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# Evaluation of the Turkish National Qualifications System Specific to the Construction Sector

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## Highlights

- This paper aims to present the views and opinions of skilled workers.
- The study sample included candidates applying to authorized certification bodies for certification.

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## Abstract

This article aims to present the views and opinions of skilled workers, such as form workers, ironworkers, plasterers, etc., who work in the construction sector in Türkiye, regarding the National Qualifications System (NQS) and the Vocational Qualification Certificate (VQC) that emerged as a natural consequence of this system. In order to accurately express these views and opinions, authorized certification bodies (ACBs) that organize the certification process for more than half of the certified workers in the construction sector within the borders of Türkiye were reached. The sample of the study consisted of candidates who have not yet been certified but have applied to ACBs to initiate the certification process. In addition to questions requesting demographic information, 13 questions were asked on a 5-point Likert scale to measure the candidates' perspectives on NQS and VQC. Because of the study, it was concluded that both the promotion activities of the system and the number of inspections to be carried out by the ministry in the field should be increased and the national qualifications should have more detailed sub-breakdowns.

## 1. INTRODUCTION

The Turkish construction sector stands as a focal industry due to its demand for a large number of trained personnel, inherent risk factors, direct and indirect impacts on the economy and various other sectors, and many other reasons. When assessed along with its subfields, the construction sector addresses a broad audience and thus holds a significant position in the country's economy [1,2]. The construction industry, retaining such critical parameters and involving significant efforts to correctly position unpredictable risks and variables, finds its place within academic literature as well. Independent of macroeconomic processes, the direction of the sector is determined by its stakeholders. At this point, employers and perhaps hundreds of thousands of employees are the stakeholders that affect the sector's variability, sustainability and value-added.

In line with technological advancements worldwide, process progression algorithms have changed in many job fields, and significant steps have been taken in adapting to innovations within the context of sustainability. The construction sector has been resistant and slow to accept innovations and technological advancements [3]. However, it is clearly seen that this situation has changed to some extent in recent years. The key element in adapting to these innovations is the determination shown by sector stakeholders in being open to change. In an era where the destructiveness of competition has deepened and even large firms are interested in small and medium-sized jobs, the importance of adapting to innovations has once more become evident.

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Like all sectors, the construction sector requires a skilled workforce to maintain a competitive position. The employees currently in the construction sector have gained their current skills and competencies through apprenticeships. The professional qualifications, skills, competencies, and theoretical knowledge capacities of construction workers, who are the primary determiners of labor in the construction sector, directly affect construction processes. Therefore, it is clear that the workforce profile needed by the sector should consist of qualified individuals who, in addition to their existing skills and competencies, possess a certain amount of theoretical knowledge and share their knowledge and experience with others [4].

The management and supervision of the National Qualifications System (NQS) processes are carried out by the Vocational Qualifications Authority (VQA), established as a result of the Employment and Training Project (ETP) implemented with the coordination of the Turkish Employment Agency and funded by the World Bank between 1992 and 2000. Under the leadership of the VQA, the framework for many professions within the construction sector, as in many other sectors, has been outlined, and national occupational standards (NOSs) have been published. Initially, it was anticipated that individuals who believed they were already proficient in their jobs might show some resistance to the system, assessment-evaluation, and certification processes [5]. However, in recent years, hundreds of thousands of workers, with the construction sector taking a significant share, have been certified under this framework and have maintained their positions in the sector as professionals approved by the government.

This study attempts to convey the perspectives of construction workers, who play a key role in the assessment-evaluation stage of the system and who might be considered laborers of this sector, regarding the NQS, which could be considered one of the most significant innovations of recent years, specifically within the construction sector. In this study, 14 demographic questions were asked to candidates applying for exams conducted by authorized certification bodies (ACBs), which authorized by the VQA, using a survey technique. Additionally, 13 five-point Likert scale questions were asked to measure the candidates' perspectives on the certification process and the vocational qualification certificate (VQC) they were trying to obtain. Efforts were made to reach 23 companies, representing approximately 75% of the total certified workforce within the Turkish construction sector, with at least one company from each geographical region, receiving responses from 14 companies. In this context, differences in the candidates' perspectives on this process, based on demographic variables such as the region where they took the exam, gender, education level, age, professional experience, etc., were identified. Recommendations for solutions were offered for the disadvantages identified concerning the certification process.

## 2. CONCEPTUAL FRAMEWORK

### 2.1. European Qualifications Framework and Türkiye Qualifications Framework

The European Qualifications Framework (EQF) was established by the recommendation of the European Commission and the European Parliament on April 23, 2008, under the notice 2008/C/111/01. The EQF serves as an inclusive reference point for national qualifications frameworks (NQFs) of member countries, allowing for the comparison of different qualification levels across these countries [6]. According to the recommendation, which forms the foundation of the Lifelong Learning philosophy, all countries' NQSs should be aligned with the EQF. Türkiye has prepared the Türkiye Qualifications Framework (TQF) in this regard and has completed the referencing process to the 8-level EQF, being one of the countries that have achieved this. The TQF, finalized with the communiqué on the Türkiye Qualifications Framework, was published in the official gazette on January 2, 2016. The qualification types, levels, and responsible institutions of the TQF are shown in Figure 1. As of today, a total of 30 countries, including 25 European Union (EU) countries and 6 non-EU countries (including Türkiye), have aligned their NQSs with the EQF [7].

### 2.2. Authorities Ensuring Quality Assurance and Sustainability of the Qualifications System

In all countries that align their NQFs with the EQF, certain institutions are responsible for maintaining, developing, and ensuring the applicability of this system [8]. In Europe, these responsibilities are generally held by ministries related to education and training or qualifications authorities [9, 10]. In some countries,

such as Hungary, the Czech Republic, and Austria, these responsibilities lie with ministry-level authorities. In other countries, like Ireland, Türkiye, the United Kingdom and France, institutions that organize the implementation, regulation, and overall management processes of the NQFs are present. For example, in Ireland, the "National Qualifications Authority of Ireland" is recognized as the sole authority capable of defining learning achievements, all assessment processes, and how different achievements can relate to each other within the country [11]. In Türkiye, the VQA was established by the Vocational Qualifications Authority Act, which was legislated unanimously by the Grand National Assembly of Türkiye on September 21, 2006. The VQA leads the process of creating NOSs and national qualifications (NQs) with a holistic approach and serves as the executor of activities such as assessment, evaluation, certification, and supervision.

