

Enhancing the Performance of Public Building Construction Projects in South-South Region, Nigeria: The Front-End Planning Strategy

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Abstract

Public building projects in the South-South Region, Nigeria have earned a bad reputation for poor performance. Construction Industry findings point to lack of front-end planning as the main cause of poor project performance. This paper focuses on systematic literature review and semi-structured interviews to identify the factors that affect project definition and front-end factors that influence project performance. The search revealed that the project environment interacts with organizational structures, project resources, Front-end processes and others (frontend management framework, funding, technology, integration, coordination and control) to influence project performance. These findings lead to the development of the conceptual framework, for enhancing project performance in the South-South Region, Nigeria.

Keywords: Project front-end planning, project performance, public building projects, stakeholder management, South-South Nigeria, System thinking.

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INTRODUCTION

Projects have gained worldwide recognition as a means of implementing organizational strategy (PMI, 2017). Public projects such as Civic Centres, Conference Centres, Cultural Centres, Libraries etc are landmark buildings initiated to create public value and benefits for the citizens. Landmark buildings signal innate qualities of cities devised to attract temporary visitors or more permanent setting of firms and individuals (Brochner, 2009). Such buildings should provide stimulating, safe and secure environment for work, studies, business, leisure, cultural and social interactions. It is important that such high worth buildings be conceived, planned, constructed and delivered efficiently, effectively and environmentally sustainable. Despite the acknowledged importance of public buildings for the provision of critical infrastructure and services to the citizens, the delivery of public building projects in the South-South Region, Nigeria face daunting challenges: cost and schedule overrun, poor conceptualization, non-

engagement of users, poor quality jobs, lack of sustainability impacts, loss of user value, abandonment, economic stagnation, user frustration and dissatisfaction. These problems are often attributed to limited or lack of understanding and poor management of the frontend phase (Aghimien & Aigbavboa 2018; Larsen *et al.*, 2021; MacGillivray, 2016).

Effective definition and management of the front-end of public building has been identified as being important for articulating stakeholders needs and good project performance (Morris, 2013; Larson, *et al.*, 2020). Traditionally, it is the role of the architect to define the building upon the briefing by the client. However, this conventional method has been proven 'inadequate' (Safapour & Kermanchashi, 2019) due to the complexity of modern (large) buildings, the multiplicity of stakeholders and their needs, especially in public buildings where the decision on what to provide is taken on behalf of the end-users by the 'paying public client' to the exclusion of the 'user client' (Caixeta & Fabricio,

2021). The fact that the architect does not directly communicate with users limits his knowledge of the users requirements and the functions to take place in the building.

To the best of our knowledge, there is no collaborative approach to the definition and management of the public building front-end hence those factors that negatively impact the performance of public buildings persist. To fill the gap, we propose a comprehensive framework for managing the front-end that focuses on identifying the factors affecting project definition and frontend factors that influence the performance of public building projects in the South-South Region, Nigeria.

A building project may be divided into two broad phases: (i) The less visible front-end, also called Project Definition Phase, Pre-Project, Front End Loading, Programming, Schematic Design, Front-End Planning; and (ii) the more tangible and popular phase, the execution (construction) phase (Siriram, 2023). The front-end is the first phase of the building lifecycle. It starts when a strategic need is identified by the organization as “opportunity (achieving something desirable) and problem (resolving something harming or troubling) and ends when a decision is taken to invest on the project (Williams T; Vo Hang; Knut Samset and Edkins, A (2019). Front-end planning is defined by Construction Industry Institute, CII (2012) as “the process of developing sufficient strategic information for owners to address risk and decide to commit resources to maximise the chance of a successful project”. Ballard and Zabelle (2000) on the other hand, defined Front-end planning as “the first phase in project delivery consisting of three modules: (i) determining purposes (Stakeholders needs and values), (ii) Translating those needs into criteria for both product and process design and (iii) generating design concepts against which requirements and criteria can be tested and developed”. The main goal of the front-end planning is to define the project and produce a comprehensive project scope which will be the groundwork of subsequent project management processes. An ill-defined project may lead to project failure and unexpected outcomes (Samset, 2010) whereas a detailed scope is known to eliminate risks, (unknown items) from the project and make the project run smoothly and efficiently (Larson *et al.*, 2021; CII, 2012).

