

# Toward A Better Understanding Of When The TVD Can Be Used In Lean Design Management In Kuwait During Covid-19

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**Abstract:-** This paper has been prepared to develop a better understanding of when the target value design (TVD) can be used in lean design management in Kuwait during covid-19. A survey questionnaire was used to collect data from a wide range of professional engineering consulting practitioners operating in Kuwait. The finding from this research were develop a better understanding of lean design management lifecycle, and the main conclusions from output of the data helped in developing a better understanding of when the TVD can be used in lean design management in Kuwait during Covid-19.

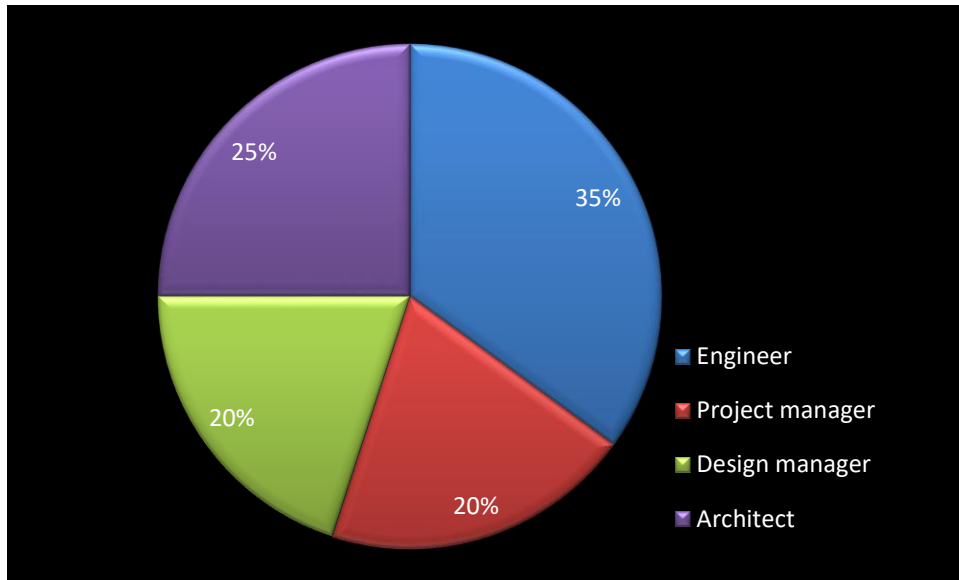
**Keywords:-** Target value design, Lean design management, Kuwait, Covid-19, Survey questionnaire,

## Introduction

Lean design management (LDM) is a group of lean tools, and social processes and methods which can be used in order to facilitate design. LDM has contributed to achieving significant outcomes in construction projects, such as reducing project costs, adding customer value and solving design management problems as well as increasing collaboration among project parties. Moreover, LDM processes and tools each have their optimal phases and strengths when they applied in project. For example, the TVD can be produced excellent outcomes in controlling customer value and project costs when used a definition/planning phase in the project. Furthermore, previous research concluded that the TVD were always used in lean design management in Kuwait during Covid-19. Therefore, this paper aims to develop a better understanding when the TVD can be used in the project phase. The objective was to gather the information from a wide range of professional such as engineers, project managers, design managers and architects' practitioners working in Kuwait.

## Research Methodology

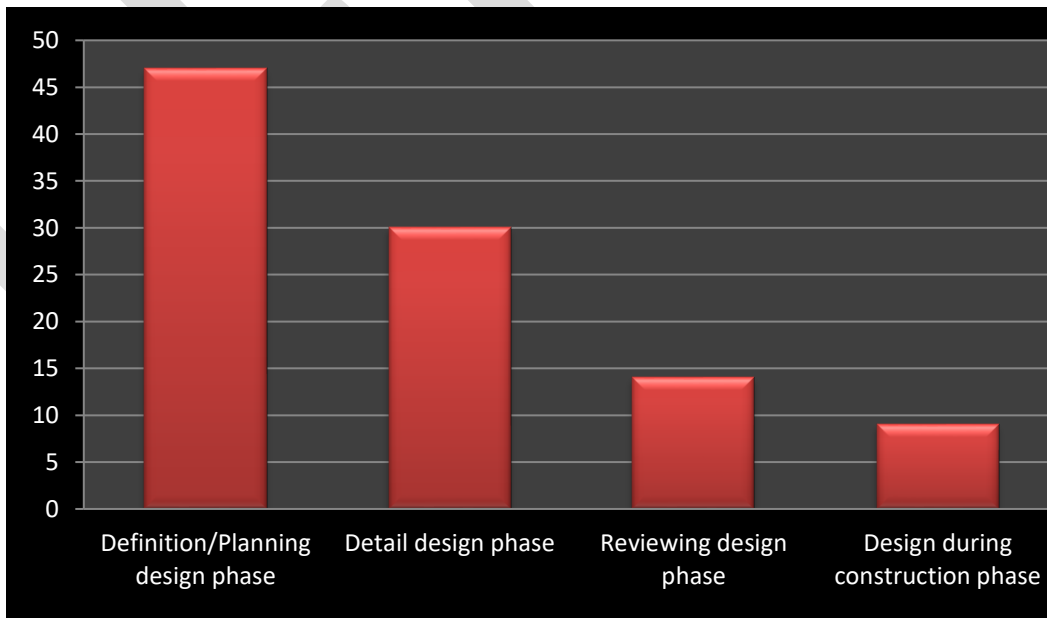
The research methodology used in this research is similar to the approach from previous research of lean design management in Kuwait during covid-19. The questionnaire was sent to 105 engineering consulting sector practitioners working in Kuwait. The survey was launched between 20<sup>th</sup> of April 2021 to 1<sup>st</sup> of July 2021. 40 of practitioners were fully completed the surveys. Responses were from: 14 engineers, 10 architects, 8 project managers and 8 design managers, as shown in Figure 1.



