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Employee motivation in construction industry: Effects of Covid-19

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Abstract
Employee motivation plays an important role in organizational management research since there is ample evidence highlighting the strong links between motivation and productivity. Although a number of research have focused on the wider effects of Covid-19 on the construction industry, no attempts have been made to investigate its impacts on employee motivation. The main objectives of the present research are (1) to identify and prioritize motivational factors that affect job satisfaction and commitment of construction employees in the post-Covid era, (2) to reveal the challenges that have negatively affected employee motivation during the pandemic and, (3) to investigate employee attitudes and perceptions towards remote working. To achieve this objective, a structured survey questionnaire strategy was adopted. Results reveal that prominent motivators common in research undertaken in the pre-Covid era such as personal growth/career development and salary have fallen behind other factors in the order of importance. Instead, employee motivation in the post-Covid world appears to be mostly driven by intrinsic factors directly related to the work itself such as job satisfaction, the variety and scope of the work, followed by good physical working conditions and good relationship with superiors. It was also observed that motivation highly depends on personal factors such as age, education level, gender, culture, experience, job and occupation level of employees. The results of the present study are important for managers in understanding motivators in the new era that the pandemic has created and thus in designing effective organizational policies for increased motivation and productivity.

Keywords
Construction, Covid-19, Employee motivation, Job satisfaction, Remote work.

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1. Introduction

In today's volatile economic environment, improving productivity requires organizations to invest even more heavily in their human resource capacity to achieve and maintain competitive advantage. Understanding employee motivation and commitment is now a key focus for scholars and practitioners. Employees' job satisfaction and loyalty to their organization should be even more of a concern for improving productivity, particularly in labor-intensive industries such as construction, for which human resources are instrumental in creating value.

Nevertheless, Al-Abbadi & Agyekum-Mensah (2022) argue that previous research in the field of productivity predominantly focused on external factors (e.g. material availability, weather conditions etc.) for improving productivity in construction, rather than on worker motivation and other cultural issues. Consequently, motivation remains a highly neglected area of research, appearing only in a limited number of studies in the construction domain. According to Olomolaiye (1990), motivation is one of the most significant factors affecting productive time in construction, along with site supervision problems, lack of materials, equipment and tools. Furthermore, Johari & Jha (2020), conclude that increasing the motivation of workers increases their productivity significantly. Similarly, Kazaz et al. (2008) argue that the motivation of labour can be considered to be the key for maximizing workers' productivity.

A number of complex factors involving the characteristics of the job itself, wages and benefits, promotions, working conditions, feelings of responsibility, achievement and accomplishment influence job satisfaction and motivation (Luthans, 2011). However priorities of individuals do not remain constant over time, instead they continuously change as individual needs and the wider economic, social, cultural context changes. Kim (2006) has shown that economic conditions, change in the working environment and labor market conditions are some of the possible reasons for the change in the priorities of motivational factors over time. The recent Covid-19 outbreak which has suddenly emerged as a serious health emergency and affected the whole world within a short period of time is certainly a perfect example of such rapid economic, social and cultural change experience affecting employee expectations and motivation. Therefore, the relationship between the Covid-19 crisis and motivation merits a deeper understanding and exploration.

The first Covid-19 case was detected in December 2019 in Wuhan, China and the virus spread rapidly around the world. As December 2022, the virus has caused more than 600 million people to be infected and over 6 million deaths (Worldometer, 2022). Because the scientific pieces of evidence have suggested that the virus spread mainly from person to person by close contact or through indirect contact by surfaces, governments around the world have taken measures to reduce the level of transmission. Consequently, lockdowns and restrictions have been enforced in many countries.

Such precautions have severely disrupted economic activities and resulted in global economic damage. According to Baker et al. (2020), the shock of uncertainty created by Covid-19 is of a much higher magnitude than the 2008 global crisis. Like other industries, construction has also been negatively affected by site closures, project cancellations, interruptions to the supply chain, cash flow problems and workforce shortages.

In addition to its devastating impacts on economies, the pandemic also had numerous long-lasting effects both on personal and professional lives of people. Following a range of measures introduced by governments to slow down the spread of Covid-19, working environments were either transformed into remote working or into one where social distancing is practiced. During these times, the constantly changing work environment and uncertain economic situation have caused the construction workforce to experience several types of organizational, economic, psychological, individual, and moderating challenges (e.g. see Pamidimuk-

kala & Kermanshachi, 2021). In particular, economic uncertainty which has a positive correlation with job uncertainty affected the psychology of individuals in a negative way (Godinic & Obrenovic, 2020).

A number of studies exploring the links between crises and employee motivation (e.g. see Hitka & Sirotiakova, 2011; Faletar et al., 2016; Bajrami et al., 2021) reveal that crises can significantly change the needs, attitudes and priorities of employees for motivational factors. To stay competitive, organizations must swiftly assess these changes and adapt motivation strategies. Thus it's crucial to document and communicate the effects of shocks on employee well-being for effective crisis response. Although a number of recent studies have focused on the broad impacts of Covid-19 on the construction industry, very few studies have particularly concentrated on its impact on employee motivation. Even less studies have evaluated the effects of Covid-19 on employee motivation and well-being in construction industries.

Based on this gap, the present research aims to explore the wide impacts of Covid-19 on employee motivation in the construction industry. In this context, the main objectives of this study are; (1) to identify and prioritize motivational factors that affect job satisfaction and commitment of construction employees in the post-Covid era, (2) to reveal the organizational, managerial and economic challenges that have negatively affected employee motivation during the pandemic and, (3) to investigate employee attitudes and perceptions towards remote working based on experiences obtained during the pandemic.

Turkey has been identified as the case area in the present research. The Turkish construction industry shrank by 1.5 percent in the first quarter of 2020, and building activities declined sharply and employment dropped from 1.64 million to 1.25 million in six months (Turkish Statistical Institute [TURKSTAT], 2020). The Coronavirus emerged at a time when the industry was already coping with the economic troubles of the 2018 crisis and thus it has been hit hard by the pandemic. As the construction industry plays an important role in the Turkish economy (Gundes, 2011), it is particularly important to understand how Covid-19 affected the motivation of employees and priorities of motivators in the post-Covid-19 period for increased productivity and a smooth recovery.

