



# Perceived Market Demand for Filipino Civil Engineers in the Kingdom of Bahrain

Jimmy A. Nebrida <sup>a,b\*</sup>

<sup>a</sup> Bahrain Training Institute, Ministry of Education, Kingdom of Bahrain, Bahrain.  
<sup>b</sup> Graduate School, Samar State University, Philippines.

## Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

## Article Information

DOI: 10.9734/JERR/2022/v22i117513

## Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/81728>

Original Research Article

Received 15 October 2021  
Accepted 20 December 2021  
Published 07 January 2022

## ABSTRACT

This study aimed to find out the market demand for Filipino civil engineers in the Kingdom of Bahrain. Specifically, it tried to determine the market demand for Filipino civil engineers in terms of communication skills, computer skills, managerial skills, technical expertise, environmental awareness, linkages with other agencies, keeping abreast with new technologies and soft skills; to know if there is significant relationship between the profile of the civil engineers and the perceived market demands. Descriptive-quantitative correlational method of research was used in this study. The data gathered were analyzed and interpreted using frequency counts, percentages, mean and Pearson's r for relationship. SPSS software was used in statistical analysis. Results show that 92 % of the respondents were male, 88.24% passed the Licensure Examination for Civil Engineers, 33.3% were in top management as consultants/managers/project supervisors, 94.12% have 7 years and above of experience, 90.2% attended more than 7 trainings/seminars and 59.4% were holders of Bachelor in Civil Engineering. The market demand for Filipino civil engineers was perceived by themselves as much needed. Market demand and gender has a p value of 0.43, market demand and eligibility has a p value of 0.33, market demand and type of employment has a p value of 0.43, market demand and years of experience has a p value of 0.88, market demand and seminars has a p value of 0.82, and market demand and educational attainment has a p value of 0.81. It implied that there is insufficient evidence to support the claim that there is a significant relationship between market demand and the profile of Filipino civil engineers in the kingdom of Bahrain.

*Keywords: Employment demand; civil engineers; engineers; market demand.*

## **1. INTRODUCTION**

Construction industry in Bahrain is one of the contributing factors for the physical, social, economic, and technological development of the country as it is noticeable in the kingdom of Bahrain, with new construction of high-rise buildings intended for commercial and residential purposes, and road constructions that cater improvement for smooth movement of traffic are currently commencing for development.

According to Tamkeen's Market Gap Studies report, despite the general economic recession, Bahrain's construction and real estate sectors have been busy. The construction of buildings contributed the most to the construction services sector's total revenue in 2008 (value of production), with the construction of buildings contributing the most to this revenue. This report highlighted the demand for civil engineers in the construction industry [1]. In addition to this market demand, the construction business in Bahrain is the fastest growing non-oil sector, contributing considerably to the country's growth. According to the most recent figures available, construction is the leading employer for foreigners, with 13,073 work permits (or 33 percent of the total) given in the second quarter of 2018. Construction expanded at a greater rate than the whole economy, which expanded by 1.8 percent. 119 tenders of BD278 million (\$737.4 million) for roads, sewage systems, and buildings were awarded during the year, with total spending on these projects totaling BD48 billion (\$127.3 billion) for 304 projects. [2].

Other major construction projects which are currently in the works like rail line development, public transport network, Bahrain International Airport Expansion and many more. This information shows the challenge on how the labour market would respond to the increasing development of the country. In this regard, the private sector plays a vital role as partners in the capital investment for the construction of government projects, and manpower supply for the skills required specifically for roads and building constructions. In addition, variety of professionals are involved in achieving the challenge of the country for development.

Employment for civil engineers is always instrumental to modern civilization. They design

and build roads, bridges, dams, buildings, and other things that make up modern civilization. Today, they are more important than ever because society depends on science and technology to keep it running and become more progressive. Knowledge and abilities connected to technical expertise are insufficient in today's trend of demand for civil engineers. Communication, project management, and leadership abilities are becoming increasingly important. According to some analysts, the demand for civil engineers is increasing, particularly in terms of attributes such as adaptability, wide education, and readiness to handle future challenges [3].

