



The Role of Work Environment in Employee Motivation: The Case of the Construction Industry

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ABSTRACT: The purpose of this study is to discern the similarities and differences in sources of motivation between employees in construction sites versus office employees using the Herzberg Two-Factor Theory. The study further analyses the effects of motivation factors, considering variables such as job position, gender and nationality. The present research analyses the responses of 326 office and construction site employees of various specialties. The results indicate that workplace physical environment plays an important role in employees' motivation. Office employees and construction site employees are affected differently by the items in Herzberg's two-factor theory. The findings of the study are expected to help managers make better use of their incentive repertoire, in accordance with the specific group needs, whether they are office employees or field workers. Research limitations include the need for a larger sample size since the present study does not allow for generalizable conclusions, partly due to the difficulty in conducting survey studies in the highly complex construction work environment.

KEYWORDS: construction, employee, Greece, Herzberg, motivation.

I. INTRODUCTION

Employee motivation is a pivotal topic for leaders, managers and people who manage human resources. In recent decades, several theories concerning employee motivation, have been proposed and hundreds of surveys, based on these theories, have been conducted, on a global scale. In general, however, there is a dearth of studies on employee motivation for people who work in the construction industry and especially on employees at the construction site particularly in Greece [1-7]. Construction industry workers are frequently working under difficult and high-risk conditions. However, many people are willing to work in this industry, because there are opportunities that do not require special knowledge or training. Many

migrants choose to work in this industry as unskilled workers. Frequently, they do not understand the language of the country in which they work, making communicating with supervisors and peers difficult. The major qualifications needed for these job positions are endurance and muscle strength. The Construction industry workforce except for unskilled workers includes, several categories of specialized personnel, such as machinery operators, vehicle drivers, engineers, foremen, etc. Another key characteristic of the construction industry is that the work environment is male-dominated.

Herzberg's two-factor motivation theory [8,9], has been tested in a large number of studies, involving various occupations, with reported findings rather inconsistent, leading to the need for further and more specific work environment research, to overcome some of the confounding factors associated with the previously reported results inconsistencies [3]. Comparisons across industries are tenuous and as Mace [10] points out, the range of variation in the measurable characteristics of the construction industry is greater than other industries. Construction industry unique characteristics comprise of strict attention to cost and schedule, numerous conflicts, labor-intensity, customized work, on-site work and short-term employment [4-6]. An important element concerning construction industry is the management of foreign workers because they may have different sources of motivation as there are several cultural differences [11]. As a result, managers in the construction industry have to cope with various challenges, adopting different leadership styles appropriate for the cultural background of the multiethnic workforce sub-groups.

The diversity of employees working together at the construction site, to deliver an outcome within specific deadlines, is necessitated by the nature of the industry. The present research could provide some useful insight to management in the construction industry in employee motivation,



given the specific constraints the industry managers are facing.

Various surveys have been conducted with the purpose of examining what motivates workers in the construction industry. However, most of these studies have been held in a variety of countries but none to our knowledge in Greece. This implies different working, economic and social conditions, as well as different cultural backgrounds, and potentially different motivating factors. The present research attempts to contribute to existing literature by examining the interaction of employees in the working, economic and social, conditions in Greece, in the context of Greek culture. This connotes different ways of interaction between local and foreign workers, which could also suggest different motivating factors.

The aim of this research is to identify the motivators of the workers in the construction industry in Greece and the differences and similarities between office employees and construction site employees.

II. LITERATURE REVIEW

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The construction industry has unique characteristics, which have implications on employee motivation that might be unique and diverge from the majority of the other industries. Borcharding and Oglesby [12] concluded that the important elements for foremen and superintendents were the challenges of running work, good management support, enough information feedback, pride of workmanship, successful work and good crew relations. In another study [13] the author reports that factors such as achievement, responsibility, advancement and low wages and payments are not classified as motivators. Ruthankoon and Ongulana [3] proposed that achievement is the most frequently mentioned motivator, for engineers and foremen. Possibility for growth, responsibility and advancement are elements which could be categorized as motivation factors in the construction industry. On the contrary, recognition does not appear to be an important motivating factor. The sample in this research focused on different factors. Hygiene factors, salary, company policy, administration relations with peers, supervisors and subordinates are really important and they can be associated with job dissatisfaction. Also, safety from the perspective of work accidents influences job satisfaction, but it depends on the category of employee specialty and the

responsibilities arising from it [3]. Chileshe and Haupt [14] extended Ruthankoon's and Ongulana's [3] work, reporting that relations with co-workers were poor but without significant effects on job satisfaction in their study. Venkatesan et al. [15] suggested that, motivation factors were different among employees. Achievement and interest in work were the most important factors that influence engineers and employees at higher levels in the organizational hierarchy [16]. The de-motivators were poor work conditions and poor administration policy.