The findings of this paper could be of particular interest to researchers working on areas such as the productivity/performance of employees and organizational efficiency. Moreover, employers and managers of both local and international construction firms that are either present in the Turkish construction market or willing to enter it, but lack knowledge on the local cultural and labour dynamics can benefit from the insights about the cultural perspectives and the factors that increase employee motivation in the construction sector. Finally, the evidence provided here and the lessons learned may be used by policymakers in identifying the measures to be taken in terms of human resources management and productivity during times of outbreaks and similar future shocks.

2. Theories of motivation

The word "motivation" was derived from the Latin term "movere", which means "to move" and today it has become one of the most important pillars of organizational productivity research. Tabassi & Bakar (2009) defined motivation as "the characteristic of an individual willing to expend effort towards a particular set of behaviours" (Tabassi & Bakar, 2009, p.474). According to Luthans et al. (2011) motivation is a basic psychological process, meaning that it is "a process that starts with a physiological or psychological deficiency or need that activates a behavior or a drive that is aimed at a goal or incentive" (Luthans et al., 2011, p.157). This process initiates and directs actions towards specific goals, energizes behavior, and plays an important role in human relations (Weinstein, 2014). Although numerous other definitions for motivation exist, these definitions converge to a common ground: they focus on what energizes human behavior, what drives

that behavior, and how it is sustained (Uwakweh, 2006).

The concept of work motivation has begun to be discussed in management literature in the early twentieth century. Engineer Frederick W. Taylor was one of the pioneers to provide insights on employee motivation in scientific management field. Taylor (1911) argued that workers could be motivated by pay-for-performance incentive schemes, widely known by the "a fair day's pay for a fair day's work" motto. The subject of work motivation has increasingly become a focus of both academic and practical concerns after World War 2 (WW2), when the need for a rapid economic recovery emerged. Consequently, topics such as motivation, industrial psychology, interpersonal relations, and worker satisfaction to increase performance and productivity (Ruthankoon & Olu Ogunlana, 2003) were extensively debated in the decades following WW2. The two main theories developed during this period; Maslow's Hiearchy of Needs (Maslow, 1943) and Herzberg's Two Factor Theory (Herzberg et al., 1959) have since been extensively explored in research regarding job satisfaction and employee motivation later, a number of researchers including Alderfer (1969) and McClelland (1990) provided alternative or complementary views and theories about human needs and motivation. What these theories have in common is that they study motivation based on human needs and goals which ultimately affect the behavior and performance of employees.

In his well-known Theory of Human Motivation, Maslow (1943) classified basic human needs in a hierarchical way: physiological, safety, social, self-esteem and self-actualization. He stated that people are motivated by the desire to meet those needs, and thus needs dictate human behavior. According to this theory, it is possible for humans to reach a higher level needs only when needs in lower levels are -at least partially- fulfilled. From a managerial point of view this means that employees will be motivated by the needs that are in line with the level they are currently at (Fisher, 2009). A satisfied need in the hierarchy no longer serves as a motivational force, and other yet unsatisfied needs emerge which are located at an upper level of the hierarchy.

Two Factor Theory introduced by Herzberg, Mausner and Snyderman (Herzberg et al., 1959) focuses on explaining job satisfaction through two separate categories of factors that have impacts on job satisfaction and dissatisfaction, recognized as motivators and hygiene factors respectively. The authors argued that motivators which include responsibility, recognition, achievement, possibility of growth, advancement, and the work itself are intrinsic factors that lead to job satisfaction. On the other hand, hygiene factors including the extrinsic (i.e related to the work environment) aspects such as pay, job security and working conditions not necessarily provide motivation. However they prevent the feeling of dissatisfaction among employees, and hence when unsatisfied, they may act as demotivators. According to this theory, motivation at workplace requires that organizations minimize dissatisfaction in hygiene factors while focusing on increasing motivators factors. From a comparative point of view it can be stated that Herzberg's Theory is more focused on work motivation compared to Maslow's Theory. Moreover, Herzberg places special emphasis on self-actaulisation for motivation compared to Maslow. Thus it can be argued that the longstanding managerial view that simply focusing on satisfying hygiene factors (e.g through higher pays) would increase motivation of workers has been challenged with Herzberg's explanations.

Criticizing the strict ranking of human needs in Maslow's hiearchy, Alderfer (Alderfer, 1969; 1972) presented the ERG theory where he divided human needs into three groups: existence, relatedness, and growth. Existence needs include physiological, safety and security needs which fall into the lower two 'survival' level needs in Maslow's hierarchy. Relatedness needs comprise the development of social relationships and hence correspond to belongingness and love needs in Maslow's Theory. The need for growth and development is manifested in the 'growth' category of Alderfer's Theory and corresponds to the esteem and self-actual-

ization needs located in the higher levels of Maslow's hiearchy. According to Alderfer (1972) people "possess some degree of each need, but they differ in the strength of their needs" (Alderfer, 1972, p. 12), thus suggesting that the three core groups of human needs may emerge without any particular order, and an individual can be motivated by more than one need category.

McClelland's achievement theory (McClelland, 1990), maintains that certain types of needs are acquired throughout life. In other words, individuals are not born with these needs but they learn them through experience. According to McClelland, the needs that provide motivation are grouped into three categories: the need to achieve, the need to establish relationships, and the need to gain power. Individuals are motivated to some degree by each of these needs, but for most people there is one particular category that outweighs others in providing motivation. Looking from a managerial point of view, McClelland's Theory suggests that management is responsible for identifying the type of need that strongly motivates their employees and provide opportunities accordingly for increased performance.

2.1. Job satisfaction and motivation research

Since the development of the theories forementioned in the previous section, a number of researchers have attempted to discuss and test their validity both in broader human resources and organizational management fields. For instance, Wahba & Bridwell (1976) reviewed studies conducted between 1962 and 1973 to test Maslow's theory. Within the findings, little empirical evidence was found to support the propositions of Maslow's theory. According to Harrel & Stahl (1984), McClelland's achievement theory is supported by numerous empirical studies.