In today's world, where technology is rapidly advancing, the civil engineering profession should contemplate a shift in focus program structure that meets the construction industry's needs. Institutions must assess their current program structure to determine the type of civil engineer required to meet industry demand. Similarly, issues such as the mismatch between academe's abilities and industry's needs, unit duplication and overlaps, and communication barriers should be regarded as drivers for improving the current civil engineering program structures.

In keeping with this, excellent preparation for a career in civil engineering should include a mix of classroom learning and hands-on experience. The demand for time, which identifies the desire for employment, should be considered in civil engineering curriculum. The rapid advancement of technology has an impact on the demand for civil engineers. As the civil engineering profession becomes more reliant on innovation, modification, and incursion brought on by rapid technological development, it has been noticed that young civil engineers are having difficulty keeping up with current civil engineering trends and practices.

To this purpose, the researcher was compelled to determine the employment need for civil engineers in the kingdom of Bahrain in order to discover the factors that influenced the skills of a civil engineer. The researcher is convinced that the outcomes of this study will help to update and upgrade the civil engineering curriculum in order to stay up with the fast-changing civil engineering practice.

## **1.1 Objectives of the Study**

This study aimed to find out the market demand for civil engineers. Specifically, it tried:

- a. To determine the perception of the respondents as to the market demand for civil engineers, in terms of communication skills, computer skills, managerial skills, technical expertise, environmental awareness, linking with other agencies, keeping abreast with new technologies, and soft skills.
- b. To determine if there is significant relationship between the profile of the civil engineers and the perceived market demands.

## **1.2 Scope of the Study**

This study was focused on the Market Demand for Civil Engineers to know the perception of the respondents as to the employment demand for civil engineers, in terms of communication skills, computer skills, managerial skills, technical expertise, environmental awareness, linking with other agencies, keeping abreast with new technologies and soft skills.

The respondents were the civil engineers working in the Kingdom of Bahrain. This study was conducted from October to December 2021.

## **1.3 Conceptual Framework**

This research is based on the idea that the ultimate measure of the effectiveness of an engineering course is felt when graduates landed a job in line with his expertise. It is in this stage that we can measure the effectiveness of a certain curriculum that molds the student during his college years as to global standard.

To reinforce this concept, a paradigm is shown.

## **2. METHODOLOGY**

### **2.1 The Respondents**

The respondents of this study that assessed the market demand for Filipino civil engineers in terms of communication skills, computer skills, managerial skills, technical expertise, environmental awareness, linking with other

agencies, keeping abreast with new technologies, and soft skills were 51 civil engineers working in private companies and ministries of the Kingdom of Bahrain.

The respondents accomplished an information sheet that gathered data on their personal profile such as sex, age, status of employment, number of trainings/seminars, number of years of experience and highest educational attainment. They accomplished the questionnaire on their ratings on the employment demand for civil engineers in terms of communication skills, computer skills, managerial skills, technical expertise, environmental awareness, linkages with other agencies, keeping abreast with new technologies and soft skills.

### **2.2 Research Design**

This study employed the descriptive - correlational method of research. It focused on identifying some of the civil engineers' personal profile, their perception on the demands of employment for civil engineers in terms of communication skills, computer skills, managerial skills, technical expertise, environmental awareness, linkages with other agencies, keeping abreast with new technologies and soft skills. Correlational studies are designed to help determine the relationship to which different variables are related to each other. Best defines descriptive research as the description, recording, analysis, and interpretation of condition that exist. It involves some type of comparison and contrast and attempts to discover between existing non-manipulated variables [4].

### **2.3 Research Instruments**

The researcher used questionnaire in gathering data. The set of the questionnaire for the respondents was consisted of two parts: Part I of the questionnaire was the personal profile of the civil engineer-respondents, which includes the age, sex, status of employment, number of years of experience, trainings/seminars, and highest educational attainment. Part II was on the perception on the market demands for civil engineers in terms of communication skills, computer skills, managerial skills, technical expertise, environmental awareness, linkages with other agencies, keeping abreast with new technologies and soft skills.