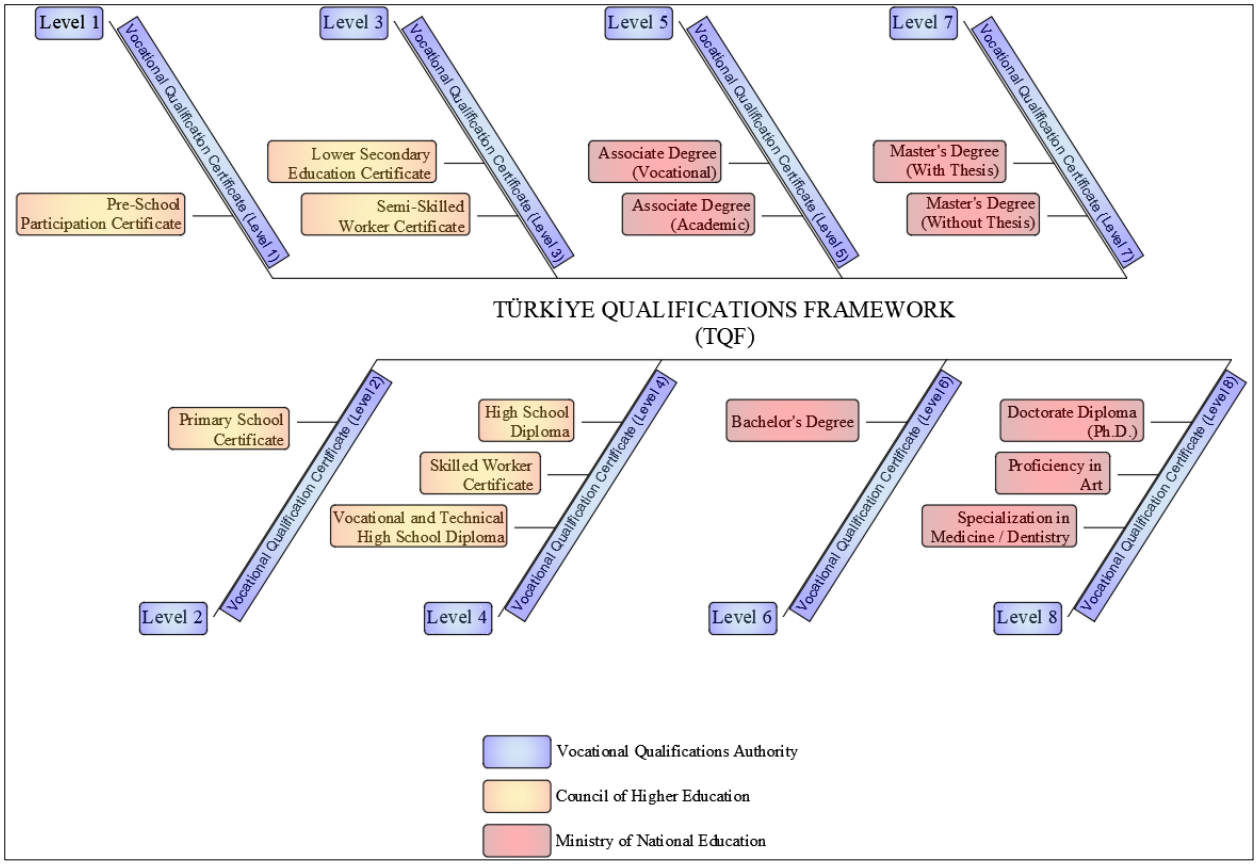


***Figure 1.*** *Türkiye Qualifications Framework qualification types, levels, and responsible institutions [12]*

### 2.2.1. Occupational standards

Occupational standards can simply be defined as the descriptions and classifications of the tasks people perform. In many countries, occupational standards are defined as a compilation of the qualifications needed within the working environment related to the job being performed. Another highly important point about occupational standards is that they also form the basis for the qualifications related to the profession [13].

In Türkiye, the VQA defines NOSs in a manner parallel to the definition of occupational standards outlined in the European Parliament's recommendation decision made in 2008. According to VQA, occupational standards are documents that indicate the knowledge, skills, attitudes and behaviours that an employee should possess in the profession they perform, and they form the basis of the created NQs [14]. The prioritization process for professions that require the preparation of occupational standards is carried out by VQA, considering the needs of the business world and educational institutions. The goal of this process is to train the qualified workforce needed by various sectors in Türkiye and to enable individuals with sufficient knowledge and skills in their professions to be evaluated according to certain standards.

### 2.2.2. National qualifications

National qualifications (NQs) are qualifications that emerge within the unique NQF of each country. The authority, institution, and organization profile involved in the process from the preparation of these qualifications, referenced to the EQF, to their acceptance as official documents can vary. While many countries prioritize stakeholders from the education and training sector in the preparation and implementation processes of NQs, in some countries such as Germany, France, and Türkiye, participants from the business world and civil society play an active role in the application and development steps due to their critical importance for the sustainability of the system [15]. In Türkiye, the VQA, which ensures the quality assurance of the process, defines NQs as documents prepared in accordance with the content of the NOSs. These documents contain skill-competence and knowledge statements that allow the assessment of whether an individual can properly perform their profession and become officially usable following the approval of VQA [16]. As can be inferred from the definition, NQs are essentially tools that measure the performance level of an individual practicing a profession. While the NOSs encompass a much broader informational content, NQs are prepared to be more concise, restricted, and aimed at evaluation to determine whether an individual officially fulfils the requirements of the profession.

### 2.2.3. Organizations that carry out the certification process

After the assessment and evaluation process carried out within the scope of NOSs and NQs, a document is issued to successful candidates, which can be considered proof of their current knowledge, skills, and competencies. These documents are issued and delivered to the certificate holders by authorities such as ministries, chambers of commerce, qualification authorities, etc. In Türkiye, this responsibility lies with the ACBs authorized by the VQA. ACBs, positioned as the public-facing representatives of VQA, hold a key role in the certification sector and organize the assessment and evaluation processes according to existing NQs. These private institutions have critical duties and responsibilities such as managing the examination processes using approved documentation and physical facilities under VQA's supervision and determining whether candidates are eligible to receive qualifications within the corresponding framework. Currently, 114 ACBs are actively working to certify individuals in positions such as wooden formwork carpenter, gypsum plasterer, and construction painter in the construction sector. This number can vary based on the authorizations or deauthorizations by VQA following audits, or the voluntary termination of operations by the institutions themselves. The progression chart that starts with the preparation of NOSs and continues to the certification of sector employees in Türkiye is shown in Figure 2.