The front end is where the initial project idea emerges, the client and promoters are known, relevant stakeholders are identified and their requirements conducted, the necessity and possibility of the project are examined, alternative concepts are explored and a responsive architectural solution for the chosen concept is developed. It is where the benefits and the value are set out (Siriram, 2023) and critical decisions are taken about the project. The importance of the FE to the strategic success of the project is well known (Zwikael & Meredith, 2019; William *et al.*, 2019; Hansen *et al.*,

2018; Morris 2013; PMI 2017). Despite this, the front end is given little attention, less empirical studies (Momeni & Martinsuo, 2019; Lock, 2015) hence the front end is impacted by many challenges (Flyvbjerg, 2017; Saukhet, *et al.*, 2020 Babaei *et al.*, 2021).

Previous researchers have documented and tried to solve many of these problems. MacGillivray (2016) opined that the main problem causing poor project performances is poor or lack of project definition and called for greater efforts on project definition. Aghimien & Aigbavboa (2018) research in South African reported lack of awareness and poorly perceived importance of frontend practices. Bal *et al.*, (2013), showed that early planning efforts lacked sustainability considerations. In a study commissioned by PMI, William *et al.*, 2019) it was reported that FEP is poorly studied, not well understood and lacking in project conceptualization. Nyaminani (2021) reported the absence of a framework for managing the front-end phase etc. Other researchers and practitioners have made effort to address these challenges. For instance, PMI (2006), Government Extension to Pmbok Guide dedicated to public sector project processes. Kwak *et al.*, (2014) dealt with challenges and best practices of managing government projects and programs; Flyvberg (2017) ‘the Iron Law of Megaproject Management’ dealt with all aspects of mega-project management including governance; Chibaly *et al.*, (2021) worked on communication; Aghimien & Agbarboa (2018) harped on the need for better Knowledge and understanding of the frontend processes, structured team, improved communication, giving enough time for frontend activities. Seruga *et al.*, (2020), examined design and value generation, and Nyaminani (2021) highlighted the importance of project framework. Relevant as all the contributions are, they remain fragmented and none is done in the context of South-South Region, Nigeria, hence the problems persist.

Given these challenges, there is need to more knowledge of the building frontend; and a new approach to promote user benefits and value generation, while enhancing project performance in terms of efficiency, sustainability and user satisfaction.

2. LITERATURE REVIEW

2.1 The Project Front-End

Project lifecycle is the path a project takes from its inception to its end. However, every project is managed by five processes: initiation, planning, executing, monitoring and controlling, and closing (PMI, 2017). Shenhar (2002) and Wateridge (1998) relate project success to project lifecycle because different success factors impact the project at different stages in the project lifecycle. Projects are classified into three types of lifecycles: Predictive lifecycle (Waterfall) which is plan-driven, has high definition objectives and clear method of execution such as construction projects. Adaptive lifecycle (Agile): which is process-driven with

clear objectives but undefined method, iterative lifecycle. In between the two extremes is iterative lifecycle with no clear objectives or method/process of execution.

The building lifecycle is divided into a number of stages or phases depending on the organization or country. Horsely, France & Quaterman (2003) identified three phases, conception/ design phase, construction phase, and operation phase. Wideman (1990), PMI

(2013) and Westland (2006) identified four phases, the generic phases: conception, planning, execution and transfer. The Commission for Architecture and Built Environment, CABA (2003) also use four phases: prepare, design, construct and use. The Nigeria construction industry adopt the four-phase structure: conceptualization, planning, execution and termination (Obunwo, 2015). Figure 2.1 shows the position of the project front-end in the building lifecycle.