## 2.4 Scoring and Interpretation

**Trainings/seminars:** This was categorized into 1-3, 4-6 and 7 and above trainings and seminars attended.

**Experience:** This was categorized as follows:

- 1 - 3 years
- 4 - 6 years
- 7 years and above

**Employment Demand:** This includes perception of respondents in terms of communications skills, computer skills, managerial skills, technical expertise, environmental awareness, linkages with other agencies, and keeping abreast with new technologies. Item in the questionnaire was scored using the scale below:

- 4 Much Needed
- 3 Moderately Needed
- 2 Fairly Needed
- 1 Not Needed

The result was interpreted using the scale with the corresponding interpretation as stated below:

Range	Description
3.501 - 4.000	Much needed
2.501 - 3.500	Moderately Needed
1.501 - 2.500	Fairly Needed
1.000 - 1.500	Not Needed

## 2.5 Statistical Treatment of Data

The data gathered were analyzed using the following statistical tools [5]: frequency counts and percentages for the data on personal profile and for the ratings on the employment demand of civil engineers in terms of communications skills, computer skills, managerial skills, technical

expertise, environmental awareness, professional advancement, keeping abreast with new technologies and soft skills. The formula was:

$$P = \frac{F}{N} \times 100$$

where:

- P = Percentage
- F = Frequency
- N = Number of Respondents

For the employment demand of civil engineers, weighted mean was used [6]. The formula was:

For the mean:

$$X_m = \frac{NR \times CP}{N}$$

Where:

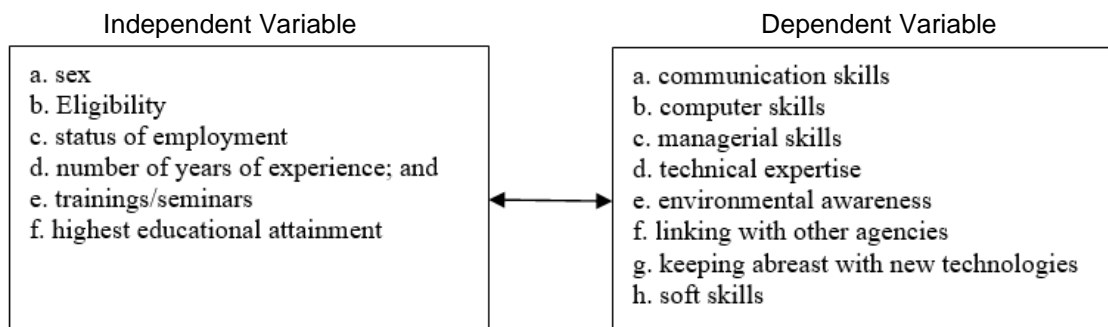
- X<sub>m</sub> = Arithmetic Mean
- NR = Number of responses registered in any category
- CP = Number of responses assigned to any category
- N = Number of Scores or cases

Pearson's Correlation Coefficient (to determine the degree of correlation between profile of the civil engineers and the perceived market demands). SPSS was used in the calculation.

$$R = \frac{n \sum xy - (\sum x)(\sum y)}{\sqrt{[n \sum x^2 - (\sum x)^2][n \sum y^2 - (\sum y)^2]}}$$

where:

- R = Pearson's Correlation Coefficient;
- X = profile of the civil engineers;
- Y = perceived market demands; and
- n = population size.



**Fig. 1. The schematic diagram on the relationship between the independent and dependent variables**

### 3. RESULTS AND DISCUSSION

#### 3.1 Profile of the Respondents

**Sex:** Fig. 1 below shows that 92 % of the respondents were male, while only 8 % were female. This implies that civil engineering profession is a male dominated one. In the study of Perea et.al. [7], the findings on building engineering career development show that the perception of professional constraints varies by gender.