Although empirical investigations and criticisms show that the validity of the theories is a debatable topic, it can be argued that 20th-century motivation theories still continue to shed light on organizational management research in a wide array of sectors. Construction, like many others, has also received its share from this trend. Today, different motivation theories are being used in the relevant literature to determine the factors that motivate civil engineers and architects (Damci, 2016). For instance, Ruthankoon & Olu Ogunlana (2003) tested the validity of Herzberg's theory using Thai construction industry as a case. In line with the data obtained from the interviews with engineers and foremen, it was concluded that the two-factor theory is not fully applicable in the Thai construction industry.

The increase in the complexity of projects over time, international collaborations, innovations in materials science and production techniques, and increasing competition have unfolded the importance of human resources in the construction industry. In the light of motivation theories, human resources management has increasingly attracted the interests of scholars in construction research community. In accordance with the main objectives of the current study, 18 research papers that investigate motivation in the construction industry were examined and as a result 17 motivational factors were deducted. These factors were then used in the survey. Table 1 illustrates the matrix of motivational factors which provides an input in the design of the questionnaire survey instrument adopted in the present study.

2.2. Motivation and personal factors

Individuals have unique characteristics, hence they may have different priorities and motivational values. In other words, one particular factor that truly motivates an individual, may be a less effective motivator for another, or may not be effective at all. For example, age of employees has always been a significant factor affecting their reward expectations for success. Therefore, the influence of the age factor on employee motivation was investigated in many fields including the construction industry (Amankwah et al., 2013; Damci, 2016; Gaki et al., 2013; Huddleston et al., 2002; Johari & Jha, 2020; Kukanja, 2013; Kuranchie-Mensah & Amponsah-Tawiah, 2016; Linz, 2004; Maqsoom et al., 2021;

Soliman & Altabtai, 2023; Urosevic & Milijic, 2012; Wong, et al., 1999).

In a study conducted with hotel employees in Hong Kong (Wong et al., 1999), it was revealed that demographic characteristics (i.e. gender, marital status, education and income levels etc.) influenced the perceptions and priorities of employees about internal motivation factors such as appreciation, sense of inclusion, understanding of personal problems, interesting job, opportunities for promotion and development, and loyalty to workers. Kukanja (2013) conducted a study to determine the effects of demographics on employee motivation in catering companies. According to the results, the importance of the motivating factors is significantly influenced by gender, age, education, income and work experience. The study conducted by Linz (2004) analyzed the motivators of Russian workers on the basis of gender and generational differences. Results showed that the relative importance given to particular motivators significantly changed by gender.

Previous research focusing on the field of motivation in the construction industry have predominantly explored the significance of employee motivating factors. Only few have provided an in-depth explanation of how individual information included in demographical data affects motivational perceptions and behaviour. Gilbert & Walker (2001) examined the relationship between the motivation of white-collar construction professionals and gender. The results of the study demonstrate that the rankings of two motivation variables, namely `exposure to project prestige' and `good relationship with supervisor' were significantly different for male and female employees. In a study examining the factors that demotivate architects, Oyedele (2013) argued that what causes the motivation or demotivation of an individual depends on personal factors such as age, education level, gender, culture, experience, job and occupation level. Damci (2016) conducted a study to investigate the motivators of civil engineers and the relationship between the motivators and demographics. The results reveal that the motivators of

Table 1. *Motivational factors affecting employee motivation in construction literature.*

Factor No.	Factor	Ruthankoon and Ogunlana (2003)	Al-Abbadi and Agyekum-Mensah(2022)	Damci *et al.*(2020)	Johari and Jha(2020)	Soliman and Altabtai(2023)	Oyedele (2010)	Ogunlana and Chang (1998)	Oyedele (2013)	Maqsoom *et al.*(2021)	Shurrab *et al.*(2018)	Raoufi and Fayek (2018)	Manoharan *et al.* (2023)	Aghayeva and Ślusarczyk (2019)	Raoufi and Fayek (2018)	Kim *et al.* (2015)	Damci (2016)	Damci *et al.* (2018)	Ghoddousi *et al.* (2014)	Total
1	Work itself and job satisfaction	×	×	×	×	×	×	×	×		×	×		×		×	×	×	×	15
2	Good physical working conditions and work environment	×	×	×			×		×		×	×		×		×	×	×		11
3	Good relationship with superiors	×	×	×		×	×		×		×		×	×		×	×	×		12
4	Good work-life balance	×							×			×		×						4
5	Good relationship with mates and collaborator team	×	×	×		×	×	×	×	×	×	×	×	×	×	×	×	×		16
6	Clearly specified and appropriate tasks and responsibilities			×			×		×		×						×	×		6
7	Good wage level	×	×	×	×	×			×	×			×	×		×	×	×	×	13
8	Decision making ability	×	×	×			×	×	×		×		×	×		×	×	×		12
9	Job security	×	×	×		×		×	×	×	×		×	×		×	×	×	×	14
10	Fair and ethical company policies and administration	×		×		×	×		×		×	×	×	×		×	×	×		12
11	Opportunity for promotion and career development	×	×	×			×		×	×	×		×	×		×	×	×	×	13
12	Fringe benefits							×					×	×		×				4
13	Contribution of work to the development	×		×							×					×	×	×	×	7
14	Financial or non-financial incentives and rewards		×			×	×			×	×		×			×				7
15	Recognition and appreciation	×	×	×	×	×	×	×			×			×			×	×	×	12
16	Feedback			×					×			×					×	×		5
17	Healthy competition among co-workers								×											1

engineers depended on their age, marital status, education level, experience, type of firm and the value of the largest project they have worked on. Shurrab et al. (2018) investigated the influence of personal characteristics and project characteristics on motivation. According to the findings, motivation is affected by personal characteristics such as education level and work experience.

2.3. Motivation and Covid-19

Job insecurity can be defined as the everyday experience of the likelihood of job loss in the future which causes prolonged uncertainty (Sverke et al., 2002). Sverke et al. (2002) suggest that

job insecurity which has a negative impact on work performance highly depends on personal perception and interpretations. Probst (2003) provides an in depth discussion about the relationships between job insecurity and job satisfaction and argues that job security is one of the components of job satisfaction (Probst, 2003). The resulting dissatisfaction is commonly associated with employees' controproductive work behaviors such as working more slowly, expending less effort, and taking more frequent and/or longer breaks.

