

SCHOOL OF CONSTRUCTION ECONOMICS & MANAGEMENT

MSc (BUILDING) PROJECT MANAGEMENT IN CONSTRUCTION

**Research Questionnaire Format**

Dear Participant,

My name is Evans Matope and I am studying towards a Master of Science Degree in Building specialising in Project Management in Construction at the University of the Witwatersrand in Johannesburg. This voluntary questionnaire is prepared to gather data for the purposes of a research report entitled **“A study of Lean Practices by Contractors in the South African Industry”**. This study is aimed at assessing awareness level, knowledge and understanding of the baseline concepts of lean construction practices by contractors within the South African construction industry as well as their commitment to its successful implementation.

The questionnaire consists of two sections, with the first part seeking information about the background of the participant in terms of professional and occupational attributes. The second part measures the lean construction practices of the construction company.

We therefore, wish to assure you that the data and information obtained from this questionnaire is strictly confidential and will not be transferred to other parties and it is only for academic purposes. This questionnaire will only take 15 minutes to complete and if you have any queries regarding the questionnaire, please do not hesitate to contact me.

Thank you in advance for your time and support, we do appreciate your time.

Name: Evans Matope

Email: [1453345@students.wits.ac.za](mailto:1453345@students.wits.ac.za) or [evansmte@gmail.com](mailto:evansmte@gmail.com)

Contact No.: 078 099 8693

While filling the questionnaire:

1. Carefully read the instructions, question statements and choices.
2. Try to be objective and true as much as you can.
3. Unless stated otherwise, pick one choice for each question.
4. Try to answer all of the questions in the questionnaire.
5. When the questionnaire is complete, save the questionnaire.
6. Send the questionnaire to [evansmte@gmail.com](mailto:evansmte@gmail.com) via electronic email.
7. We guarantee that all the gathered corporate and personal information will be kept confidential and used solely for academic purposes.
8. **Background of Respondent**
9. Choose from types below what best describes your organisation in the construction sector.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Contractor |  | Consultant |  | Government Department |  |

1. Please indicate your current position in the construction field.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Project Manager |  | Site Manager |  | Quality Controller |  | Technical Manager |  | Other: Specify |  |

1. Please indicate your profession.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Civil Engineer |  | Architect |  | Quantity Surveyor |  | Site Engineer |  | Other: Specify |  |

1. Please indicate your level of education.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Diploma |  | Advanced Diploma |  | Bachelor’s Degree |  | Master’s Degree |  | Other: Specify |  |

1. Please indicate your experience in the construction field.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 0 – 5 years |  | 5 – 10 years |  | 10 -15 years |  | 15 – 20 years |  | 20 years and above |  |

1. **Lean Construction Practices of the Construction Company**

**Definition of Lean Construction**

Lean Construction is a proven method in managing and improving the construction process such that profitability can be achieved by using the right principles and resources as well as its ability to deliver things right the first time, in other words the ability in improving the performance of construction projects particularly in reducing site waste, construction time and overall construction cost, improving quality of the projects and environmental as a whole. Hence, the following questions deal with the concepts of lean construction.

**Instructions**

Based on your experience, please carefully assess the statements below and determine as objectively as possible the lean construction practices at your company to the statements on the **right or left**. *Please mark the following boxes as follows:*

**Box Number 1** – If you think, the practices **perfectly match** the statement on the **left**.

**Box Number 5** – If you think, the practices **perfectly match** the statement on the **right**.

**Box Number 2** – If you think, the practices **are close to** the statement on the **left**.

**Box Number 4** – If you think, the practices **are close to** the statement on the **right**.

**Box Number 3** – For the practices in the **middle** of these two statements.

**N/A Box** – If you have **no idea** about the practice or if you think the statements are **irrelevant**.

***Please make sure that you mark only one box for each question.***

1. **Culture / People**

**People Involvement**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Employees do not share their ideas/point of views in the name of improving the firms operations. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Employees share their ideas/point of views to improve the firm’s processes and to reduce the waste within the firm. The firm has some mechanisms to provide this. |

**Organisational Commitment**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Senior level management seem to be satisfied with the status quo. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Senior level management endeavours to change the firm’s culture in the name of increasing organisational effectiveness. |

**Training**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The firm does not allocate time and funding for the activities (seminars, educational meeting etc.) that enrich employees’ present knowledge and capabilities. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | The firm consciously and systematically sustains activities that enrich employees’ present knowledge and capabilities that cause employees gain new skills necessary for the changing needs of the firm. |

1. **Continuous Improvement / Built-In-Quality**

**Metrics – 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Unused and/or unnecessary purchased materials and tools are frequently put aside. These materials and tools are either wasted or returned to the supplier at the end of the project. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | There is a concrete system at the firm that measures and evaluates the quantity of unused and/or unnecessarily purchased materials and tools. |

**Metrics – 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Some metrics about production (worker – machine productivity, production defect ratios, material waste ratios, the ratio of real time – cost performance to the planned figures and so on) are not clearly, systematically and objectively measured. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Some metrics about production are clearly, systematically and objectively measured, recorded and analysed. These metrics are clear enough for employees to understand them. These standard measures are taken into the account while evaluating project successes. |