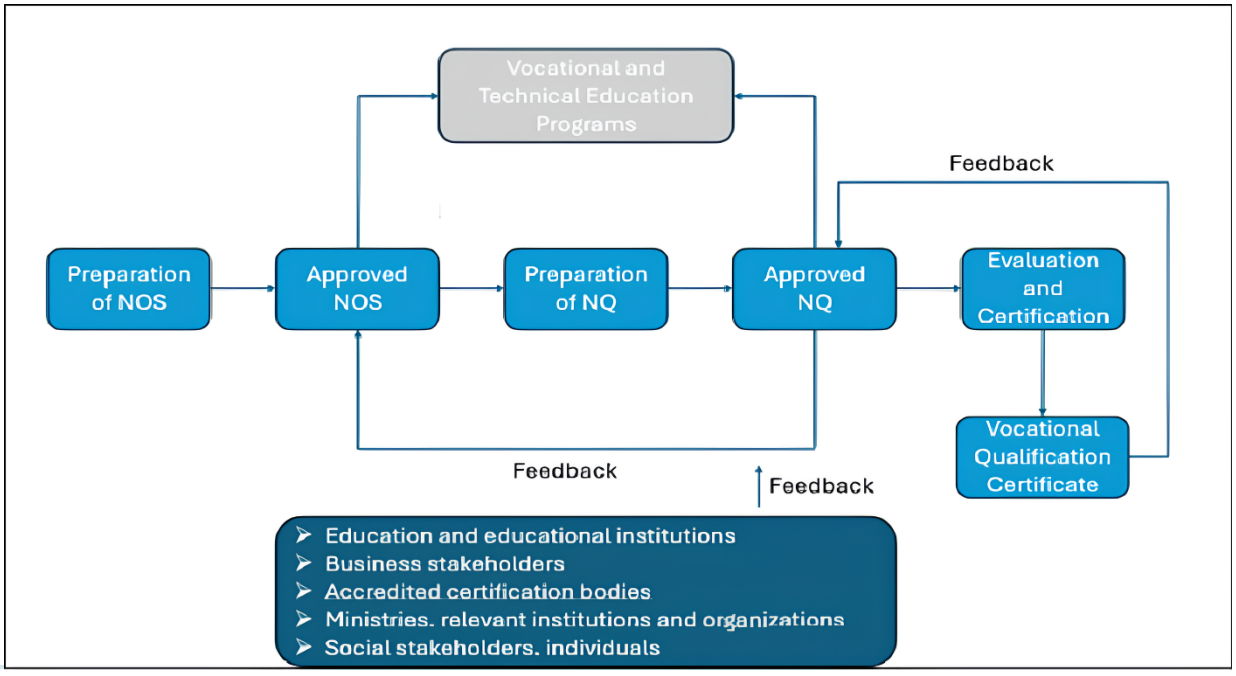


***Figure 2.*** *Processes of NQS [12]*

### 2.3. Previous Studies

Although there are studies in the literature partially covering the topics that form the basis of this study, such as the NQS, vocational qualifications, certification processes, etc., very few studies focus on these topics and aim to reveal the success of the system. Regarding the NQS and certification sector specifically within the Turkish construction sector, only a few thesis studies exist, and apart from these, to our knowledge, there have not been any other studies.

In Akçay Zileli's (2013) research, she examined the criteria used in the authorization processes of certification bodies. The researcher, who also examined the criteria used by VQA and the Scottish Qualifications Authority during the authorization phase, shaped the criteria and sub-criteria used in his study based on these criteria. In the study, where multi-criteria decision-making methods such as DEMATEL, AHP, and ANP were used, the author concluded that the internal and external verification of the assessment-evaluation system, continuous quality improvement, transparency of the organizational structure, and management approach criteria should have relatively high importance in the process of authorizing institutions [17].

In Arslan's (2014) study, a survey was conducted to measure the knowledge level of stakeholders in the printing and publishing sector on topics such as NOS, NQ, VQA, and certification activities. The study, which included information on the structural features and problematic areas of the Turkish printing and publishing sector, reached 623 business owners, 470 employees, and 612 students. It was noted in the study that as the education level of the survey participants increased their knowledge level about VQA and its activities also increased, but this rate did not exceed 20%, and it was inferred that certification processes are not sufficiently known by sector stakeholders [4].

Üstün et al. (2016) quantitatively examined the NOSs and NQs published up to the year of the study, focusing on Levels 3 to 7. In their study, which indicated a significant difference between the number of NOSs and NQs prepared and the necessity of accelerating the NQ preparation process by VQA, the researchers suggested increasing the number of ACBs and reorganizing the learning environments of institutions providing education at Levels 3, 4, and 5 under the Ministry of National Education (MoNE) to facilitate education in line with the published NOSs and NQs [18].

In his thesis, Bayram (2016) conducted a survey with 409 workers working on high-altitude platforms in Istanbul to examine the relationship between the vocational qualifications of workers and work accidents. In the study, where 150 surveys were not included in the evaluation due to incomplete answers, Bayram concluded from the illogical answers of the workers that the awareness of vocational education among workers was quite low and that they were not aware of the importance of education. At the end of his study, Bayram included a recommendation to increase the number of accredited institutions by VQA, along with his suggestions on occupational health and safety and vocational education [19].

Özgüler (2018) discussed the potential of the young workforce in Türkiye within the scope of the existing vocational qualification system. The study, which shared statistical data revealing labor market indicators and the status of young people in world countries and Türkiye, also included descriptive information about the vocational qualification system. At the end of the study, the researcher commented that while the vocational qualification system was progressing rapidly in terms of developing standards and qualifications, the same performance could not be achieved in terms of examination and certification. In the conclusion of his study, the author shared the opinion that the success of the system could be realized by employers demanding this certificate in the personnel they hire, otherwise, if certified workers face employment problems despite having the VQC, the problem could develop into a deeper issue with psychological factors [20].

Yaşar (2019) conducted a master's thesis examining the impact of certification processes on the rights and responsibilities of construction workers. In the study, which surveyed 200 individuals working in different subunits of the construction sector, with 52% holding a VQC, Adana, Ankara, and Istanbul were selected as sample cities. The study, which presented descriptive statistics for each sample, found that 64% of the

survey participants believed that the VQC they received would provide them with better job opportunities. Additionally, the author suggested updating the NQs and improving the promotional activities of VQA [21].

Özcan (2019) shared introductory information about the Turkish construction sector and VQA, which is responsible for certifying workers in this sector, in his study. In the study, where the NQS was examined specifically for the construction sector, it was emphasized that considering the levels on the TQF at Level 6 and above as equivalent to the undergraduate and postgraduate diplomas offered by the Council of Higher Education (CoHE) might cause problems. The study mentioned that construction sector workers were subjected to group exams and thus might be inclined to cheat in these exams, and the author proposed NOS suggestions for occupational groups such as Aluminium Curtain Wall Systems Installer, Aluminium Composite Cladding Installer, and Aluminium Joinery Installer [22].

Güreş (2019) conducted a qualitative study with a group of six representatives from VQA, the MoNE, the University Continuing Education Association (ÜNİSED), the Türkiye University Continuing Education Centres (TÜSEM) Council, and ACBs to determine the current state of vocational qualification and certification systems in Türkiye. Based on the opinions of participants responding to Güreş's questions, it was concluded that the VQC would contribute to the country's economy, the assessment and certification system was a necessity, and the certificate would help employers to find the right human resource more easily, thus preventing financial and time loss. The positive aspects of the system included the levelling of occupational groups by VQA, the insurance premium support provided by the state to employers of certified workers, and the possibility of preventing fatal work accidents with an increase in certified labor. The negative aspects included the lack of VQA's promotional activities, slow process of preparing NOSs, frequent audits and inconsistent demands from auditors, and the perception of ACBs seeing the system as a profit-making opportunity. The researcher, at the end of the study, made recommendations for improving the system such as having theoretical questions used in the certification process approved collectively by VQA and covering the VQC fees individually [23].