**Fig 1:- Respondents' profession or current role.**

### Findings

The majority of the respondents (62.5%) worked for small organisations consisting of more than 250 employees. The annual turnover for 87.5% of the surveyed companies was less than £1.5m, while the annual turnover for 12.5% was between £1.5m and £7.5m. Respondents were involved in a variety of projects in the commercial and industrial, new builds and/or refurbishment, housing sectors, roads and civil infrastructure. Respondents also had experience in both private and public clients. The main findings of the questionnaire survey are presented in Figure 1 as well as Table 1 and 2.



**Figure 1:- Respondents' replies to the design effort in the project lifecycle in their organisation.**

**Table 1:- Respondents’ replies on which design phases they are most likely to require rework or design changes in the project**

Design Phases	Very Unlikely	Unlikely	Neutral	Likely	Very Likely
Definition/Planning design phase	0%	0%	0%	8.7%	91.3%
Detail Design phase	26.09%	21.74%	26.09%	26.09%	0%
Reviewing design phase.	17.39%	34.78%	30.43%	17.39%	0%
Design during construction phase.	34.78%	51.17%	4.35%	4.35%	4.35%

**Table 2:- Respondents’ replies on which design phases are most important in ensuring client satisfaction.**

Design Phases	Not At All Important	Low Importance	Neutral	Important	Very Important
Definition/Planning design phase	0%	0%	0%	4.35%	95.65%
Detail Design phase	13.04%	13.04%	34.78%	39.13%	0%
Reviewing design phase.	21.74%	34.78%	34.78%	8.7%	0%
Design during construction phase.	47.83%	39.13%	4.35%	0%	8.7%

**Discussion**

Table 1 was based on the design effort in the project lifecycle in their organisations. The results showed that the majority of the respondents were indicated that 9%, 14% and 30% respectively required a design during construction phase, reviewing design phase and detail design phase to the customer project in their organisation. While the results in Figure 1 showed that the majority of the respondents were indicated that 47% required a definition/planning design phase to the customer project in their organisation. In

addition, Table 1 was based on which design phase they are most likely to required rework or design changes in the project in their organisations. The results showed that 91.3% of the responded were indicated that the definition/planning design phase is the most likely to required rework or design changes to the customer project in their organisation. Moreover, Table 2 was based on which design phases are most important in ensuring customer satisfaction in their organisations. The results showed that 95.65% of the responded were indicated that the definition/planning design phase is the most important in ensuring customer satisfaction in their organisation. Therefore, it can be indicated that this study results were probably linked to the previous study which concluded that the TVD were always used in Kuwait during covid-19. Furthermore, it could be line with the previous study which indicated that the TVD produced excellent outcomes when used a definition/planning phase in the project. However, further research is required to develop a better understanding.

## CONCLUSION:

This study helped in developing a better understanding of when the TVD can be used in lean design management in Kuwait during Covid-19. The main conclusions of this paper are summarised as follows:

- The definition/planning design phase is the most likely to required rework or design changes to the customer project in their organisation.
- The definition/planning design phase is the most important in ensuring customer satisfaction in their organisation.
- The definition/planning design phase were probably linked to the previous study which concluded that the TVD were always used in Kuwait during covid-19. Further research is required to develop a better understanding. For example, face-to-face interviews with individuals currently in the engineering consulting sector in order to validate that the TVD produced excellent outcomes when used a definition/planning phase in the project and a case studies are needed to test the overall lean design management within construction projects in Kuwait during Covid-19, and beyond.

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