**Eligibility:** In terms of eligibility, 88.24 % passed the Civil Engineering Licensure Examination, 1.96 % passed the Civil Service Professional Examination and Civil Engineering Licensure Examination, and 7.84 % completed the other qualifications. The findings suggest that the civil engineering license examination is important in professional activity in Bahrain. According to Law No 51 for 2014 on Regulating the Practice of Engineering Professions, the Council for Regulating the Practice of Engineering Professions is the governmental authority in the Kingdom of Bahrain that is responsible for licensing all engineering offices and all engineers in the kingdom and one of their requirements is the license of civil engineers regulated by Philippines Professional Commission [8].

#### 3.2 Status of Employment

Status of employment was analyzed on the basis of the following categories: type of employment and position of the respondents. As to the type of employment, 74.51% were employed in private construction firms, 23.53% were employed in government institutions and 1.96% were self-employed. This implies that, according to the findings of this survey, private construction enterprises are the primary employer of civil engineers in Bahrain.

The position of the respondents, 33.3% were in top management as consultants/managers/project supervisors, 41.2% in middle management as QS engineer and Structural engineer while, 19.6 % were on operational level as site engineers and supervisors. This means that majority of the respondents are employed on a job that fits to their field as civil engineers. According to the study of Adiong, the provincial development plan foresees significant structural changes in the area in the coming years, as well as a demand for engineers between 2009 and 2013, and it was discovered that there will be a

strong demand for engineering graduates in the next five years, particularly due to the retirement of engineers [9]. The construction sector of Bahrain is the fastest growing non-oil sector which contributes the significant development of the country. According to the Oxford Business Group, the construction's total market value rose to \$8.4bn in 2018, from \$7.9bn in 2017. The rate of growth averaged 5.1% a year between 2014 and 2018. The construction is the top employer for expatriates reported as highest number of work permits – 13,073 or 33% of the total – issued in the second quarter of 2018, the most recent statistics available [2].

#### 3.3 Number of Years of Experience

The years of experience reveals that 94.12% have 7 years and above of experience, while 1.96% for 1 - 3 years of experience. This means that most of the respondents have enough experience in the field of civil engineering needed for the skills demanded by the construction industry. The project events had a considerable impact on project workers' work-life experiences in construction [10].

#### 3.4 Number of Training/Seminars Attended

As to number of training/seminars attended, it reveals that 90.2% attended more than 7 trainings/seminars while 9.8 % attended 4 -6 trainings/seminars. It could be inferred that all respondents are willing to attend trainings and seminars for them to keep abreast with the latest innovations and technical know-how in the field of civil engineering. Several recounts of teaching experiences show that ESL teachers need more support in terms of training and professional development to ensure literacy skills mastery among pupils with dyslexia [11].

#### 3.5 Highest Educational Attainment

Highest educational attainment of respondents revealed that 59.4% were Bachelor in Civil Engineering holders, 25.49% have earned master's units only, 15.69% holder of master's degree, and 3.92% has earned doctoral degree. These figures show that almost half of the respondents are pursuing post graduate studies with some of them completed doctorate degree. In the study on factors relating to engineering identity, educational advancement, gender, and

professional development are important factors to be considered as engineers [12].

### 3.6 Market Demand for Filipino Civil Engineers

Table 2 shows the employment demand for civil engineers as perceived by the respondents. The respondents perceived soft skills as the highest, with a mean of 3.79, interpreted as much needed, while communication skills scored the lowest, with a mean of 3.36 interpreted as moderately needed. This suggests that the personal qualities of civil engineers in dealing with work are in high demand in the market and

are top priority for the Bahraini construction sector.