In his specialist thesis, Coşkun (2020) conducted a two-month survey with 100 ACBs authorized to certify candidates in the construction sector, technical experts involved in the revision group 11UY0012-3 Concrete Reinforcement Worker (Level 3) (Rev. No:03), and a local government, to minimize the waste materials arising in certification processes carried out in the construction sector. In the thesis, which included cost analyses of performance exams specifically for the qualification of a concrete reinforcement worker, Coşkun proposed project suggestions that would result in minimum material wastage in certification exams conducted in construction trades such as wooden formwork carpenter, concrete reinforcement worker, and bricklayer [24].

## 3. THE RESEARCH FINDINGS AND DISCUSSION

### 3.1. Type, Population and Sample of the Study

This study was conducted between 01.12.2021 and 01.01.2022. The population of this research consists of those who took the construction worker qualification exams conducted by ACBs, reaching a total of 746 individuals. No sample selection was made, and efforts were made to reach as many participants as possible. The purpose of the study was explained to the candidates, and their written consent was obtained.

### 3.2. Data Collection Tools

Sociodemographic data were collected from the participants, including gender, education, occupation, duration of employment, months worked in a year, witnessing any disciplinary actions, factors contributing to the formation of certification awareness, and training status for the exam. Additionally, the Certificate Value Scale (CVS) comprising 13 questions was administered to measure the positive/negative impacts of the VQC and the certification process on the individual candidate and the construction sector, and to assess whether it created awareness at the sectoral level. In the applied scale, questions 4, 8, and 10 were reverse scored.

### 3.3. Statistical Evaluation of Data

The findings of the study were evaluated using relevant statistical analyses suitable for the data types and research questions. To determine the normality distribution of the data, the Shapiro Wilk-W test, Kolmogorov Smirnov test, skewness, and kurtosis values were used. Descriptive statistics for continuous variables were provided as mean and standard deviation, while descriptive statistics for categorical data were presented as frequency and percentage. The Chi-square test was used for comparing categorical data. For comparing quantitative data, the Independent Samples t-Test and One-Way ANOVA were used for those that met the normal distribution assumption, whereas the Mann Whitney U and Kruskall Wallis tests were used for those that did not.

## 4. RESULTS

Descriptive statistical values for the categorical demographic variables of all participants in the study are presented in Table 1.

***Table 1.*** *Distribution of participants' responses to categorical variables*

| | | n (%) | | | n (%) |
|---|---|---|---|---|---|
| Gender | Female | 6 (0.8%) | Work Experience | 0-1 year | 79 (10.79%) |
| | Male | 740 (99.2%) | | 1-5 years | 166 (22.68%) |
| Education | Illiterate | 8 (1.18%) | | 5-10 years | 277 (37.84%) |
| | Primary School | 450 (66.47%) | | 10 years and above | 210 (28.69%) |
| | Secondary School | 189 (27.92%) | Months Worked per Year | 0-3 months | 109 (15.35%) |
| | University | 28 (4.14%) | | 3-6 months | 139 (19.58%) |
| | Graduate School | 2 (0.3%) | | 6-9 months | 295 (41.55%) |
| Job | Wood Pattern Maker | 42 (6.02%) | | 9-12 months | 167 (23.52%) |
| | Panel Pattern Maker | 7 (1%) | Penalty | No | 537 (75.32%) |
| | Reinforced Concrete Worker | 4 (0.57%) | | Yes | 69 (9.68%) |
| | Construction Worker | 311 (44.56%) | | I don't know | 107 (15.01%) |
| | Construction Painter | 189 (27.08%) | Where Heard About | TV Advertisement | 9 (1.30%) |
| | Plasterer | 12 (1.72%) | | Colleague | 220 (30.60%) |
| | Gypsum Plaster Applicator | 21 (3.01%) | | Employer | 230 (32.10%) |
| | Gypsum Board Applicator | 51 (7.31%) | | Examination Institution | 179 (24.90%) |
| | Concrete Worker | 0 (0%) | | Internet | 51 (7.10%) |
| | Thermal Insulator | 18 (2.58%) | | Other | 29 (4.00%) |
| | Scaffold Installation Worker | 0 (0%) | Exam Training | No | 494 (66.22%) |
| | Bricklayer | 12 (1.72%) | | Yes | 252 (33.78%) |
| | Ceramic Tile Layer | 31 (4.44%) | | | |

Descriptive statistical values for the continuous variables of all participants in the study are presented in Table 2. The mean and standard deviation values for the variables of income, age, number of exam attempts, and Certificate Value Scale (CVS) score have been determined.

***Table 2.*** *Distribution of participants' responses to continuous variables*

| | Mean.±S.D. | Median (Min-Max) |
|---|---|---|
| Income | 3779.04±2484.3 | 3500 (0-50000) |
| Age | 36.38±17.47 | 35 (0-388) |
| Number of Exam Entries | 1.29±0.71 | 1 (1-4+) |
| CVS Score | 49.09±11.22 | 50 (13-65) |

The Cronbach's Alpha value for the CVS applied to the participants was found to be 0.937 (Table 3). This indicates that the scale has very high reliability.

***Table 3.*** *Cronbach's Alpha Value*

| Cronbach’s Alpha | n |
|---|---|
| 0,937 | 13 |

The CVS scores of the participants were compared according to categorical variables (Table 4).