Another issue addressed in a few studies is employee management style. Notably, management styles differ depending on culture among other factors and in many cases, there are conflicts and communication gaps because of the different languages and cultures at the construction site. An important issue is that a downward stream of productivity, more accidents and inferior construction quality appear due to language barriers and cultural differences [17]. Kim et al. [11] in their research found that motivators vary and depend on the nationality of each worker. These findings could be used for the purpose of stimulating social awareness, to create an appropriate systematic policy and develop a more efficient management plan for foreign workers, suitable to addressing cultural differences.

In the construction industry, the projects are constantly changing and the responsibilities and requirements arising from them adjust to the new settings. In conclusion, "construction process, is described as a people management business" [18] and the main resource of productivity is workers [2].

Based on the discussion above we propose the following hypotheses:

- *H0.A*: Hygiene factors do not differ between office employees and construction site employees.
- *H1.A*: Hygiene factors differ between office employees and construction site employees.
- *H0.B*: Motivator factors do not differ between office employees and construction site employees.
- *H1.B*: Motivator factors differ between office employees and construction site employees.

III. METHODOLOGY

There were overall 326 questionnaires answered by employees from 8 construction companies in Greece. The sample was a convenient one given that the resources available were limited, but the size of it allows us to proceed with reliable statistical analyses and produce valid conclusions [19-21]. An attempt was made to compare, employees from various categories in the



construction site with office employees also from various occupations.

The sample was divided into two main categories: office employees and employees in construction sites. The age of participants was divided into five categories, 18-25, 26-35, 36-45, 46-55 and >55. Figure 1 shows the percentage of office employees versus those employed at the construction site.

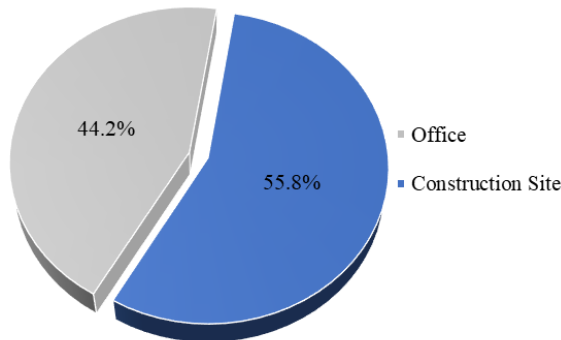


Figure 1: Work Environment

The education level of participants was examined, by separating them into, primary school graduates, high school graduates, University/Technological Institute graduates, postgraduates and doctoral graduates. The participants were mostly Greek, Albanian and workers from 8 other countries with a rather small representation. The employees, were divided in the following categories:

- Office Employees of various specialties
- Office Engineers
- Site Engineers and Foremen
- Operators and Drivers
- Workers of all specialties

Engineers were separated into office engineers and site engineers because the working conditions and the nature of their work, differ. Site engineers are categorized in the same group with foremen, because both are engineers and the responsibilities arising from these job positions do not have meaningful differences. Figure 2 shows in detail the percentage of employees in each specialty of the sample used in this study.

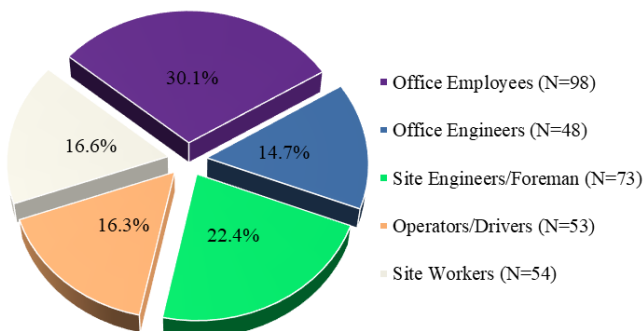


Figure 2: Percentage of employees in each specialty

The construction industry is a male-dominated workplace. Thus, it was decided to separate participants into two categories, male and female. Moreover, as mentioned above, the construction site is a workplace in which many foreign workers are employed. For this reason, this survey also compares locals versus foreign workers.