In totality, the table reveals a grand mean of 3.54, interpreted as much needed. The respondents also perceived market demand in terms of keeping abreast with new technologies, managerial skills and computer skills as much needed with a mean of 3.62, 3.63 and 3.58 respectively. This means that skills in the application of new technologies and management skills for construction projects, such as modern construction methods and processes, computer skills such as AutoCAD, MS Office, Structural software, and internet assessing, are in high demand in the civil engineering

**Table 1. Profile of respondents**

<b>Sex</b>	<b>Frequency</b>	<b>Percentage</b>
Male	47	92.20
Female	4	7.80
Total	51	100
<b>Eligibility</b>		
Licensure Exam for Civil Engineers	45	88.24
Civil Service Examination (Professional)	1	1.96
Others	4	7.84
Total	51	100
<b>Type of Employment</b>		
Private	38	74.51
Government	12	23.53
Self Employed	1	1.96
Total	51	100.00
<b>Position</b>		
Top Management e.g. Consultant/Manager/Project Supervisor	17	33.33
Middle Management e.g. QS Engr/Structural Designer	21	41.18
Operational level e.g. Site Engineer/Supervisor	10	19.61
Others		5.88
Total	51	100.00
<b>Number of Years of Experience</b>		
1 – 3 years	17	1.96
4 – 6 years	21	3.92
7 years and above	10	94.12
Total	51	100.00
<b>Number of Trainings and Seminars attended</b>		
1 – 3	17	0
4 – 6	21	9.80
7 and above	10	90.20
Total	51	100.00
<b>Highest Educational Attainment</b>		
BS degree holder	28	54.90
Earned masteral units	13	25.49
Masteral degree holder	8	15.69
Doctoral degree holder	2	3.92
Total	51	100.00

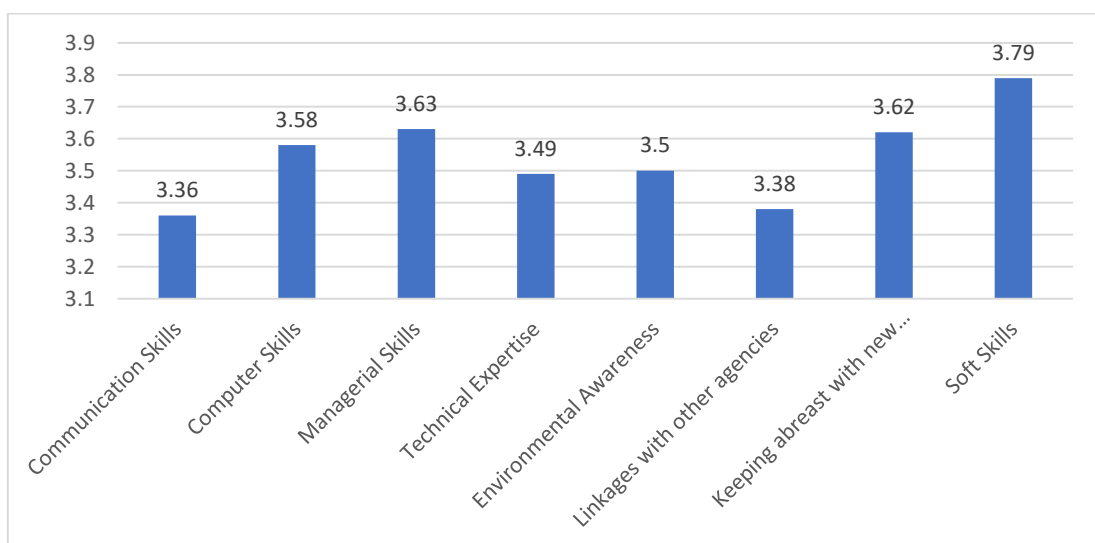
profession in Bahrain. According to Zhu and Zhang, research both domestically and internationally has shown that engineering education should return to engineering practice. Practice education is the foundation for engineering education, and it helps to strengthen project-oriented training and practice-oriented projects, both of which should be implemented in the classroom. As a result, training courses across the curriculum play an important role in the system, which should include teaching reform in course content, course structure, and laboratory practice that improves students' computer skills, such as CAD, Drawing, PKPM software, and computer simulation test system [13]. While Environmental awareness, technical expertise and linkages with other agencies got a mean of 3.50, 3.49 and 3.38 respectively interpreted as moderately needed. This implies that skills related to the awareness on the preparation of environmental impact assessment, technical expertise and linkages with other agencies are moderately needed for employment in Bahrain setting. This could be inferred that the