The increase in unemployment rates appears to be one of the most significant factors affecting perceived job insecurity. The study conducted by Ellonen & Natti (2015) confirmed that as the unemployment rate increases, the perceived job insecurity rate increases. Results of this study show that perceived job insecurity is at its highest during periods of economic recession.

Based on the preceding arguments, it can be stated that there is a negative association between job insecurity and intrinsic motivation (Shin et al., 2019) and that crises adversely affect employee motivation. Hitka & Sirotiakova (2011) examined the effects of the global economic crisis of 2008 on employee motivation through a comparison of the pre-crisis and post-crisis periods. When the years of 2008 and 2009 are compared, it has been observed that both the levels of employee motivation and the priorities of motivators have considerably changed. For instance, while the most important motivation factor was salary in 2008, it was recorded that job security ranked first among all motivators in 2009. When the same survey was conducted in 2013, results showed that salary and job security continue to be among the main factors (Zavadsky et al., 2015). Another study carried out to examine the impact of the 2008 global economic crisis on job security and job motivation is the research by Mehri et al. (2011). According to the data obtained from individuals who experienced both the pre-crisis and post-crisis periods, it was observed that the crisis had a negative impact on work motivation and posed a threat to job security. Faletar et al. (2016) also investigated the differences between employee motivation during the crisis and the post-crisis restructuring period. It was found that while psychological needs have become more crucial during the crisis, social needs have begun to gain importance in the post-crisis period.

In sum, it can be stated that a consensus has been reached among scholars that the global crisis of 2008 increased job insecurity which in turn negatively affected employee motivation and changed employees' expectations towards their working environment. It is inevitable, therefore, that the global crisis caused by Covid-19 has strongly affected the usual perceptions of employees about job security and satisfaction. Indeed, it could be argued that the overall level of worry was higher in the Covid-19 crisis as its effects were multidimensional in terms of economic, political, and social repercussions, in addition to the uncertainty associated with its possible duration in the early stages.

Bajrami et al. (2021) showed that job uncertainty and insecurity caused by Covid-19 negatively affected the motivation of employees in the tourism sector in a significant way. Apart from job insecurity, employees faced several other problems as a consequence of the Covid-19 pandemic. For example, similar to many industries, office workers in construction had to switch to remote working environments during the course of the pandemic. At this point, many employees have encountered work-to-home transition problems such as the lack of a suitable working environment at home and the presence of distractions (Kaushik & Guleria, 2020; Alsharef et al., 2021), unfamiliarity with the technologies required (Alsharef et al., 2021), lack of digital infrastructure (Alsharef et al., 2021; Beauregard et al., 2013) and the difficulties associated with adaptation processes. Furthermore, as communication among co-workers is important for well-being (Rouhanizadeh & Kermanshachi, 2021), working from home during this period caused them to feel socially isolated (Beauregard et al., 2013; Grant et al., 2013). In addition to many stress factors, one of the factors

that can cause stress is the employee's feeling that they cannot contribute enough to the work (National Institute for Occupational Safety and Health [NIOSH], 1999).

The challenges faced by businesses throughout the pandemic were not limited to the loss of employee motivation or the adaptation problems brought about by remote working practices. Employees that were infected by the virus were not only socially isolated but also were not able to work until recovery. This resulted in increased absence rates and workforce shortages in many industries. Construction employees faced increased stress due to changes and disruptions in the work schedule, difficulties in adapting to new working hours and increased workloads during this period (Araya, 2021).

In such circumstances, effective leadership which is related to knowledge, skills and how the crisis is handled (Stiles et al., 2021) is particularly important. With the pandemic, the crucial role of leadership in the success of firms is clearly understood, and its positive impacts on organizational performance are confirmed (Balasubramanian & Fernandes, 2022). Hahang et al. (2022) pointed out that leadership skills such as communication, decision-making, stress management and trust building are essential to overcome the negative impacts of the pandemic. Moreover, since the performance evaluations and feedbacks affect job satisfaction and motivation positively (Kuvaas, 2006; Guo et al., 2014), regular feedback should also be provided for remote workers (Rupietta & Beckmann, 2018).

Despite the difficulties of working from home, there are some advantages. It enables employees to use time more effectively with a more effective work-life balance (Andriyanty et al., 2021; Grant et al., 2013). It creates a flexible working environment and helps to reduce the stress (Farrell, 2017) and improves the well-being (Grant et al., 2013). Beauregard et al. (2013) argues that hence employee performance is positively affected by well-being and negatively affected by stress, the flexibility provided by working from home can increase productivity. In addition, it provides economic advantages for companies by reducing some costs such as transportation (Andriyanty et al., 2021). In addition to the cost-efficiency of the remote work model, it is possible to refer to its time efficiency. Employees live in different regions, which normally requires a considerable amount of time traveling from home to the workplace. Therefore, working from home can provide employees with additional free time for any activities or relaxation. Several studies have directly investigated the impacts of working from home on productivity, effectiveness, work efforts and motivation. For instance, Rupietta & Beckmann (2018) found that remote work has a positive impact on both work efforts and motivation. However, according to the results of Caillier (2012) the evidence is not sufficient to say that those who work from home have a higher motivation.

3. Method and data

To achieve the aims of the research outlined in the introduction section, first of all a comprehensive literature review was conducted for identifying the factors affecting employee motivation in the construction industry. In the next phase, a survey questionnaire consisting of 4 sections was designed based on the output of the previous phase. Questionnaires are recognized to be a time and cost-effective way of uncovering individuals' attitudes, beliefs, behaviors and knowledge (Gray, 2009; Knight & Ruddock, 2008).