The research was conducted by using Herzberg's questionnaire [8] that measures employee motivation (Table 1). The questionnaire was modified in order to meet the needs of the present research. It consists of 15 questions of a 5-point Likert scale (1 = not at all important, 5 = very important). Questions about hygiene factors are Q1, Q2, Q4, Q5, Q6, Q7, Q10, Q12, and the motivators Q3, Q8, Q9, Q11, Q13, Q14, and Q15. Previous research [22] has confirmed both the validity and the reliability of the questionnaire in a number of different professions.

Table 1: Questionnaire

CODE	QUESTION
Q1	Employer's prestige in the workplace.
Q2	Social Orientation in the workplace.
Q3	To be interested in my work.
Q4	To have high salary.
Q5	To provide me with extra financial benefits (bonuses, commissions).
Q6	To provide me with extra non-financial benefits (health insurance, accommodation, car, mobile).
Q7	Having a work environment without stress.
Q8	To acquire a job position of responsibility
Q9	To be involved in the decision making concerning my work.
Q10	Good relations with my supervisor.
Q11	To have opportunities for promotion.
Q12	To provide me with job security.
Q13	Equal opportunities for men and women.
Q14	To have an opportunity for personal growth.
Q15	Meeting challenges in my work.

The comparison groups are listed below:

- Office Employees - Construction Site Employees (CG1)
- Office Engineers - Site Engineers (CG2)
- Office Employees - Office Engineers (CG3)
- Office Employees - Site Engineers/Foremen (CG4)
- Office Employees - Operators/Drivers (CG5)
- Office Employees - Site Workers (CG6)
- Men - Women (CG7)
- All Greeks -All Foreign Personnel (CG8)



- Greek Workers Only - Foreign Workers Only (CG9)

It is important to note that, because many of the Albanian workers in the construction industry in Greece do not speak Greek, the questionnaires were translated into Albanian.

In order to analyse the data, the statistical program SPSS was used. The t-test method was selected for the comparison of means.

IV. RESULTS AND DISCUSSION

The statistical analyses we used showed the questionnaire Reliability Cronbach $\alpha = 0.893$. Figure 3 presents the average value of Likert scale for each question from all the sample. Thus, as it is shown most of the sample answers over 3.5 of the Likert scale which was used.

