, …, N; N denotes the denotes the total number of respondents for that specific criterion; and S denotes the highest possible severity rating, which is 5. The burnout severity index values are shown in the third column of Table 1, while the cumulative severity index of each factor and the total rating of all burnout factors are shown in the fourth and fifth columns, respectively.

The top five burnout items in order of overall rating are as follows; BC39; BC38; BC37; BC7 and BC22.

3.4 Underlying Burnout Factors – Exploratory Factors Analysis (EFA)

Though the reliability analysis 39 reliable items were inputted to the SPSS software within the context of EFA. Six components presented factors with an eigen value greater than 1 were then extracted and they accounted for 67.66% of the explained total variance (Table 1).

Table 1 presents the results of EFA. Due to factor loading smaller than 0.4 one item (BC27) was extracted from the questionnaire. Finally, thirty-eight items together with alpha coefficient reliably are summarized Table 1. Six components with Eigen value greater than 1 were extracted which accounted and explained 67.66% of total variance. Each factor was elucidated, and coded depending on the items that gathered factors as below mentioned:

Factor 1: Working Condition Challenges and Lack of Management between Working Team and Manager (WCCLM)
Factor 2: Lack of Coordination among Stakeholders (LCS)
Factor 3: Lack of Motivating Awards and Payment Injustices (LMAPI)
Factor 4: Problems Sourced from Tenders and Contracts (PSTC)
Factor 5: Incompatible Colleagues and Troublesome Clients (ICTC)
Factor 6: Organizational Incompatibilities and Maladaptive Behaviors of Building Audit Firms (OIMBAF))

Table 1. Severity index and exploratory factor analyze.

Factor	Items Coded as	Items	Severity Index (SI)	Factor loadings	Average SI (%)	Severity Rank of Factor	% of variance	Cronbach Alpha
Factor 1	BC30	Lack of communication and coordination between the manager and employees	85.27	0.807	83.35	3	15.318	0.943
	BC28	Unclear job distribution and job descriptions	85.02	0.756				
	BC31	Managers' negative attitudes and behaviors	87.24	0.749				
	BC32	Insufficient occupational health and safety measures at the workplace	77.82	0.729				
	BC29	Insufficient planning, control and supervision within the organization	82.95	0.727				
	BC25	Irregular and long working hours	83.26	0.713				
	BC24	Excessive workload	83.20	0.655				
	BC26	Not having the right to participate in design decisions	83.68	0.544				
	BC23	Failure to appreciate the work done by the managers	81.78	0.534				
Factor 2	BC37	Customers' demanding the perfect one and paying little price in return	90.55	0.754	88.44	1	15.243	0.919
	BC39	Excessive disrespect by individuals outside the profession	91.80	0.714				
	BC35	Lack of experience at construction industry due to short internship period in the architectural education process	84.26	0.698				
	BC36	Unclear demands of clients and frequent changing minds	87.73	0.671				
	BC6	Selection of unqualified materials to reduce the cost	88.64	0.670				
	BC34	Considering the cost rather than quality during design process	84.00	0.641				
	BC33	Requesting changes in the completed projects	88.37	0.629				
	BC7	Architectural projects are not considered sufficiently by the subcontractors	88.93	0.613				
	BC38	High number of colleagues who do the same job almost without making money	91.75	0.600				
Factor 3	BC19	Lack of monetary rewards	81.91	0.755	84.49	2	13.529	0.907
	BC18	Inequality at salaries of employees in the same job position	85.65	0.691				
	BC21	Not paying salaries on time	86.84	0.652				
	BC20	Inequality to distribute monetary reward	81.03	0.640				
	BC16	Insufficient social security facilities	83.28	0.611				
	BC22	Lack of promotion opportunity	83.97	0.607				
	BC17	Insufficient salary	88.75	0.588				

Table 1. Severity index and exploratory factor analyze (contd).

Factor	Items Coded as	Items	Severity Index (SI)	Factor loadings	Average SI (%)	Severity Rank of Factor	% of variance	Cronbach Alpha
Factor 4	BC2	The absence of items such as arbitration or resolution in contracts	77.92	0.763	82.45	4	8.845	0.831
	BC4	Problems sources from tenders	84.11	0.724				
	BC5	Poorly planned investments	86.94	0.692				
	BC1	Unilaterally prepared contracts	79.88	0.648				
	BC3	Failure to comply with the contracts	83.44	0.506				
Factor 5	BC15	Lack of sense of responsibility among the team members	84.62	0.701	81.22	6	8.169	0.818
	BC14	Unwarranted competition within the work team	78.95	0.679				
	BC13	Poor communication and cooperation within teammates	82.58	0.669				
	BC12	Customers' unrealistic project requests	78.75	0.442				
Factor 6	BC8	Weak communication of architects working in design offices with building inspection companies	77.96	0.783	81.71	5	6.562	0.802
	BC10	Approval of the projects without being reviewed by the auditor staff	79.33	0.689				
	BC9	Considering the building inspection service as a formality	86.40	0.571				
	BC11	Non-cooperative attitudes and behaviors of customers and other project stakeholders	83.15	0.422				
Total Explained Variance								**67.666**
Kaiser-Meyer-Olkin (KMO) Value								**0.939**
Barlett's Test of Sphericity	**Approx. Chi-Square**							**11421.551**
	df:							**741**
	p:							**0.000**