The survey instrument consisted of both open-ended and closed-ended questions. In the first section of the questionnaire, there were five questions about the demographic characteristics of the participants, including their gender, age, profession, work experience, and the scale of the company. As shown in Table 1, the second section consists of 17 motivational factors which were identified by a detailed review of the studies that focussed on employee motivation in the construction industry. Respondents were asked to rate the level of importance of each factor. The rating was done on a five-point Likert scale ranging from 1 to 5;

Table 2. *Descriptive statistics of the sample.*

General Information	No. of samples	% of total respondents
Gender		
Male	79	55.60
Female	63	44.40
Age		
Up to 30	103	72.50
Over 30 years	39	27.50
Occupation of respondents		
Architects	103	72.50
Civil Engineers	29	20.40
Other occupational groups	10	7.10
Experience in construction industry		
0-2 years	40	28.20
2-5 years	46	32.40
5-10 years	30	21.10
10-20 years	18	12.70
More than 20 years	8	5.60
Company size		
Micro (1-9)	61	42.90
Small (10-49)	37	26.10
Medium (50-249)	21	14.80
Large (>250)	23	16.20
Total	142	

Table 3. *Factors affecting employee motivation.*

Motivator	Overall arithmetic mean score	Standard Deviation
Work itself and job satisfaction	4.25	0.926
Good physical working conditions and work environment	4.23	0.985
Good relationship with superiors	4.23	0.948
Good work-life balance	4.20	1.062
Good relationship with mates and collaborator team	4.20	0.964
Clearly specified and appropriate tasks and responsibilities	4.18	1.022
Good wage level	4.17	1.078
Decision-making ability	4.13	0.952
Job security	4.05	1.100
Fair and ethical company policies and administration	3.98	1.114
Opportunity for promotion and career development	3.96	1.163
Fringe benefits	3.96	1.231
Contribution of work to the development	3.94	1.116
Financial or non-financial incentives and rewards	3.84	1.308
Recognition and appreciation	3.75	1.101
Feedback	3.75	1.125
Constructive competition among co-workers	3.27	1.233

where 1 represents "very important" and 5 represents "less important". Thus, means and standard deviations could be calculated in the analysis. In the third section of the questionnaire, nine statements were provided to evaluate the impact of Covid-19 on construction employees. Most of the questions in this part aimed to measure job security concerns and are adapted from the study of Bajrami et al. (2021). Other factors related to problems in the supply chain and organizational problems were retrieved from the study by Pamidimukkala & Kermanshachi (2021). The final section of the questionnaire consisted of 10 statements that aim to understand employee experiences of remote working in construction and its effects on motivation. The last two sections are again evaluated on the basis of a five-point Likert scale ranging from 1 to 5. However, this time respondents were asked to specify their level of agreement with the statements provided where 1 represented "strongly disagree" and 5 represented "strongly agree". Once the survey instrument was complete, it was tested with two construction employees with backgrounds in architecture to make sure that the questions could easily be understood by participants. Finally, the survey instrument was revised in accordance with their feedback.

Survey participants were randomly selected from professional organizations to mitigate sampling bias. The target population included members from the Istanbul Chamber of Turkish Architects (68,478 members), the Istanbul Chamber of Turkish Civil Engineers (137,365 members), and the Turkish Contractors Association (127 members). The survey was distributed via email, resulting in 142 valid responses after a two-week collection period, yielding a 0.06% response rate. Statistical analysis was conducted using IBM SPSS Statistics 26 software.

4. Findings

Descriptive statistics for the sample are provided in Table 2. A total of 142 employees completed the survey, 79 of which are male (55.60%) and the remaining 63 are female (44.40%). While the sample is quite well distributed across gender types, there appears to be an imbalance between the number of below and over 30 age groups, resulting in an overrepresentation of younger respondents (72.50%). Similarly, an overwhelming majority of participants were architects (72.50%), followed by civil engineers (%20.40). The participants predominantly work for micro scale firms (42.90%), followed by small (26.10%), large (16.20%) and medium sized firms (14.80%).

4.1. Employee motivation in the post-Covid-19 period

Table 3 shows overall arithmetic mean scores and standard deviations of motivators. Results reveal that the most important motivation factors in the post-Covid era are "work itself and job satisfaction", followed by "good physical working conditions and work environment" and "good relationship with superiors". On the other hand,

Table 4. *Motivators according to personal characteristics.*

Motivator	F	M	A1	A2	ARC	CVL	EX1	EX2	EX3	EX4	EX5	CS1	CS2	CS3	CS4
Work itself and job satisfaction	4.32	4.20	4.38*	3.92*	4.31	4.10	4.45	4.30	4.20	4.17	3.38	4.18	4.35	4.24	4.30
Good physical working conditions and work environment	4.33	4.14	4.31	4.00	4.32*	4.00*	4.25	4.37	4.20	3.94	4.00	4.15	4.14	4.33	4.48
Good relationship with superiors	4.43*	4.06*	4.35*	3.90*	4.34*	3.93*	4.38	4.30	4.13	4.06	3.75	4.38	4.03	4.29	4.09
Good work-life balance	4.35	4.09	4.30	3.95	4.32	4.00	4.10	4.46	4.23	3.83	4.00	4.11	4.00	4.62	4.39
Good relationship with mates and collaborator team	4.30	4.13	4.31	3.92	4.29	4.03	4.33	4.24	4.37	4.00	3.25	4.31	4.05	4.00	4.35
Clearly specified and appropriate tasks and responsibilities	4.35*	4.05*	4.27	3.95	4.28	3.90	4.40	4.13	4.17	3.94	4.00	4.33	3.97	4.14	4.17
Good wage level	4.44*	3.95*	4.32*	3.77*	4.36*	3.83*	4.47	4.17	4.13	3.72	3.75	4.18	3.84	4.33	5.42
Decision-making ability	4.21	4.06	4.20	3.92	4.24*	3.86*	4.20	4.13	4.13	4.06	3.88	4.10	3.97	4.33	4.26
Job security	4.27*	3.87*	4.19*	3.67*	4.20*	3.66*	4.22	4.09	4.17	3.61	3.50	4.07	3.84	3.95	4.43
Fair and ethical company policies and administration	4.21*	3.80*	4.11*	3.64*	4.15*	3.76*	4.22	4.07	3.80	3.72	3.50	4.15	3.65*	3.76	4.26*
Opportunity for promotion and career development	4.13	3.84	4.12*	3.56*	4.11	3.72	3.98*	4.09*	4.27*	3.33*	3.50*	4.00	3.68	4.14	4.17
Fringe benefits	4.16	3.80	4.12*	3.54*	4.13	3.69	4.03	4.07	4.13	3.44	3.50	3.77*	3.81*	4.14	4.52*
Contribution of work to the development	4.17*	3.76*	4.04	3.69	4.15*	3.55*	4.18	3.93	3.93	3.83	3.13	3.97	3.70	4.00	4.22
Financial or non-financial incentives and rewards	4.00	3.71	3.97*	3.49*	4.00	3.62	3.88	3.96	4.03	3.39	3.25	3.80*	3.41*	4.05	4.43*
Recognition and appreciation	3.89	3.63	3.83	3.54	3.89*	3.38*	3.88	3.76	3.83	3.72	2.75	3.74	3.57	3.71	4.09
Feedback	3.95*	3.59*	3.90*	3.36*	3.88	3.55	3.95	3.74	3.90	3.22	3.50	3.77	3.46	3.90	4.04
Constructive competition among co-workers	3.22	3.32	3.31	3.18	3.36	3.10	3.40	3.11	3.63	3.06	2.75	3.34	2.92	3.24	3.70