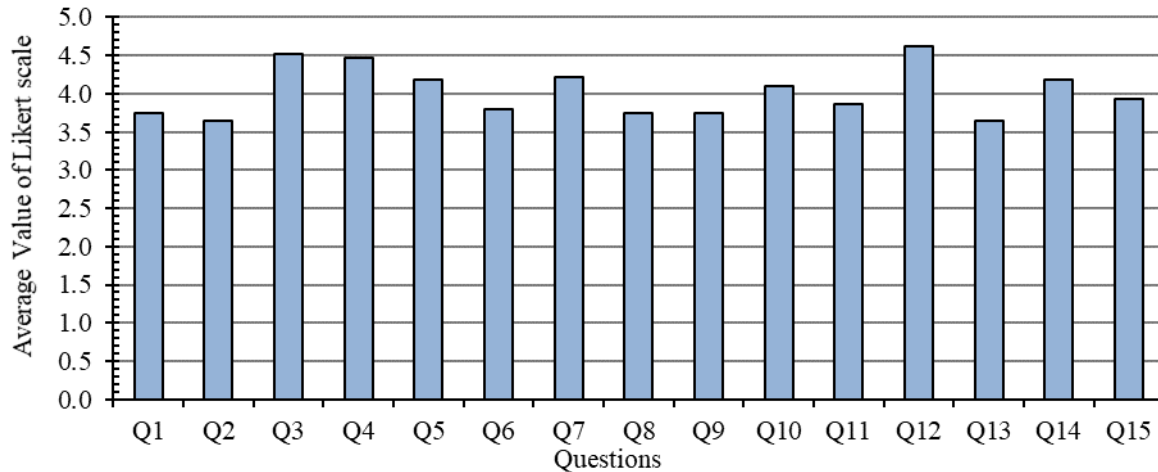


Figure 3: Average value of Likert scale for each question from all the sample

Table 2 shows all the p_{value} results of all the comparison groups (CG1 to CG9) that emerged from the t-tests, according to each question (Q1 to Q15) and each motivation factor. The results, lent partial support to the Hypothesis that Office Employees differ from Construction Site Employees (CG1), namely in the case of questions 4,5,9, 11, 12 and 13. The remaining questions suggest that the hypothesis H_0 . A is rejected and that there is no difference between the two groups of employees. In the second group comparison we attempted comparing Office Engineers to Site Engineers (CG2), again we notice support for the alternative

hypothesis only in two questions, Q5 and Q6, while the remaining questions support the null hypothesis, indicating no difference between the two groups. The third comparison entails Office Employees and Office Engineers (CG3), whereby the Null hypothesis is supported and there is no difference between the two groups, in all but one question (Q15). In comparing Office Employees and Site Engineers/Foremen (CG4), the alternative hypotheses is supported in four questions (4, 5, 6, 15), while for the remaining questions there is no difference between two groups.

Table 2. Results of p_{value} per Question and per Comparison Group

	CG1	CG2	CG3	CG4	CG5	CG6	CG7	CG8	CG9
Q1	0.573	0.731	0.479	0.238	0.923	0.050	0.613	0.002	0.155
Q2	0.117	0.847	0.659	0.809	0.029	0.623	0.152	0.735	0.872
Q3	0.954	0.437	0.409	0.050	0.379	0.622	0.304	0.039	0.215
Q4	0.001	0.134	0.474	0.015	0.026	0.000	0.001	0.000	0.007
Q5	0.003	0.048	0.866	0.015	0.244	0.004	0.043	0.048	0.454
Q6	0.579	0.050	0.687	0.046	0.050	0.406	0.593	0.477	0.608
Q7	0.710	0.242	0.195	0.928	0.553	0.195	0.050	0.466	0.464
Q8	0.509	0.390	0.468	0.078	0.100	0.318	0.511	0.079	0.250
Q9	0.001	0.910	0.620	0.516	0.000	0.004	0.117	0.050	0.762
Q10	0.372	0.981	0.809	0.752	0.510	0.308	0.211	0.838	0.900
Q11	0.050	0.531	0.998	0.506	0.029	0.028	0.522	0.110	0.042
Q12	0.050	0.142	0.435	0.536	0.588	0.050	0.632	0.123	0.888
Q13	0.000	0.350	0.604	0.097	0.000	0.000	0.000	0.000	0.002
Q14	0.855	0.461	0.365	0.808	0.684	0.815	0.853	0.654	0.976



Q15	0.986	0.733	0.027	0.005	0.369	0.993	0.539	0.184	0.050
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The comparison of Office Employees and Operators/Drivers (CG5) yielded support for the alternative hypotheses in five questions (4, 6, 9, 11, 13), while no significant difference was found between the two groups in the remaining questions. Office Employees and Site Workers (CG6) were found to differ in seven questions (1, 4, 5, 9, 11, 12, 13), partially supporting the alternative hypotheses. Comparing Men and Women (CG7), we found no significant differences in all but four questions (4,5,7,13). Our comparison of Greek Personnel with Foreign Personnel (CG8), produced significant differences in seven questions, lending partial support to the alternative hypotheses. Finally, when comparing Greek Workers Only with Foreign Workers Only (CG9), we found no

differences between the two groups with the exception of questions 4,11, 13, 15.

Subsequently, Figure 4 shows the correlations for each comparison group with each motivation factor. Namely, to what extent both of the two hypotheses H0 are accepted for each comparison group. The correlation (ρ) of the t-tests' results with the hypothesis H0 of each of the 2 motivation factors and Figure 4 are resulted from the following equation:

$$\rho = \frac{\sum(Q) - \sum(Q_d)}{\sum(Q)}$$

Where $\sum(Q)$ is the number of questions for each motivation factor and $\sum(Q_d)$ is the number of questions for this motivation factor, which do not support the H0 ($p_{\text{value}} \leq 0.05$).