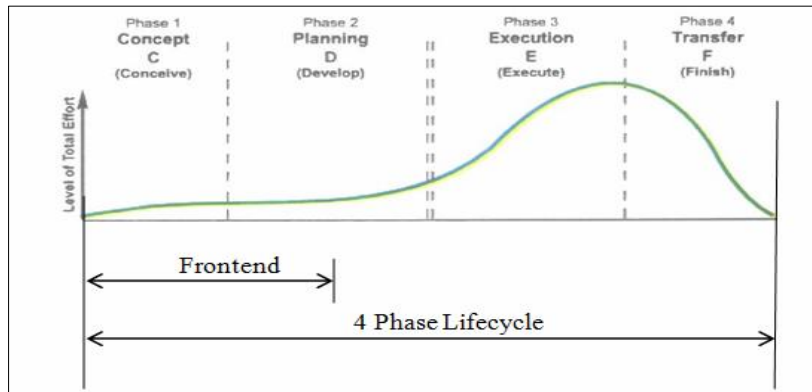


Figure 2.1: Generic 4 Phase Lifecycle
Source: Wideman (1990)

It must be noted that while the project execution phase consumes more resources (time, money, materials, human efforts), it is the diligence and efforts made at the front-end and planning phases that have most significant impact on the project outcome (BIS, 2010). As the project progresses through the phases, its level of definition increases, at the same time, the ability to influence the final characteristics of the project outcome decreases. At the beginning, the opportunity to create value is highest, ability to define requirements is very

high, ability to make changes (in design) is high and cost of such changes are relatively low compared with later phases. This is the basic principle of front-end planning, that is the more a project is completely defined, the less the chances of experiencing schedule and cost overruns and less the change orders. The influence curve, figure 2.2 also show that risk and uncertainty are highest at the beginning, information available is low, so is cost and staffing level (PMI, 2017). Decisions made early in the project have high impact on later stages of the project.

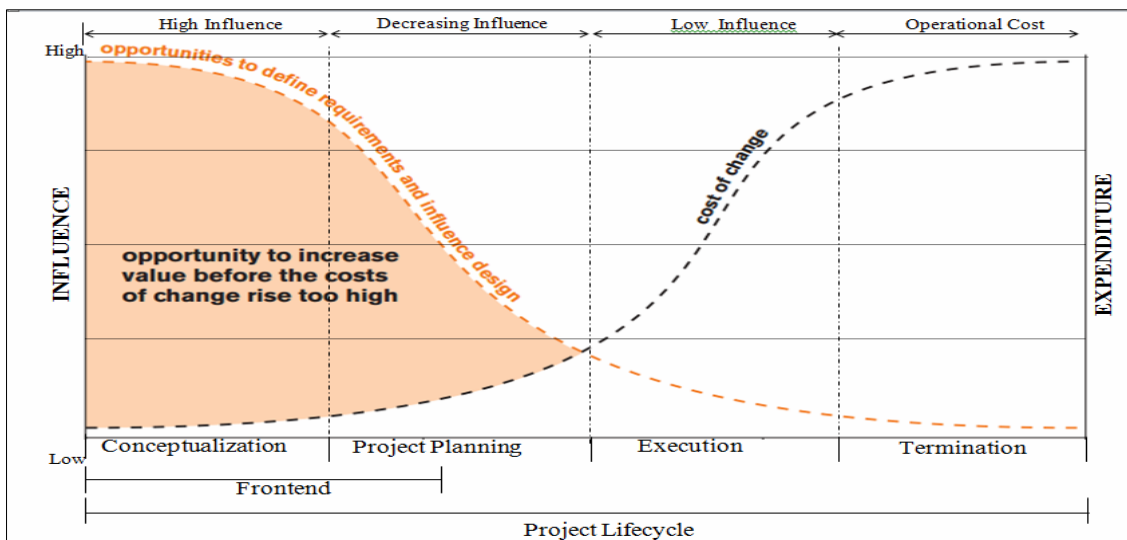


Figure 2.2: Influence and Expenditure curve for the project lifecycle
Source: Caba (2003)

Hutchinson & Wabeke (2006) found that if project definition resulted to high value project, even the

poor execution of that project would be of better value than the project that has been poorly defined (this is

illustrated in figure 2.4). Stating that well defined project is far more important and beneficial than the execution. In figure 4b, phase 1-3 is value identification and proposition while phase 4-5 is value realization. It is

easier to create value at the beginning than at the end, and the high value created by good project definition cannot all be cancelled by poor execution.