Note: F = female; M = male; A1 = younger than 30; A2 = older than 30; ARC = architects; CVL = civil engineers; EX1 = 0-2 years experience; EX2 = 2-5 years experience; EX3 = 5-10 years experience; EX4 = 10-20 years experience; EX5 = more than 20 years experience; CS1 = micro-scale company; CS2 = small-scale company; CS3 = medium-scale company; CS4 = large-scale company.
*Statistically significant difference groups at α= 0.05

the least important motivators for the respondents appear to be "healthy competition among co-workers", "feedback" and "contribution of work to the development".

Table 4 demonstrates the arithmetic mean scores calculated for gender, different groupings of age, experience, occupation and company size. Mann-Whitney U tests were performed to determine whether there are significant differences within each group.

Significant differences are found in particular within the gender group. Results show that female employees attach more importance to the factors "Good relationship with superiors", "Good wage level", "Job security", "Fair and ethical company policies and administration", "Contribution of work to the development" and "Feedback" compared to their male counterparts.

Previous studies have put forward various types of different classifications for categorizing employees according to their age. In the present research, employees were categorized into two groups as younger than 30 and older than 30 years following Kukanja's (2013) classification. Table 4 shows that there are significant differences in motivational factors including "Work itself and job satisfaction", "Good relationship with superiors", "Good wage level", "Job security", "Fair and ethical company policies and administration", "Opportunity for promotion and career development", "Fringe benefits", "Financial or non-financial incentives and rewards" and "Feedback", with results revealing that younger employees attached more importance to these motivators.

As far as professions of participants are concerned, it can be observed that the first ranked motivator by the architects is "Good wage level", while it is "Work itself and job satisfaction" by the civil engineers. Mann-Whitney U test results once again show that there are significant differences among the responses of participants from different occupations. It was observed that architects attached more importance to the factors "Work itself and job satisfaction", "Good physical working conditions and work environment", "Good relationship with superiors", "Good wage level", "Decision-making ability", "Recognition and appreciation", "Fair and ethical company policies and administration", "Contribution of work to the development" and "Job security" compared to civil engineers.

As there are more than two subgroups in the experience category, the differences in the perception of motivators based on work experience were measured using the Kruskal-Wallis test. The results show that work experience does not affect employees' perceptions about motivators except for "Opportunity for promotion and career development". Compared to individuals with more than 10 years of experience, individuals with less than 10 years of experience attached more importance to this factor.

Kruskal-Wallis test was once again applied to the subgroups about firm size to examine the influence of firm

Table 5. *Impacts of Covid-19 factors.*

	Statements	OMS	F	M	ARC	CVL	EX1	EX2	EX3	EX4	EX5	CS1	CS2	CS3	CS4
Job Security	Employees in the company lost their jobs due to Covid-19.	1.85	1.84	1.85	1.79	2.07	1.43	2.02	1.93	1.78	2.75	1.72	1.84	2.05	2.00
	Pay cuts and payment delays came up frequently in the firm.	1.89	2.08	1.75	1.82	1.97	1.80	2.07	1.57	1.89	2.63	1.75	2.11	2.05	1.78
	The departments of the company have merged or there is a possibility of merging.	1.82	2.00	1.68	1.73	2.10	1.88	1.87	1.60	1.50	2.88	1.66	1.95	1.86	2.04
	Covid-19 posed a risk for the company to shut down.	1.92	2.03	1.84	1.90	2.10	1.90	1.91	1.67	1.94	3.00	1.98	2.05	1.81	1.65
	I was afraid of losing my job because of Covid-19.	2.09	2.35*	1.89*	2.06	2.28	2.33	2.00	2.13	1.56	2.50	2.13	2.00	2.00	2.22
	There is still a risk of dismissal.	1.77	1.94	1.63	1.75	1.86	1.88	1.85	1.57	1.50	2.13	1.87	1.78	1.38	1.83
	There were alarming rumors about changes in the workplace.	1.95	2.17	1.77	1.92	2.10	2.13	1.93	1.83	1.72	2.13	1.87	1.95	1.95	2.17
Supply Chain	Delays due to problems in the supply chain negatively affected my motivation.	2.68	2.90	2.51	2.75	2.48	3.08	2.39	2.30	3.11	2.88	2.59	2.54	3.00	2.87
Organizational Problems	The increase in my workload has affected me negatively due to the decrease in the number of employees in the company because of the infection, dismissal and etc.	2.19	2.40*	1.96*	2.23	2.14	2.15	2.30	1.93	1.94	3.25	2.21	1.95	2.43	2.30

Note: OMS = Overall Mean Score; F = female; M = male; ARC = architects; CVL = civil engineers; EX1 = 0-2 years experience; EX2 = 2-5 years experience; EX3 = 5-10 years xperience; EX4 = 10-20 years experience; EX5 = more than 20 years experience; CS1 = micro-scale company; CS2 = small-scale company; CS3 = medium-scale company; CS4 = large-scale company.
Statistically significant difference groups at α= 0.05

scale on employee motivation. The classification of the European Commission (2015) was adopted for firm scales. According to the results, motivation perceptions of employees working for large-scale companies differed significantly from those of micro and small-scale, particularly for "Fair and ethical company policies and administration", "Fringe benefits" and "Financial or non-financial incentives and rewards".