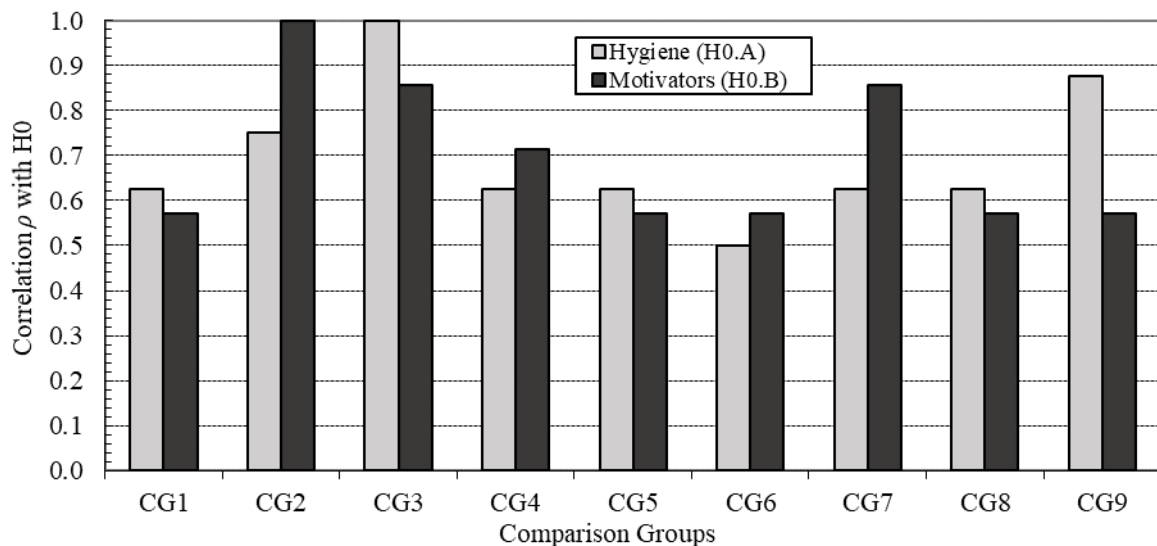


Figure 4: The Correlation ρ of H0 for each comparison group and each motivation factor.

The primary aim of this study is the examining of the first comparison group, CG1. The results have shown that almost half of the questions relating both motivators (Q4, Q5, Q12) and hygiene factors (Q9, Q11, Q13) do not support H0. The ρ correlation of H0 is 0.63 for hygiene factors and 0.57 for motivators. Hence, the goal of this study was achieved because it was proved that employees' motivation factors are differentiated according to their external organizational environment, office or construction site.

As far as CG2 is concerned, there are only two differentiations regarding hygiene factors (Q4, Q5). The ρ for this group is 0.75 for hygiene factors and 1.0 for motivators. This was expected because site engineers are often required to move where the

construction project takes place. Thus, salary and extra financial benefits are considered to be their main priority.

Furthermore, the CG3 analysis shows that H0 is supported, corroborating previous research [23]. The only difference concerns question Q15. The ρ is 1.0 for hygiene factors and 0.86 for motivators. Engineers like to face challenges. Besides, it is part of their work.

The ρ as far as CG4 is concerned, is 0.63 for hygiene factors and 0.71 for motivators. The results were in line with our expectations. Some differences in the results were found, in questions concerning hygiene factors (Q4, Q5, Q6) and in some relating motivators (Q3, Q15).

Analysing CG5, the results show that H0



was not supported in almost half of the questions: in hygiene factors (Q2, Q4, Q6) and in motivators (Q9, Q11, Q13). The ρ is 0.63 and 0.57 for motivators. Operators/drivers do not expect any further professional development. They do not care about challenges and extra responsibilities and they are mainly interested in salary and other financial benefits.

Similar results are observed in CG6. In this case the divergence of employees' and workers' needs is apparent to a larger extent. The results do not support H0 neither concerning hygiene factors (Q1, Q4, Q5, Q12) nor concerning motivators (Q9, Q11, Q13). The ρ is 0.50 for hygiene factors and 0.57 for motivators. Workers are mainly interested in salary and job security.