***Table 4.*** *Comparison of participants' CVS scores*

| | | Total CVS Score | | | |
|---|---|---|---|---|---|
| | | Mean ±S.D. | Median (Min-Max) | t/F | p |
| Gender | Female | 47.33±4.18 | 49 (40-51) | -0.385 | 0.701 |
| | Male | 49.1±11.26 | 50 (13-65) | | |
| Education | Illiterate | 55.88±7.68 | 55 (45-65) | F=2.239 | 0.063 |
| | Primary School | 50.28±11.58 | 52 (13-65) | | |
| | High School | 47.44±10.61 | 48 (13-65) | | |
| | University | 46.36±9.67 | 47 (16-61) | | |
| | Graduate School | 41±5.66 | 41 (37-45) | | |
| Job | Wood Pattern Maker (a) | 48.98±12.39 | 51 (22-65) | **15.529** | **<0.001** $p^{ah}$**<0.001** $p^{ch}$**=0.011** $p^{dh}$**<0.001** $p^{gh}$**<0.001** $p^{hı}$**<0.001** $p^{hi}$**<0.001** $p^{hj}$**<0.001** |
| | Panel Pattern Maker (b) | 47±11.21 | 42 (37-65) | | |
| | Reinforced Concrete Worker (c) | 39±17.81 | 45 (13-53) | | |
| | Construction Worker (d) | 46.39±10.99 | 48 (13-65) | | |
| | Construction Painter (e) | 51.9±9.2 | 52 (16-65) | | |
| | Plasterer (f) | 49.33±9.22 | 47 (38-65) | | |
| | Gypsum Plaster Applicator (g) | 48.24±5.66 | 47 (37-62) | | |
| | Gypsum Board Applicator (h) | 63.62±4.57 | 65 (43-65) | | |
| | Thermal Insulator (ı) | 45.53±9.15 | 47 (27-57) | | |
| | Bricklayer (i) | 41.17±9.23 | 44 (30-56) | | |
| | Ceramic Tile Layer (j) | 45.7±12.24 | 48 (24-65) | | |
| Work Experience | 0-1 year (a) | 45.17±10.56 | 44 (13-65) | **13.563** | **<0.001** $p^{ac}$**<0.001** $p^{bc}$**=0.001** $p^{cd}$**<0.001** |
| | 1-5 years (b) | 49.16±10.65 | 50 (16-65) | | |
| | 5-10 years (c) | 52.15±10.9 | 52 (13-65) | | |
| | 10 years and above (d) | 46.87±10.97 | 49 (13-65) | | |
| Months Worked per Year | 0-3 months | 44.1±11.27 | 45 (13-65) | **13.873** | **<0.001** $p^{ac}$**<0.001** |
| | 3-6 months | 49.26±10.64 | 51 (21-65) | | |
| | 6-9 months | 51.64±11 | 52 (13-65) | | |
| | 9-12 months | 47.53±10.7 | 49 (13-65) | | |
| Penalty | No (a) | 48.01±11.66 | 49 (13-65) | **19.594** | **<0.001** $p^{ab}$**<0.001** $p^{bc}$**<0.001** |
| | Yes (b) | 56.75±9.17 | 58 (21-65) | | |
| | I don't know (c) | 49.53±7.74 | 51 (20-65) | | |
| Where Heard About | TV Advertisement (a) | 50.67±11.65 | 48 (37-65) | **7.976** | **<0.001** $p^{bd}$**<0.001** $p^{be}$**=0.001** $p^{cd}$**=0.001** $p^{ce}$**=0.012** |
| | Colleague (b) | 46.89±10.71 | 48 (13-65) | | |
| | Employer (c) | 47.41±11.19 | 48 (13-65) | | |
| | Examination Institution (d) | 52.18±10.64 | 53 (16-65) | | |
| | Internet (e) | 54.36±11.5 | 52 (13-65) | | |
| | Other (f) | 50.04±12.16 | 50 (13-65) | | |
| Reason for Seeking Certification (To work abroad) | No | 50.31±11.48 | 52 (13-65) | **5.238** | **<0.001** |
| | Yes | 45.83±9.79 | 47 (17-65) | | |
| Reason for Seeking Certification (To work on public projects) | No | 50.41±10.61 | 49,5 (28-65) | 0.654 | 0.394 |
| | Yes | 46.29±12.13 | 50 (28-61) | | |
| Reason for Seeking Certification (Due to environmental pressure) | No | 48.77±11.2 | 49 (13-65) | **-2.736** | **0.006** |
| | Yes | 53.13±10.77 | 55 (24-65) | | |
| Reason for Seeking Certification (As a result of ACB's guidance) | No | 48.7±11.34 | 49 (13-65) | **-2.370** | **0.018** |
| | Yes | 51.57±10.11 | 53 (21-65) | | |
| Reason for Seeking Certification (Due to employer guidance) | No | 49.54±10.87 | 50 (13-65) | 1.945 | 0.053 |
| | Yes | 47.43±12.3 | 49 (13-65) | | |
| Reason for Seeking Certification (Because it is free, within the scope of incentives) | No | 49.21±11.78 | 50 (13-65) | 0.547 | 0.585 |
| | Yes | 48.75±9.51 | 48 (13-65) | | |
| Reason for Seeking Certification (Because it is legally mandatory) | No | 49.36±11.5 | 50 (13-65) | 1.137 | 0.256 |
| | Yes | 48.35±10.43 | 49 (13-65) | | |
| Reason for Seeking Certification (To find new job opportunities) | No | 49.09±11.45 | 50 (13-65) | 0.011 | 0.991 |
| | Yes | 49.08±10.09 | 50 (16-65) | | |
| Region of Construction Work (The Marmara) | No | 49.58±11.64 | 51 (13-65) | **2.156** | **0.032** |
| | Yes | 47.71±9.86 | 48 (17-65) | | |

| | | | | | |
|---|---|---|---|---|---|
| Region of Construction Work (The Aegean) | No | 48.82±11.38 | 49 (13-65) | -1.287 | 0.199 |
| | Yes | 50.17±10.52 | 52 (17-65) | | |
| Region of Construction Work (The Black Sea) | No | 49.17±10.68 | 49 (16-65) | 0.351 | 0.726 |
| | Yes | 48.78±13.02 | 51 (13-65) | | |
| Region of Construction Work (The Central Anatolia) | No | 48.94±11.17 | 50 (13-65) | -0.627 | 0.531 |
| | Yes | 49.54±11.38 | 49,5 (17-65) | | |
| Region of Construction Work (The Mediterranean) | No | 49.26±11.52 | 50 (13-65) | 0.945 | 0.345 |
| | Yes | 48.21±9.55 | 49 (21-65) | | |
| Region of Construction Work (The Eastern Anatolia) | No | 49.27±11.28 | 50 (13-65) | 1.835 | 0.067 |
| | Yes | 45.84±9.56 | 47,5 (16-65) | | |
| Region of Construction Work (The South eastern Anatolia) | No | 49.64±11.48 | 51 (13-65) | **4.427** | **<0.001** |
| | Yes | 45.29±8.34 | 46 (16-65) | | |
| Exam Training | No | 47.96±11.3 | 49 (13-65) | **-3.823** | **<0.001** |
| | Yes | 51.28±10.75 | 52 (13-65) | | |

There is a statistically significant difference in CVS scores among participants according to their occupational branches (F=15.529; p<0.001). Post-hoc analyses were conducted to determine which groups contributed to this difference. The analysis revealed that the differences were between the drywall installer (63.62±4.57) group and the groups of wooden formwork carpenter (48.98±12.39), concrete reinforcement worker (39±17.81), construction worker (46.39±10.99), gypsum plasterer (48.24±5.66), insulation board installer (45.53±9.15), bricklayer (41.17±9.23), and ceramic tile installer **($p^{ah}$<0.001, $p^{ch}$=0.011, $p^{dh}$<0.001, $p^{gh}$<0.001, $p^{hı}$<0.001, $p^{hi}$<0.001, $p^{hj}$<0.001).**

There is a statistically significant difference in CVS scores according to the participants' years of experience in their professions (F=13.563; p<0.001). Post-hoc analyses were conducted to determine which groups contributed to this difference. The analysis showed that the differences were between the 5-10 years (52.15±10.9) group and the 0-1 year (45.17±10.56), 1-5 years (49.16±10.65), and 10 years and above (46.87±10.97) experience groups **($p^{ac}$<0.001, $p^{bc}$=0.001, $p^{cd}$<0.001)**.