3.5 Ranking of the Burnout Factors

The factor model regarding the elucidated factors causing the burnout is proposed, and it is composed of six factor groups. Through the average severity index, the significance of each factor was gradated as identified in Table 1. These groups, based on their relative importance in order are Lack of Coordination among Stakeholders (LCS), Lack of Motivating Awards and Payment Injustices (LMAPI), Working Condition Challenges and Lack of Management between Working Team and Manager (WCCLM), Problems Sourced from Tenders and Contracts (PSTC), Organizational Incompatibilities and Maladaptive Behaviors of Building Audit Firms (OIMBAF) and Incompatible Colleagues and Troublesome Clients (ICTC).

4 CONCLUSIONS

The current research concentrates on factors that induce burnout on architects employed at design firms in Turkey. Thirty-nine criteria were identified with the extensive literature review and from the findings of this study, "Excessive disrespect by individuals outside the profession"; "High number of colleagues who do the same job almost without making money"; "Customers' demanding the perfect one and paying little price in return"; "Architectural projects are not taken into account sufficiently by the subcontractors" and "Lack of promotion opportunity" are the top five burnout subjects for architects. As a result of factor analysis, six underlying factors have been identified that lack of coordination among stakeholders is promoter factor that cause burnout among architects. It is significant that the four of items (BC39, BC38, BC37, BC7) are burnout items arising from lack of coordination among stakeholders. The result of this study shows parallelism with former studies (Leung *et al*. 2012, Poon *et al*. 2013) that researchers expressed as a big part of construction professionals suffer from stress due to their work. Correspondingly, construction professionals experience job burnout under accumulated and prolonged job stress.

This research contributes to awareness and better understanding of burnout among architects significantly. Within this context, employers and project managers should take particular precautions to decrease the burnout level of architects and to increase the productivity level.

References

Chan, D. W., and Kumaraswamy, M. M., C*ompressing Construction Durations: Lessons Learned from Hong Kong Building Projects,* International Journal of Project Management, Elsevier, 20(1), 23-35, January, 2002.

CIOB, *Occupational Stress in the Construction Industry*, CIOB Published National Stress Survey Results, 2006. Retrieved from https://www.ciob.org/sites/default/files/CIOB%20research%20-%20Occupational%20Stress%20in%20the%20Construction%20Industry%202006_0.pdf on June 04, 2021.

Çivici, T., *Mimari Tasarım Bürolarında Çalışan Mimarların Mesleki Tükenmişlik Düzeylerini Etkileyen Demotivasyon Faktörleri.* Çukurova University Journal of the Faculty of Engineering and Architecture, 31(1), 281-292, June, 2016.

Kometa, S. T., Olomolaiye, P. O., and Harris, F. C., *Attributes of UK Construction Clients Influencing Project Consultants' Performance,* Construction Management and Economics, 12(5), 433-443, July, 1994.

Leung, M.-Y., Chan, I. Y. S., and Yu, J., *Preventing Construction Worker Injury Incidents Through the Management of Personal Stress and Organizational Stressors*, Accident Analysis and Prevention, 48, 156-166, September, 2012.

Leung, M. Y., Chan, Y. S. I., and Dongyu, C., *Structural Linear Relationships Between Job Stress, Burnout, Physiological Stress, and Performance of Construction Project Managers*, Engineering, Construction and Architectural Management, Emerald, 18(3), 312-328, May, 2011.

Loosemore, M., and Waters, T., *Gender Differences in Occupational Stress Among Professionals in the Construction Industry*, Journal of Management in Engineering, 20(3), 126-132, July, 2004.

Nunnally, J. C., and Bernstein, I. H., *Psychometric Theory*, McGraw-Hill, New York, NY, 2007.

Poon, S. W., Rowlinson, S. M., Koh, T., and Deng, Y., *Job Burnout and Safety Performance in the Hong Kong Construction Industry*, International Journal of Construction Management, Taylor and Francis, 13(1), 69-78, February, 2013.

Tavakol, M., and Dennick, R., *Making Sense of Cronbach's Alpha,* International Journal of Medical Education, 2, 53, June, 2011.

Yang, F., Li, X., Zhu, Y., Li, Y., and Wu, C., *Job Burnout of Construction Project Managers in China: A Cross-Sectional Analysis,* International Journal of Project Management, 35(7), 1272-1287, October, 2017.

Yip, B., and Rowlinson, S., *Job Burnout Among Construction Engineers Working Within Consulting and Contracting Organizations*, Journal of Management in Engineering, ASCE, 25(3),122-130, July, 2009.