The construction site is mainly male-dominated and thus, it was expected there would be differences concerning the support for H0, especially as far as hygiene factors are concerned. The results, after studying CG7, provide evidence for that. The ρ is 0.63 for hygiene factors and 0.86 for motivators. Disagreements were observed in questions Q4, Q5, Q7. On the other side, among the motivators, the only disagreement concerns the question relating to men-women equal opportunities (Q13) and it is according to our expectations.

One of this study's findings concerns the nature of the demographics in the construction industry (subject to the limitations of our sample) whereby the industry employs more foreign workers in construction sites than Greeks in comparison with those working in offices. Examining CG8, the ρ is 0.63 for hygiene factors and 0.57 for motivators. The aforementioned results showed that almost half of the questions concerning hygiene factors (Q1, Q4, Q5) and motivators (Q3, Q9, Q13) fail to support H0.

As far as group CG9 is concerned, results indicated that the only disagreements with H0 were found in Questions Q4, Q11, Q13 and Q15. The ρ for hygiene factors is 0.88 and 0.57 for motivators. The above findings agree with the researchers' earlier work. The majority of foreign workers are mainly interested in having the minimum amount of stamps per month to maintain their residence permit without extra requirements or interest in challenges. One reason is that a large percentage of foreign workers do not understand the Greek language adequately so as to seek other type of employment. This sub-group tend to be indifferent to the issue concerning gender equality and representation in salary, promotions or other relevant considerations.

V. CONCLUSION

Workplace environment plays an important role in employee motivation. Based on the results presented in this study, corroborating earlier findings, office employees and construction site employees differ when examined in terms of Herzberg's two-factors theory. Construction managers need to be cognizant of the diverging needs and motivators of the various employee groups they supervise. The differences between the groups of employees proposed in this study, in terms of the importance attributed to each of the items in Herzberg's scale by each group was an outcome for construction industry managers. Highly educated personnel appear to respond more favourably to motivators compared to employees with low education levels.

Office employees and office engineers (CG3) are motivated in the same way according to Herzberg's two-factor theory. Office employees compared to site engineers are motivated by different factors, while Operators/drivers differ from office employees, concerning the effect of two-factor theory. Workers were motivated in a distinctly different way compared to office employees and men and women differ in their views of Hygiene, although they agree about the importance of motivators. Culture has been shown to play an important role in motivation, as local personnel and foreign employees, place different value to various motivation and hygiene items.

A final conclusion of the present research is that the construction industry environment affects significantly employees' motivation factors. This field has a large variety of requirements regardless of job position. After all, as mentioned earlier, the projects, in the construction industry, are constantly changing and the responsibilities and requirements arising from them adjust to the new settings. Also, the interaction between foreign workers and Greek workers, because of their cultural differences, may differ, when compared to the findings of other studies on this subject. The findings of this study add to the big picture of employees' motivation at the construction sites in Greece.

In spite of the contribution of this study's findings in understanding motivation in the workplace and specifically in the construction industry, future research may delve deeper into the subject, testing other motivation theories and tool effectiveness being practiced by companies in the field. Especially the subject of motivating a diverse workforce as is the case with the multi-ethnic multilingual and multi-cultural corporation



nowadays, is highly challenging for managers who need to identify the priorities the interests and the needs of employees and then develop motivation strategies and act upon them. Future studies could look at different approaches also in motivating employees in extraordinary circumstances, such as the pandemic of 2020, which may have a lasting impact on the way people work, at the site, the office, or at home.