type of job offered by most of the companies hiring civil engineers moderately require the skills related to technical expertise, environmental awareness, and linkages with other agencies. Likewise, communication skills were perceived to be the lowest interpreted as moderately needed which mean that the type of employment offered by most of the construction companies and government agencies in the Kingdom moderately needs communication skills. The results show the needed skills by the construction industry in both public and private agencies which helps bridge the gap between of skills provided by the academic institutions and skills needed by the industry. Jia, et al. (2019) examine the conditions under which the expansion of producer services drives job growth from the demand and supply perspectives. Studying the influencing elements of producer services employment is vital and necessary in order to fully explore the employment growth potential of producer services and promote the solution of China's current structural employment challenges [14].

**Table 2. Perception of respondents on market demand for Filipino civil engineers in the Kingdom of Bahrain**

a. Communication Skills	As perceived by Civil Engineer Respondents	
	Weighted mean	Interpretation
1. Oral proficiency in English	3.68	Much Needed
2. Written proficiency in English	3.70	Much Needed
3. Oral proficiency in other foreign language	3.70	Much Needed
4. Written proficiency in other foreign language	2.34	Fairly Needed
<b>Mean</b>	3.36	<b>Moderately Needed</b>
<b>b. Computer Skills</b>		
MS Office	3.76	Much Needed
Computer aided drafting e.g. AutoCAD	3.54	Much Needed
STAAD, REVIT, ETABS, Project Planner	3.40	Much Needed
Primavera and other Computer Aided Software		
Internet Assessing	3.60	Much Needed
<b>Mean</b>	3.58	<b>Much Needed</b>
<b>c. Managerial Skills</b>		
Leadership	3.64	Much Needed
Time Management	3.66	Much Needed
Planning, organizing, and staffing	3.66	Much Needed
Financial and Resources management	3.54	Much Needed
<b>Mean</b>	3.63	<b>Much Needed</b>
<b>d. Technical Expertise</b>		
1. Estimating	3.54	Much Needed
2. designing	3.30	Moderately needed
3. Supervising	3.60	Much Needed
4. Consultancy	3.50	Moderately Needed
<b>Mean</b>	3.49	<b>Moderately Needed</b>
<b>e. Environmental Awareness</b>		
1. Ability to assess impact of project on the environment.	3.56	Much Needed

<b>a. Communication Skills</b>	<b>As perceived by Civil Engineer Respondents</b>	
	<b>Weighted mean</b>	<b>Interpretation</b>
2. Know how on the formulation of mitigating means.	3.48	Moderately Needed
3. Ability to coordinate with government offices.	3.52	Much Needed
4. Conservation and economics.	3.42	Moderately Needed
<b>Mean</b>	<b>3.50</b>	<b>Moderately Needed</b>
<b>f. Linkages with other agencies</b>		
OJT before graduation (internship)	3.42	Moderately Needed
Networking of school with enterprises, government agencies, and private firms	3.34	Moderately Needed
<b>Mean</b>	<b>3.38</b>	<b>Moderately Needed</b>
<b>g. Keeping abreast with new technologies</b>		
1. Familiarizing and manipulating new engineering tools.	3.64	Much Needed
2. Ability to understand and apply new problems.	3.64	Much Needed
3. Awareness in roads, bridges, ports, and harbors.	3.58	Much Needed
<b>Mean</b>	<b>3.62</b>	<b>Much Needed</b>
<b>h. Soft Skills</b>		
Flexible attitude	3.74	Much Needed
Good character and working attitude	3.82	Much Needed
Integrity and Ethical Behaviour	3.88	Much Needed
Personal development	3.84	Much Needed
Accountability	3.74	Much Needed
Problem solving	3.78	Much Needed
Teamwork	3.86	Much Needed
Dedication	3.80	Much Needed
Time and Resource management	3.74	Much Needed
Flexibility	3.74	Much Needed
Adaptability	3.74	Much Needed
Collaborative	3.74	Much Needed
<b>Mean</b>	<b>3.79</b>	<b>Much Needed</b>
<b>Grand Mean</b>	<b>3.54</b>	<b>Much Needed</b>