4.2. Covid-19 effects

In this part of the survey, the multidimensional effects of Covid-19 on job security, supply chain, and organizational structure are explored. In the analysis, besides overall mean scores, individual mean scores based on gender, occupation, experience, and company size are also calculated in SPSS. Since the data is not normally distributed, non-parametric tests of Mann-Whitney U and Kruskal Wallis H tests are used in the analysis (Table 5).

The data obtained from all respondents reveal that participants' views are generally very close to "disagree". Even the statement with greatest importance "Delays due to problems in the supply chain negatively affected my motivation" received a mean score of only 2,68.

When the Covid-19 effects are evaluated on the basis of gender, it was observed that the level of agreement of female employees in the statements is generally higher than that of their male counterparts. Significant differences among genders were observed in two statements namely "I was afraid of losing my job because of Covid-19" and "The increase in my workload has affected me negatively due to the decrease in the number of employees in the company because of the infection, dismissal and etc.". The results of the Mann-Whitney U and Krıskal-Wallis tests show that there are no significant difference within other subgroups.

4.3. Remote working

In this section, the views and experiences of construction professionals on to the remote working model during the Covid-19 period are analyzed. The overall mean scores and mean scores on the basis of personal characteristics including gender, age, occupation, experience, and company size are calculated in SPSS. Since the data is non-normally distributed, non-parametric tests of Mann-Whitney U and Kruskal Wallis H tests are used to identify whether there are significant differences within subgroups (Table 6).

Looking at the overall mean scores, the top three statements which received the highest support from participants appear to be: (1) "I am pleased that my transportation expenses have decreased", (2) "I am happy that I don't have to go to work when I'm sick and tired", and (3) "I am happy that I have more flexible work hours with the remote work model". On the other hand, the statement with the lowest agreement is "I felt that I was not contributing enough to the work".

When the differences between the mean scores of males and females are

Table 6. *Impacts of remote working on employees.*

Statements	OMS	F	M	A1	A2	ARC	CVL	EX1	EX2	EX3	EX4	EX5	CS1	CS2	CS3	CS4
I have received adequate attention and support from my company while working remotely during Covid-19	3.10	3.03	3.15	2.99	3.38	3.06	3.10	2.95	2.96	3.27	3.17	3.88	3.10	2.89	3.29	3.26
I am happy that I have more flexible work hours with the remote work model	3.14	3.21	3.09	3.11	3.23	3.10	3.28	3.33	2.91	3.27	2.72	4.00	3.20	2.84	2.86	3.74
I am happy that I don't have to go to work when I'm sick and tired	3.56	3.71	3.44	3.50	3.72	3.59	3.38	3.60	3.59	3.37	3.50	4.13	3.57	3.46	3.43	3.83
I am pleased that my transportation expenses have decreased	3.58	3.89*	3.33*	3.53	3.69	3.66	3.38	4.00	3.28	3.50	3.44	3.75	3.72	3.35	3.48	3.65
The decrease in communication with my colleagues affected me negatively	2.79	3.02	2.61	2.78	2.82	2.90	2.52	3.20*	2.30*	2.87*	3.06*	2.63*	2.97	2.38	2.86	2.91
I had problems due to the lack of digital infrastructure	2.50	2.70	2.34	2.50	2.51	2.49	2.45	2.63	2.43	2.47	2.39	2.63	2.72	2.54	2.19	2.13
The excess of distracting factors at home negatively affected my work	2.73	2.86	2.63	2.75	2.69	2.84	2.38	2.88	2.52	2.77	2.94	2.63	2.95	2.57	2.67	2.48
The technical difficulties that I had with the digital tools had a negative impact on me	2.37	2.48	2.28	2.45	2.15	2.47	2.10	2.58	2.30	2.40	2.28	1.75	2.57	2.22	2.29	2.13
I felt that I was not contributing enough to the work	2.22	2.33	2.13	2.19	2.28	2.22	2.10	2.48	1.91	2.23	2.44	2.13	2.46	2.03	2.24	1.87
Not getting enough feedback about my work during the remote working period reduced my motivation	2.39	2.44	2.34	2.46	2.21	2.48	2.28	2.58	2.35	2.43	2.28	1.75	2.51	2.27	2.62	2.04

Note: OMS = Overall Mean Score; F = female; M = male; A1 = younger than 30; A2 = older than 30; ARC = architects; CVL = civil engineers; EX1 = 0-2 years experience; EX2 = 2-5 years experience; EX3 = 5-10 years experience; EX4 = 10-20 years experience; EX5 = more than 20 years experience; CS1 = micro-scale company; CS2 = small-scale company; CS3 = medium-scale company; CS4 = large-scale company.
*Statistically significant difference groups at α= 0.05

examined, it can be seen that the rankings of statements for each sample are different. Compared to male employees, the statement "I am pleased that my transportation expenses have decreased" received significantly more agreement from female employees.

As depicted in Table 6, no significant differences are found within age, professions and firm scale groups. However, as far as the work experience of the respondents is concerned, a significant difference is observed for the statement "The decrease in communication with my colleagues affected me negatively". Employees with 0-2 years of experience have more agreement with this statement compared to employees with 2-5 years of experience.

5. Discussion

5.1. Employee motivation and personal characteristics

The findings indicate that work itself is one of the key factors for the motivation of employees in the construction industry. Thus, to improve motivation of their employees, managers should inclusively assess the suitability of a given task to an employee, ensure the variety of work opportunities (Ruthankoon & Olu Ogunlana, 2003; Van den Berg, 2011; Pang & Lu, 2018) and regularly evaluate employee satisfaction with the work provided. Additionally, the provision of a physical working environment is another key strategy that can be used to increase employee motivation.

In line with previous studies (Gilbert & Walker, 2001; Soliman & Altabtai, 2023; Sugathadasa et al., 2021; El Sayed et al., 2020), results of the present research also demonstrated that the motivation perceptions of female and male employees are different. For instance, having a good relationship with superiors motivates women more than men, confirming the findings by

Gilbert & Walker (2001). In addition, job security appears to be a more important motivator for female employees in construction compared to their male counterparts. This finding may be attributed to the fact that construction industry still continues to be male-dominated and thus concerns over unemployment among female employees are prominent.