REFERENCES

- [1]. Glinia, E., 2005, "Work motivation, job satisfaction and turnover intention of recreation employees in resort hotels and sport tourism." *Doctoral dissertation*. Thessaloniki: Democritus University of Thrace. [online]. Available from: <https://thesis.ekt.gr/thesisBookReader/id/20745#page/1/mode/2up>.
- [2]. Panas, A.; Pantouvakis, J. P., 2018, "On the use of learning curves for the estimation of construction productivity." *International Journal of Construction Management*, vol. 18, no 4, pp. 301-309. (DOI: 10.1080/15623599.2017.1326302).
- [3]. Ruthankoon, R.; Ogunlana, S. O., 2003, "Testing Herzberg's two-factor theory in the Thai construction industry." *Engineering, Construction and Architectural Management*, vol.10, no. 5, pp. 333-341 (DOI: 10.1108/09699980310502946).
- [4]. Nave, J.; H. JR., 1968, "Construction personnel management." *Journals of the Construction Division*, vol. 94, no 1, pp. 95-105 (DOI: 10.1061/JCCEAZ.0000217).
- [5]. Schrader, C.R., 1972, "Motivation of construction craftsmen." *Journal of the Construction Division*, vol. 98, no 2, pp. 257-273 (DOI: 10.1061/JCCEAZ.0000348).
- [6]. Laufer, A.; Jenkins, G. D., 1982, "Motivating construction workers." *Journal of the Construction Division*, vol. 108, no 4, pp. 531-545 (DOI: 10.1061/JCCEAZ.0001062).
- [7]. Barg, J. E. et al., 2014, "Motivating Workers in Construction." *Journal of Construction Engineering*, vol. 2014, pp. 1-11 (DOI: 10.1155/2014/70308).
- [8]. Herzberg, F., 2003, "One more time: How do you motivate employees?" *Harvard Business Review*, vol. 81, no 1, pp. 86.
- [9]. Herzberg, F. et al., 1959, "The motivation to work." *John Wiley & Sons Inc*: New York.
- [10]. Mace, C.A., 1950, "Human Problems in the building industry: A general survey." *Occupational Psychology*, vol. 94, no 1, pp. 18-30.
- [11]. Kim, S. et al., 2015, "Cultural differences in motivation factors influencing the management of foreign laborers in the Korean construction industry." *International Journal of Project Management*, vol.33, no 7, pp. 1534-1547 (DOI: 10.1016/j.ijproman.2015.05.002).
- [12]. Borcherding, J. D.; Oglesby, C. H., 1974, "Construction productivity and job satisfaction." *Journal of the Construction Division*, vol. 100, no3, pp. 413-431.
- [13]. Hague, D. J., 1985, "Incentives and motivation in the construction industry: a critique." *Construction Management and Economics*, vol.3, no 2, pp. 163-170 (DOI: 10.1080/01446198500000012).
- [14]. Chileshe, N.; Haupt, T. C., 2010, "The effect of age on the job satisfaction of construction workers." *Journal of engineering, design and technology*, vol. 8, no 1, pp. 107-118. (DOI: 10.1108/17260531011034682).
- [15]. Venkatesan, R. et al., 2009, "Motivation and demotivation cause factors for engineers in construction organizations." *Proceedings for the 25th Annual ARCOM Conference*, pp. 145-153.
- [16]. Sahinidis, A. et al., 2021, "Age and prior working experience effect on entrepreneurial intention." *Corporate & Business Strategy Review*, vol .2, issue 1, pp. 18-26 (DOI: 10.22495/cbsrv2i1art2).
- [17]. Go, S. et al., 2009, "A Study about the Plan of Foreign Construction Worker's Safety Management." *Proceedings of Korea Institute of Construction Engineering and Management*, pp. 36-39.
- [18]. Smithers, G. L.; Walker, D. H., 2000, "The effect of the workplace on motivation and demotivation of construction professionals." *Construction management and economics*, vol. 18, no7, pp. 833-841 (DOI: 10.1080/014461900433113).
- [19]. Sahinidis, A. et al., 2020, "The influence of the big five personality traits and risk aversion on entrepreneurial intention." *Strategic innovative marketing and tourism*, pp. 215-224 (DOI: 10.1007/978-3-030-36126-6_24)
- [20]. Sahinidis, A. G.; Tsaknis, P. A., 2020, "Shaping entrepreneurial intentions: The impact of entrepreneurship education on university students." *Zeszyty Naukowe*



- Małopolskiej Wyższej Szkoły Ekonomicznej w Tarnowie*, vol. 48, no. 4, pp.49-58.
- [21]. Tsaknis, P. A.; Sahinidis, A. G., 2020, “An Investigation of Entrepreneurial Intention Among University Students Using the Theory of Planned Behavior and Parents' Occupation.” *Entrepreneurial Development and Innovation in Family Businesses and SMEs*, pp. 149-166.
- [22]. Sahinidis, A.; Kolia, A., 2014, “Private or public sector? An investigation of employer preferences of university students using Herzberg's two factors theory of motivation.” *Archives of Economic History*, vol. 26, no 2, pp. 1.
- [23]. Loiseau, J. W., 2011, “Herzberg's theory of motivation.” *Walden University, Public Policy & Administration*.