There is a statistically significant difference in CVS scores according to the participants' employment duration in construction work within a year (F=13.873; p<0.001). Post-hoc analyses were conducted to determine which groups contributed to this difference. The analysis indicated that the difference was between the 0-3 months (44.1±11.27) group and the 6-9 months (51.64±11) group **($p^{ac}$<0.001).**

There is a statistically significant difference in CVS scores according to whether participants have witnessed disciplinary actions due to employing uncertified workers (F=19.594; p<0.001). Post-hoc analyses were conducted to determine which groups contributed to this difference. The analysis showed differences between the "yes" (56.75±9.17) group and the "no" (48.01±11.66) and "not aware" (49.53±7.74) groups **($p^{ab}$<0.001, $p^{bc}$<0.001)**.

There is a statistically significant difference in CVS scores according to the initial source of awareness about the VQC among participants **(F=7.976; p<0.001)**. Post-hoc analyses were conducted to determine which groups contributed to this difference. The analysis revealed differences between the groups informed by coworkers (46.89±10.71) compared to those informed by ACBs (52.18±10.64) and the internet (54.36±11.5), and between those informed by employers (47.47±11.19) compared to those informed by ACBs (52.18±10.64) and the internet (54.36±11.5).

There is a statistically significant difference in CVS scores between participants motivated to obtain the VQC for the purpose of working abroad (45.83±9.79) and those who are candidates for obtaining the VQC for other reasons besides working abroad (50.31±11.48) **(t=5.238; p<0.001)**.

There is a statistically significant difference in CVS scores between participants who stated they were motivated to obtain the VQC due to external pressure (53.13±10.77) and those who declared they did not face such pressure when applying for the VQC (48.77±11.2) **(t=-2.736; p=0.006)**.

There is a statistically significant difference in CVS scores between participants who entered the certification process through the guidance of an ACB (51.57±10.11) and those who initiated the certification process without any external guidance (48.7±11.34) **(t=-2.370; p=0.018)**.

There is a statistically significant difference in CVS scores between participants who frequently work in construction jobs located in the Marmara Region (47.71±9.86) and those working in different locations outside the Marmara Region (49.58±11.64) **(t=2.156; p=0.032)**.

There is a statistically significant difference in CVS scores between participants who predominantly work in construction jobs in the Southeastern Anatolia Region (45.29±8.34) and those employed in the construction sector in different regions outside the Southeastern Anatolia Region (49.64±11.48) **(t=4.427; p<0.001)**.

There is a statistically significant difference in CVS scores between participants who received training before the certification process (51.28±10.75) and those who did not receive any training before taking the exams (47.96±11.3) **(t=-3.823; p<0.001)**.

The relationship between the categorical variables of the participants and the groups formed by splitting the CVS scores at the median value of 50 was examined (Table 5).

***Table 5.*** *The relationship of participants' CVS groups with categorical variables*

| | | Scale Group | | | |
|---|---|---|---|---|---|
| | | Below 50 | 50 and above | $X^2$ | p |
| Gender | Female | 3 (0.83%) | 3 (0.81%) | 0.001* | 1.000 |
| | Male | 359 (99.17%) | 366 (99.19%) | | |
| Education | Illiterate | 2 (0.63%) | 6 (1.73%) | **18.137**** | **<0.001** |
| | Primary School | 188 (59.49%) | 251 (72.54%) | | |
| | High School | 105 (33.23%) | 80 (23.12%) | | |
| | University | 19 (6.01%) | 9 (2.6%) | | |
| | Graduate School | 2 (0.63%) | 0 (0%) | | |
| Job | Wood Pattern Maker | 16 (4.79%) | 26 (7.45%) | **81.293*** | **<0.001** |
| | Panel Pattern Maker | 5 (1.5%) | 2 (0.57%) | | |
| | Reinforced Concrete Worker | 3 (0.9%) | 1 (0.29%) | | |
| | Construction Worker | 179 (53.59%) | 121 (34.67%) | | |
| | Construction Painter | 70 (20.96%) | 118 (33.81%) | | |
| | Plasterer | 7 (2.1%) | 5 (1.43%) | | |
| | Gypsum Plaster Applicator | 15 (4.49%) | 6 (1.72%) | | |
| | Gypsum Board Applicator | 2 (0.6%) | 48 (13.75%) | | |
| | Thermal Insulator | 11 (3.29%) | 6 (1.72%) | | |
| | Bricklayer | 0 (0%) | 0 (0%) | | |
| | Ceramic Tile Layer | 10 (2.99%) | 2 (0.57%) | | |
| | 0-1 year | 16 (4.79%) | 14 (4.01%) | | |
| Work Experience Months Worked per Year | 1-5 years | 53 (15.01%) | 25 (6.87%) | **22.945*** | **<0.001** |
| | 5-10 years | 74 (20.96%) | 84 (23.08%) | | |
| | 10 years and above | 111 (31.44%) | 163 (44.78%) | | |
| | 0-3 months | 115 (32.58%) | 92 (25.27%) | | |
| Months Worked per Year | 3-6 months | 74 (21.45%) | 34 (9.71%) | **25.011*** | **<0.001** |
| | 6-9 months | 63 (18.26%) | 71 (20.29%) | | |
| | 9-12 months | 118 (34.2%) | 168 (48%) | | |
| | No | 90 (26.09%) | 77 (22%) | | |
| Penalty | Yes | 288 (83%) | 240 (67.61%) | **34.777*** | **<0.001** |
| | I don't know | 12 (3.46%) | 57 (16.06%) | | |
| | TV Advertisement | 47 (13.54%) | 58 (16.34%) | | |
| Where Heard About | Colleague | 5 (1.43%) | 4 (1.13%) | **45.189*** | **<0.001** |
| | Employer | 126 (36%) | 87 (24.51%) | | |
| | Examination Institution | 130 (37.14%) | 97 (27.32%) | | |
| | Internet | 68 (19.43%) | 110 (30.99%) | | |
| | Other | 8 (2.29%) | 42 (11.83%) | | |
| | Female | 13 (3.71%) | 15 (4.23%) | | |
| Exam Training | No | 260 (71.82%) | 223 (60.43%) | **10.575*** | **0.001** |
| | Yes | 102 (28.18%) | 146 (39.57%) | | |

There is a statistically significant relationship between participants' education level and the CVS score groups **($X^2$=18.137; p<0.001)**. Among participants with CVS scores below 50, 59.49% (n=188) are primary school graduates, while those who are illiterate and postgraduate graduates are distributed equally at 0.63% (n=2). Among participants with CVS scores above 50, 72.54% (n=251) are primary school graduates. There are no postgraduate graduates in this scale group.