Once again, in line with previous studies (Wong et al., 1999; Linz, 2004; Damci, 2016) it was found that career development is one of the important motivational factors. Thus trainings and seminars, in particular for younger employees, that will contribute to personal and professional development should be taken into consideration for increasing employee motivation in construction organizations. Another growing need is feedback, hence monitoring performance and regularly informing employees about their performance appears to be of crucial importance.

Results also suggest that financial motivators are more important for young workers. Maqsoom et al. (2021) argues that economic fluctuations in developing countries make such financial incentives or allowances more important for employees. In the present research it was also found that younger

employees put more emphasis on job security. This finding can be explained by several reasons. Firstly, in recent years Türkiye has had a large number of graduates in construction, and consequently employment opportunities have become limited. Another reason may be the difficult situation of the young workforce who cannot be employed or have no job security during the Covid-19 period. In this context, reducing concerns strongly depends on managers, who should adequately support employees and receive feedback to understand whether everything is going well.

"Work itself and job satisfaction" was identified as the most important motivational factor for civil engineers, which is consistent with previous studies (Damci, 2016; Damci et al., 2018; Damci et al., 2020). However, the factor "Good wages" have become significantly more important for architects. As mentioned before, the increase in the number of graduate architects and civil engineers in Turkey in recent years and the damage caused by Covid-19 in the construction industry may have caused many architects and civil engineers to be unemployed or their salaries to fall. It was observed that architects were affected more negatively from this phenomenon compared to civil engineers.

5.2. Covid-19 effects

Due to the need for imported inputs such as energy, raw materials and equipment in the construction sector, any problem that may occur in the supply chain may cause work schedule disruptions, increase in workloads, cost increases and similar negative effects and crises on the sector. While the transportation disruptions experienced during the Covid-19 process and the situations arising from domestic or inter-country closures negatively affect the supply chain, they also somehow negatively affected the motivation of the employees. According to our findings, interruption of the supply chain was the most effective factor for employees on their motivation. However even this statement had a relatively low overall mean score, indicating that Covid-19 did not put severe stress on employees in the construction sector. On the other hand, participants had the least agreement level in the statement "There is still a risk of being fired", which furthermore shows that the perception of job insecurity due to Covid-19 doesn't continue anymore among construction employees.

Covid-19 has affected men and women in different ways (Pamidimukkala & Kermanshachi, 2021) and this is also supported by our findings. According to the results, female employees were more afraid of losing their jobs due to Covid-19. Similar to other crises, Covid-19 poses a greater risk for women in many ways including job security than men (Azcona et al., 2020). This finding may be attributed to challenges faced by women in the construction industry, including gender diversity issues. Addressing this requires promoting positive discrimination and activities to reshape the traditional perception of women's roles in society.

5.3. Remote working

As far as the perceptions about remote working are concerned, it can be argued that construction employees regarded working from home a quite pleasant experience, at least for our sample. The factor that mostly satisfied the employees was the reduction in their transportation expenses. Andriyanty et al. (2021) argue that companies should adapt to the remote work model in order to reduce many cost components, including transportation. In traditional work models, the obligation to be at the workplace within specific hours often leads to a work-life balance focused on work. Remote work offers flexibility and increased free time by eliminating travel, making it logical that not having to commute on sick or tired days, along with flexible hours, is highly agreed upon by participants.

Another significant difference was found across groups with different lengths of professional experiences. Apparently, less experienced employees were more adversely affected by social isolation and reduced communication with colleagues while working from home. This may stem from their greater need for physical interaction with the work environment to gain ex-

perience. In line with the suggestions of Caillier (2012), organizing regular meetings and face-to-face activities may be helpful in overcoming the feeling of social isolation among employees. In addition, benefitting more from the opportunities provided by the digital environment (i.e. cameras) (Grant et al., 2013) may be considered.

While no significant differences were found across groups except for gender and work experience, meaningful insights can be drawn from mean scores. Employees in small and medium-scale companies particularly emphasized the economic benefits of remote work, possibly due to limited financial resources and benefits in SMEs. Furthermore, small-scale companies were found to be insufficient in providing support to their employees. Klein & Todesco (2021) argue that in small-scale companies managerial weaknesses are common and that management is usually centralized with an owner-manager maintaining the control of all operations. In such an environment, providing support to remote working employees adds a yet more difficult challenge.

Results about remote working suggest that working from home can be perpetuated in the construction industry. While remote work is less common in the construction industry due to physical tasks, advancements like virtual and augmented reality enable effective collaboration. Some roles in construction companies such as project management and design, can be performed remotely (El Khatib et. al., 2023). Managers can leverage digital tools for remote work. Harikrishnan et al. (2021) propose that AR, combined with BIM, fosters communication and knowledge transfer, enhancing design team involvement and staff expertise utilization.

Future trends may see widespread remote work in the construction industry. El Khatib et. al. (2023), in their studies, suggest a company-wide restructuring, shifting from sustaining physical workstations to investing in cost-effective tools for remote work. Futhermore, comprehensive staff training is recommended for technical skills and adapting to the social aspects of remote work with new collaboration tools.

6. Conclusions

Employee motivation is regarded to be one of the most important factors affecting productivity. In the post-Covid-19 period, the most motivating factors for employees have been identified as "work itself and job satisfaction", "good physical working conditions and work environment" and "good relationship with superiors". During the pandemic, delays due to problems in the supply chain have been the most influential factor on employee motivation. Within the scope of our study, it was also found that the attitudes towards and experiences regarding the remote working model brought by the pandemic were mostly positive. The results of this study also revealed that motivation and personal characteristics are linked, which is consistent with previous studies.

The outcomes from the present study may be beneficial for managers in the construction industry in understanding the expectations of workers from their workplaces in the post-Covid-19 era. Furthermore, the results may shed light on decisions regarding government policies in developing measures for possible crises that may occur in the future. Since the study was limited by its geographic boundries, the results of this research should be interpreted with caution. Further research should focus on involving participants from various countries and cultures to take into account possible country specific differences.

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