**Fig. 2. Market demand for filipino civil engineers in the kingdom OF Bahrain**



**Table 3. Pearson’s correlation coefficient performed between market demand and profile of the respondents for filipino civil engineers in the Kingdom of Bahrain**

	<b>Gender</b>	<b>Eligibility</b>	<b>Type of employment</b>	<b>Number of years of Experience</b>	<b>Trainings/ Seminars</b>	<b>Highest educational attainment</b>
Market Demand for Filipino Civil Engineers in the Kingdom of Bahrain	0.43	0.33	0.43	0.88	0.82	0.81

**3.7 Relationship between Respondents’ Profile and Market Demand**

Table 3 showed the p values between market demand and the profile of the respondents. Specifically, market demand and gender has 0.43, market demand and eligibility has 0.33, market demand and type of employment has 0.43, market demand and years of experience has 0.88, market demand and seminars has 0.82, and market demand and educational attainment has 0.81. This suggests that there is insufficient evidence to support the claim on the significant relationship between market demand and profile for Filipino civil engineers in Bahrain. Marcus and Gopinath revealed that age of the respondents was found to have an impact on the drivers of employee engagement while gender has no bearing on the identified factors of employee engagement [15].

**4. CONCLUSION**

The study focused on the market demand for Filipino civil engineers in the Kingdom of Bahrain. Results show that 92 percent of the respondents were male, 88.24% passed the Licensure Examination for Civil Engineers, 33.3% were in top management as consultants/managers/project supervisors, 94.12 % have 7 years and above of experience, 90.2% attended more than 7 trainings/seminars and 59.4% were holders of Bachelor in Civil Engineering. These figures imply that market demand for Filipino civil engineers is male dominated profession with requirement of the licensure examination from the PRC (Philippine Regulation Commission) and employment offers majority for top management with needed 7 years and above experience and with relevant trainings and seminars attended. It also shows that majority of employers are accepting civil engineers in bachelor’s degree level.

The market demand of Filipino civil engineers was perceived by themselves as much needed. This means that all skills demanded by employer in terms of communication, computer, managerial, technical expertise, environmental awareness, linkages with other agencies, keeping with new technologies and soft skills are much needed in the market. The soft skills got the highest skills followed by the managerial skills both interpreted as much needed, implies that skills related to management such as leadership, time management, financial and resource management along with much needed personal traits are the priorities for employment in the construction industry in the Kingdom of Bahrain. Likewise, communication skills were perceived to be the lowest interpreted as moderately needed which mean that the type of employment offered by most of the construction companies and government agencies in the Kingdom moderately needs communication skills.

**5. RECOMMENDATIONS**

After a thorough analysis of the findings of this study, the following recommendations are being proposed:

It was found out that slightly more than a half of the respondents are only on bachelor’s degree level. It is therefore recommended that they should pursue master’s and doctorate degree program for them to face the challenge in facing the issues involved in the performance of the construction industry which is evident on the necessity of almost half of the respondents pursuing for master’s and doctorate degree.

Filipino civil engineers should continuously attend relevant seminars and trainings to keep them updated with the latest innovations in the industry. Every institution both government and private should come up with an employee development program that gives more emphasis

on the intellectual retooling of their employees. The Philippines Institute for Civil Engineers Bahrain Chapter should continue and regularly organize a series of seminars that will enhance the knowledge of the civil engineers particularly in latest updates in the civil engineering practices.