There is a statistically significant relationship between the NQs that participants aspire to obtain a VQC in and the CVS score groups **($X^2$=81.923; p<0.001)**. Among participants with CVS scores below 50, 53.59% (n=179) applied to be certified in the construction worker field, and 0.6% (n=2) in the drywall installer field. Among participants with CVS scores above 50, 34.67% (n=121) are construction workers and 0.29% (n=1) have initiated the certification process in the panel formwork installer qualification.

There is a statistically significant relationship between participants' sector experience and CVS score groups **($X^2$=22.945; p<0.001)**. Among participants with CVS scores below 50, 32.58% (n=115) have 10 years or more of sector experience, and 15.01% (n=53) have at most one year of sector experience. Among participants with CVS scores above 50, 44.78% (n=163) have 5 to 10 years of experience, and 6.87% (n=25) have at most one year of sector experience.

There is a statistically significant relationship between the durations participants are employed in construction work within a year and the CVS score groups **($X^2$=25.011; p<0.001)**. Among participants with CVS scores below 50, 34.2% (n=118) work in construction for 6 to 9 months and 18.26% (n=63) for 3 to 6 months per year. Among participants with CVS scores above 50, 48% (n=168) work in construction for 6 to 9 months, and 9.71% (n=34) work for at most 3 months per year.

There is a statistically significant relationship between participants' previous encounters with disciplinary actions due to employing uncertified workers and CVS score groups **($X^2$=34.777; p<0.001)**. Among participants with CVS scores below 50, 83% (n=288) have not encountered any disciplinary action, and 3.46% (n=12) answered "yes" to this question. Among participants with CVS scores above 50, 67.61% (n=240) answered "no" to the question of whether they have encountered disciplinary action, and 16.06% (n=57) stated that they had encountered a disciplinary action due to employing uncertified workers at least once in their working life.

There is a statistically significant relationship between the sources from which participants first heard about the VQC and CVS score groups **($X^2$=45.189; p<0.001)**. Among participants with CVS scores below 50, 37.14% (n=130) first learned about the existence of such a certificate from their employers, and 1.43% (n=5) learned about it from TV commercials. Among participants with CVS scores above 50, 30.99% (n=110) first became aware of the VQC through ACBs, and 1.13% (n=4) through TV commercials.

There is a statistically significant relationship between pre-exam training status and CVS score groups **($X^2$ = 0.575; p = 0.001)**. Among participants with CVS scores below 50, 71.82% (n=260) answered "no" to the question of whether they had previously received training, while 60.43% (n=223) of participants with CVS scores above 50 also answered "no" to this question.

## 5. DISCUSSION AND CONCLUSION

This section is divided into 2 subsections. The first subsection will discuss the observations made by Coşkun ÇAKMAK, who serves as a technical expert in the construction sector in VQA processes, during the surveys he personally conducted. The second subsection will focus on the discussion of the statistical results presented in the findings section.

### 5.1. Field Observations

This study was conducted on candidates who were about to take the exam to obtain a VQC. Therefore, the exam environment provided by the ACBs, the behaviour of the candidates, and the attitudes and behaviours

of the personnel conducting the assessment and evaluation process were observed. Field impressions, conclusions, and suggestions regarding the certification process are detailed below.

Field Observations (FO) and Suggestions (S):

FO1: Different levels of comfort areas are available for candidates at the exam venues where the surveys were conducted. This results in candidates taking the same VQC exam under varying conditions across the country. In some exam centers, there are no waiting areas for candidates, while in others, air-conditioned waiting areas are provided.

S1: ACBs undergo stringent accreditation and authorization processes to manage certification processes on behalf of VQA. It is believed that the areas mentioned in FO1 are not physical areas approved by Turkish Accreditation Agency (TÜRKAK) and VQA inspection teams. Reducing the inspection periods after the initial accreditation and authorization processes by both institutions would be beneficial. Also, implementing an easy feedback algorithm (e.g., an Android app, random phone surveys etc.) to gather feedback from candidates who have taken the exam would help ensure system quality assurance.

FO2: Some candidates were seen to have applied for an exam in a field where they had no experience. For instance, some candidates who applied and came for the 16UY0253-2 Construction Worker (Rev. No:00) certificate exam declared that they had no prior experience in the construction sector.

S2: A large portion of the NQs published by VQA within the NQS framework does not include any prerequisites for certification candidacy. In a sector such as construction, where working conditions are hazardous and many risk factors are present, allowing candidates to take the exam without prerequisites poses a risk of not being able to manage any hazards encountered during the exam. Thus, requiring a document proving prior work experience in the applied job field, such as an insurance document, might serve as a root solution for the assessment and evaluation process.

FO3: It was observed that some candidates applied for qualifications other than those they primarily perform in the sector and took exams to obtain these certificates.

S3: Not every sub-job in the construction sector has a corresponding NQ. For example, those who only perform marble work on construction sites often join the 12UY0051-3 Ceramic Tile Installer (Rev. No:01) exams. Since VQA does not have a NQ for marble workers, candidates prefer to join the 12UY0051-3 Ceramic Tile Installer (Rev. No:01) exam even though the application details and difficulty are quite different. It is assessed that VQA should take steps to organize the certification process for occupations that are not yet on the NQ list but have many practitioners in the sector.

FO4: Some candidates were observed struggling with reading questions, unable to answer even the simplest survey questions, and making significant efforts to understand the questions.

S4: Candidates take theoretical and performance exams to obtain the VQC. It is noted by ACBs that candidates particularly have difficulty with theoretical exams. Thus, conducting theoretical exams orally, as in the exams for 11UY0011-3 Wooden Formwork Carpenter (Rev. No:03), 11UY0012-3 Concrete Reinforcement Worker (Rev. No:03), and 16UY0253-2 Construction Worker (Rev. No:00), would enable those who perform well in their jobs but struggle to comprehend what they read due to exam stress to pass these processes more easily.

FO5: The theoretical and performance exam areas used in different exam centers are set up and quality-wise vary significantly.

S5: VQA documentation includes various guides and regulations containing information about exam conditions. The authors of this study believe that there is no need to define or limit the environment for theoretical exams in any guide, regulation, or directive. However, during the study, it was observed that theoretical exams were conducted in very different physical conditions and that the quality of performance

exam areas showed significant variability. Increasing the number of unannounced inspections by VQA and, if quality differences are detected, stopping the exam processes of those institutions until they document meeting the relevant quality standards to ensure uniformity across institutions is deemed important.