**Response to Defects**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Production defects are usually identified randomly. The decision of whether production will be stopped or not after the identification of the production defects, are completely left to the will of the crew that is responsible for that production. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | In the identification of defects, there is a guiding quality plan that defines the duties and the responsibilities of people within any project. Crews and individuals behave according to this quality plan in case of a production defect. |

**Error Proofing**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The precautions against production defects are limited to defect correctors that are put into application after the occurrence of any defect. These precautions have a reactive nature. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | The precautions against production defects are preventive measures that are put into application before the occurrence of any defect. These precautions have a proactive nature. |

**Organisational Learning**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Each and every project is evaluated separately. An effective database, created from the objective and the subjective data of the past projects has not been constituted. Some inferences are not driven from the past projects to use for the future projects. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | For the firm, effectively recording data, employees’ knowledge and ideas, analysing these data, presenting these data to the related departments on time and applying necessary change by the inferences driven from these data are among priorities. During the realisation of any future project, these data are extensively utilised. |

1. **Customer Focus**

**Flexible Resources – 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Working by customer focus is not explicitly stated among the strategic goals of the firm. The features of the main resources such as material, tools and manpower are in a static nature and predominantly determined by the management. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Being customer focussed is one of the strategic goals of the firm. The features of the main resources such as material, tools and manpower and the elements like the employed technology and the organisational structure within the firm are in a dynamic nature and in a change according to the expectations of customers. |

**Flexible Resources – 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The firm has to consume substantial amount of resources in order to comply to the environmental change such as changing customer needs. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | The firm is in a flexible nature. It can adapt to the environmental change consuming relatively lesser amount of resources. |

**Optimize Value – 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Some problems are experienced about studying the customer needs throughout a project, understanding them correctly and producing by these needs. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | It can be said that the customer needs are studied throughout a project, understood correctly and the necessary production is executed by these needs. |

**Optimize Value – 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The value created by means of a project is defined separately by each and every party involved. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | The value created by means of a project is defined with the customer and for the whole of a project. It is understood by every party involved. |

1. **Eliminate Waste**

**Supply Chain Management – 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Materials, prior to their usage are stored in somewhere near the construction site. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Materials predominantly arrive to the construction site just before their usage. Storage is at its minimum. |

**Supply Chain Management – 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Materials stay at a specific place, no matter where their location of usage is at the construction site. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Materials stay at the possible closest place to their location of usage at the location of usage at the construction site. |

**Optimize Production System – 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The output of a production unit gets into its successor production unit as an input either in huge amounts or in being totally completed. The production chain is discontinuous. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | The output of a production unit gets into its successor production unit as an input in a continuous manner and in lesser amounts. |

**Optimize Production System – 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The number of employees in a production unit at the construction site is not changed. There is only one production unit for each individual in which they can work efficiently. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | The number of employees in a production unit at the construction site can be changed depending on the needs of their successor production units. Each individual can work in more than one production unit efficiently. |

**Optimize Production System – 3**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| There is no planning and control department in the firm. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | There is a planning and control department in the firm with its authority and responsibilities clearly defined. This department is efficiently utilised within the firm. |

**Reduce Process Cycle Time – 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Projects prior to their starts are evaluated according to their approximate costs and their conformances to the related codes and specifications. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Projects in addition to their approximate costs and conformances to the related codes and specifications are evaluated also according to their constructability. The points that are believed to cause waste of resources and some discontinuity in the production line and that are believed not to contribute to meeting customer needs are tried to be changed. |

**Reduce Process Cycle Time – 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The departments (civil, mechanical, electrical, architectural, environmental, etc.) operate in their areas of responsibility. There is no intensive connection between each other. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Coordination and cooperation between the departments (civil, mechanical, electrical, architectural, environmental, etc.) are at a top level. |

**Reduce Process Cycle Time – 3**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Risk management techniques are not utilised within projects. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Risk management techniques according to the features of projects are always utilised with different methods and scales. |

**Optimise Work Content**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Standard, prefabricated, pre-assembled, repetitively usable construction elements have never been used by the firm. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Standard, prefabricated, pre-assembled, repetitively usable construction elements have been consciously preferred by the firm. The firm desires and works for the generalisation of their usage. |

1. **Standardization**

**Visual Management – 1**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Some visual tools that inform employees about the matters like production condition, schedule, safety, productivity, level of production quality and so on have not been used. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Some visual tools such as documents and pictures about the matters like the production condition, schedule, safety, level of production quality and so on have been used and are accessible to anyone at the offices and the construction sites. |

**Visual Management – 2**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| The informative tools are updated at different intervals. These updates are sometimes frequent and sometimes seldom. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | The informative tools are updated frequently and prepared to be understandable for everyone. |

**Workplace Organisation**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| There is no predefined order at the offices and the construction sites. The order and the cleaning at these places depending on the conditions are at the personal initiatives of the office and the site managers. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | The firm systematically pays attention to keeping the offices and the construction sites clean, materials and tools sorted orderly by their types and places of usage. There are firm wide standards in order to keep this system running. Chaos and dirt are never allowed. |

**Defined Work Processes**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| There is no study on work processes at the firm-wide scale. Employees within their responsibilities are expected to manage their own work processes. | |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | **1** | **2** | **3** | **4** | **5** | **N/A** | |  |  |  |  |  |  | |  |  |  |  |  |  | | Work processes are systematically consciously and continuously monitored. The visual maps of these processes that show the flow of materials, equipment, manpower and financial resources are uncovered. Processes are identified. |