On the market demand for Filipino civil engineers, it was soft skills was perceived as highest in all much needed skills for civil engineers. It is highly recommended to improve and maintain good personal relationships toward colleagues that would be needed for adaptability and flexibility, collaboration and ethical values towards employment.

Finally, market demand perceived by the Bahraini employers are encouraged for further studies.

## CONSENT

As per international standard or university standard, respondents' written consent has been collected and preserved by the author(s).

## COMPETING INTERESTS

Author has declared that no competing interests exist.

## REFERENCES

1. Tamkeen. Market Gap Study: The Market Gap Report; 2010.  
Available:  
<https://portal.tamkeen.bh/files/The%20Market%20Gap%20Report%20-%202009.pdf> (retrieved on December 3, 2021)
2. Oxford Business Group. The Report: Bahrain; 2020.  
Available:<https://oxfordbusinessgroup.com/overview/breaking-ground-mega-projects-across-key-sectors-drive-growth-building-activity> (retrieved on December 3, 2021)
3. Brown Jeff L. Special Report: Wanted: Civil Engineers. Civil Engineering Magazine Archive. 2005;75(7):46–49.  
DOI:10.1061/ciegag.0000028
4. Best, J. Research in Education, 4th Edition, Prentice Hall, Inc., Englewood Cliffs, New Jersey; 1990.
5. Calmorin LP. Educational Measurements and Evaluation, National Bookstore Inc., Philippines; 1988.
6. Broto A. Statistics Made Simple, University of Eastern Philippines, Catarman Northern Samar; 2003.
7. Perea M, Astor E, Onsaló M, Sex, Age, Work Experience, and Relatives in Building Engineering Career Development. Journal of Management in Engineering. 2021;37: 5.  
Available:  
[https://doi.org/10.1061/\(ASCE\)ME.1943-5479.0000935](https://doi.org/10.1061/(ASCE)ME.1943-5479.0000935)
8. CRPEP, (n.d.). The Council for Regulating the Practice of Engineering Professions Available: <http://www.crpep.bh/who-we-are.php> (retrieved on January 3, 2022)
9. Adiong, M. Provincial Development and Demand for Engineers: Projections for Misamis Oriental, Southern Philippines. Philippine E-Journals. 2010;4:10.  
Available:<http://www.ejournals.ph/article.php?id=1582> (retrieved on December 14, 2021)
10. Helen Clare Lingard, Valerie Francis & Michelle Turner. The rhythms of project life: a longitudinal analysis of work hours and work–life experiences in construction, Construction Management and Economics. 2010;28:10:1085-1098, DOI: 10.1080/01446193.2010.480977
11. Ahmad S, Ali M, Salehuddin K. ESL Teachers' Experience in Teaching Pupils with Dyslexia in Mainstream Classrooms. Creative Education. 2018;9: 2171-2182.  
DOI: 10.4236/ce.2018.914158.
12. Meyers K, Ohland M, Pawley A, Siliman, Smith, K. Factors relating to engineering identity. Global Journal of Engineering Education. 2012;14:1.  
Available:<http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.1030.4081&rep=rep1&type=pdf> (retrieved on December 15, 2021)
13. Zhu P, Zhang L. Thinking of Personnel Training Mode to Enhance the Employment Competence of Civil Engineering. Creative Education. 2012;3:154-157.  
DOI: 10.4236/ce.2012.37B040.
14. Jia H, Liu B, Li J. The Factors Influencing the Employment of Producer Services—From the Perspectives of Demand and Supply. American Journal of Industrial and

- Business Management. 2019;9:1666-1681.  
DOI: 10.4236/ajibm.2019.98109.
15. Marcus A and Gopinath N. Impact of The Demographic Variables on the Employee Engagement - An Analysis. ICTACT Journal on Management Studies. 2017;3:2.  
DOI:10.21917/ijms.2017.0068

---

© 2022 Nebrida; This is an Open Access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

*Peer-review history:*  
*The peer review history for this paper can be accessed here:*  
<https://www.sdiarticle5.com/review-history/81728>