### 5.2. Statistical Inferences

• Participants aiming to obtain the Gypsum Board Applicator certification have expressed quite positive views regarding the certification process. Gypsum board application has become a widespread preference in partition wall applications in the construction sector in recent years, primarily due to ease of application within the construction industry, the relatively efficient resolution of process errors without showing them to the end user, and the significant acceleration of construction progress [25]. Hence, the demand for qualified personnel in this field is increasingly crucial. Additionally, the NQ of 12UY0054-3 Gypsum Board Applicator (Rev. No:00) is considered somewhat less demanding in terms of assessment processes compared to other NQs of construction sector. Therefore, it can be said that the success rates of candidates taking the exam are higher compared to other qualifications. The perceived strength of certification in the sector and the relatively straightforward assessment process contribute to the positive perceptions among participants aspiring to obtain certification in this sector.

• NQ of the construction worker is the most certified one by ACBs. As known, a construction worker is an employee who performs jobs with the lowest risk factors at construction sites by following instructions. It can be defined as a profession that almost all employers need but requires less professional knowledge compared to professions such as form worker, ironworker, and plasterer. At the same time, as mentioned in the field observations section, there is a considerable number of candidates for construction worker exams who do not have sufficient sector knowledge and experience. One of the reasons for this inappropriate situation is that the 16UY0253-2 Construction Worker (Rev. No:00) NQ is at Level 2. At this level of qualification, individuals are expected to perform basic tasks with limited autonomy under supervision [26]. Furthermore, the fact that there is no legal requirement for proof of working in the relevant profession before assessment processes also triggers the participation of irrelevant individuals in exam processes. It is thought that these candidates provide responses that negatively evaluate the certification system due to their lack of theoretical professional knowledge, experience, and professional awareness. Another inference would be beneficial at this point. ACBs have been financially supported by the government for a period for each successful candidate. ACBs have raised awareness about the necessity of the exam to many participants through promotional activities. However, it is believed that ACBs direct individuals unrelated to the construction sector towards the certification process to maximize the benefits of this financial support received.

• It is considered that participants with professional experience of up to 1 year or less have a lack of positive thoughts about the certification process due to their lack of professional experience. In addition, it is evaluated that the negative views of participants with 10 years or more of professional experience, which parallel those with 0-1 year of experience, stem from their belief that they are already sufficiently skilled and competent, and they perceive an official title obtained through examination as unnecessary. However, participants with 1 to 5 years and 5 to 10 years of professional experience approach the topic with a somewhat more comprehensive perspective, evaluating the necessity of the certification and assessment process positively, demonstrating that the VQC and assessment process are beneficial.

• Similarly to the above inference, it is observed that workers who work in construction for up to 3 months per year have thoughts that the certification process is not beneficial because they are less exposed to the necessity of the VQC. Additionally, participants who are employed in construction for more than half of the year (6-9 months) are thought to express views positioning the value of certification in a positive light with a more comprehensive approach.

• According to our laws, certification is mandatory for every profession for which certification standards have been published by the VQA, and individuals without having VQC cannot be employed. As of 2025, the administrative fine for each uncertified worker has been set at ₺7156.00 (~$200). Participants who have witnessed this penalty procedure conducted by labor inspectors directly experienced the seriousness of the

matter, leading them to provide responses indicating that the VQC and certification processes are necessary and beneficial. Similarly, participants who have not witnessed such an inspection and penalty procedure clearly have contrary opinions.

• 203 participants indicated that one of their motivations for obtaining VQC is to be able to work abroad. 75 of these 203 individuals stated that they have no other reason for seeking certification besides the ability to work abroad. Additionally, 42 participants marked the option related to working abroad as one of their two motivations for obtaining certification. It is evaluated that these individuals view the VQC as a tool to easily find jobs abroad and may not have deeply analysed topics such as the certification process, its impact on the construction sector, benefits, and shortcomings in their responses to survey questions due to lack of other motivations. Participants who did not mark working abroad as a motivation for obtaining certification generally have positive opinions about the usefulness of the VQC and the certification process. This is believed to be because these candidates perceive that obtaining the VQC increases their potential to find employment in Türkiye and have faith that completing a legally mandatory assessment process enables them to participate in the employment process.

• Candidates who wish to obtain VQC due to pressure from their surroundings responded to the scale questions in a manner that indicates they view the system's operation positively. Out of the 53 candidates who marked this option, 23 of them identified pressure from their surroundings as the sole reason for seeking certification. It is believed that this pressure comes from their colleagues at work. It is evaluated that the pressure from their surroundings, includes information about the legal status, necessity, and position of the VQC in Türkiye, and encourages uncertified workers to start and progress in the process.

• There are 100 participants who indicated that they entered the certification process through ACBs. ACBs have received certain incentives from the government for each successful candidate during the assessment process they organize. It wouldn't be wrong to say that the sustainability of ACBs is directly proportional to the number of successful candidates in exams. Therefore, it is necessary for ACBs to find candidates who can take the exam and inform them about the position, legal status, and advantages of Türkiye's NQS laws. It is evaluated that ACBs also handle these referrals with some commercial concerns, explaining the system in detail to the candidates they find. These candidates are considered more knowledgeable about the process, and they have provided answers indicating that they find the VQC and certification system beneficial with this expertise. Among these participants, 39 first learned about the existence of the VQC through ACBs. It can be naturally accepted that ACBs advertise the VQC to some extent due to their roles. However, the fact that these 39 individuals have an average age of 35.3 and were unaware of the VQC’s existence until now, leads us to conclude that the promotional activities of VQA and the inspections conducted by the Ministry in the sector may not have been sufficient.

• The Southeastern Anatolia region is not accurately characterized as lagging behind the rest of the country in terms of the exams conducted and resources allocated for issuing VQC. However, it is the region where ACBs, based in different central cities, are most generous in establishing temporary exam centers. This indicates that these organizations do not focus their main operations and human resources in this region. Due to reasons such as organizations in Southeastern Anatolia touching candidates more superficially and not leaving a lasting impression, participants working in this region are perceived to have a more negative view towards VQC and the system compared to their counterparts in other regions.

• Participants who stated that they received training before the exam responded in a manner that indicates they found the system useful. It would not be wrong to interpret that receiving training before the assessment process and being equipped with information about the system positively influenced these candidates' perspectives on the system. Nearly one-third of the participants (n: 253) indicated that they received training, out of which 163 will be taking the exam for the first time. As indicated by the statements of some candidates in this study, similar to Yaşar's [19] study, a significant portion of candidates were informed by ACBs before the exam and considered this as a form of training. From this, it can be inferred that some candidates may have a lack of knowledge regarding the concept of training. It would not be incorrect to suggest that VQA should develop an appropriate training policy for assessment processes and/or coordinate this process with the MoNE.

• The majority of participants, who believe that the VQC and certification processes are positive, are mostly elementary school graduates, indicating that VQA is implementing the lifelong learning philosophy in line with its EU mission. These individuals, who last sat in student desks in elementary school, feeling included in a learning and achievement ecosystem again, tend to focus more on the benefits of VQC, similar to possessing a diploma from high school or university.

## CONFLICTS OF INTEREST

No conflict of interest was declared by the authors.

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