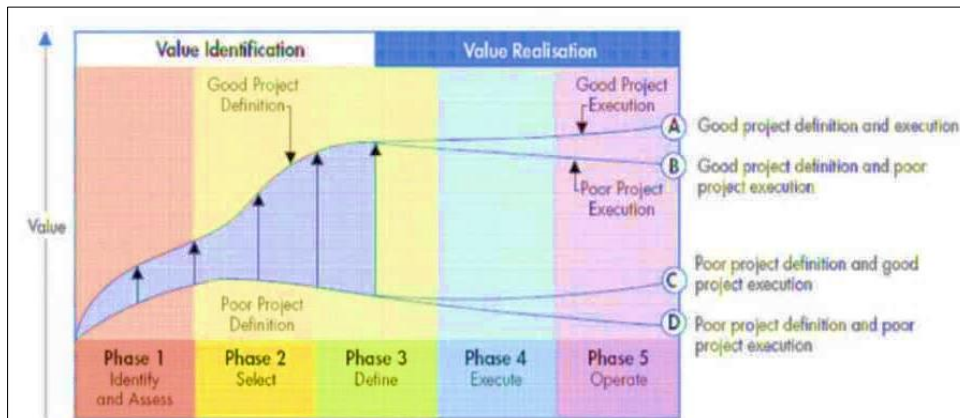


Figure 2.4: Value Creation in Early Phase
 Source: Hutchinson & Wabeke (2006)

2.1.2: The Project Front-end and Front-end Planning Defined

Project front-end also known as pre-project (PMI, 2013), project definition (Cano & Lidon, 2011), front-end Loading, front-end Engineering design (Feed), conceptual design, Schematic design is part of the early phases (initiation and planning) of the project lifecycle. Despite many names, they allude to the same idea. According to Wang & Gibson (2006), front-end comprises all the tasks from initiation to the point decision is made to invest on the project. On the other hand, front-end planning is defined by CII (2012) as the process of developing sufficient strategic information for owners to address risk and decide to commit resources to maximize the chance of a successful project. This process encompasses (i) Feasibility (ii) Concept, and (iii)

Detailed scope. It is at the front-end phase of a project that the why, what, when, how, where and who questions about a project are answered (IPA, 2009).

Ballard & Zabelle (2000), posited that front-end planning is “the first phase in project delivery consisting of three modules: (i) determining purposes (stakeholder needs and values) (ii) translating those purposes into criteria for both product and process design, and (iii) generating design concepts against which requirements and criteria can be tested and developed”. In the other word, front-end planning or project definition is the alignment of Purpose (Ends), Concept (Means), and Criteria (Constraints). This definition is adopted as a working definition for this study.

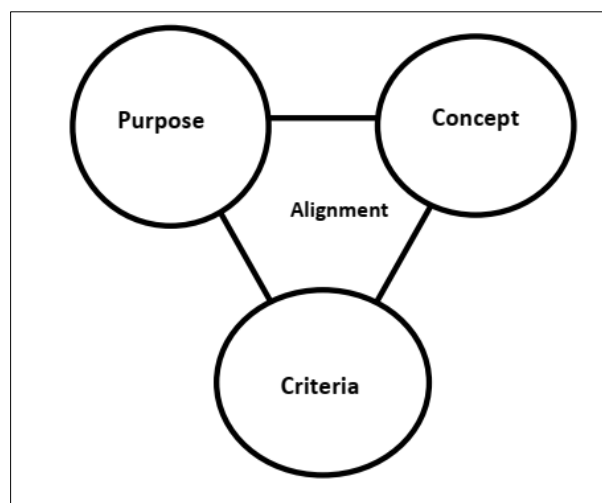


Figure 2.5 Project definition
 Source: Ballard & Zebelle, 2000

Furthermore, Whelton *et al.*, (2002) see front-end planning as a “a collaborative process, one in which

knowledge is shared and acquired and it significantly relies on the collective knowledge of the individuals”,

stressing that it is through this collaborative learning that value is created. Learning, according to Argyris (1999) take place when an organization achieves what is intended, that is when there is a match between intension and outcome, or when a mismatch is identified, corrected and turned to a match. Several authors agree that front-end is a learning process to forge common understanding of the problem, where knowledge is generated and shared (Leyva & Matovic, 2011, Kahkonen, 1999) and subject to politics, social, economic, behavioural and even psychological nature (Englund & Graham, 1999; Winter & Szezpank, 2009). According Hafsa Chibaly *et al.*, (2021), project definition entails effective communication. Communication refers to the process of sending a message through the exchange of knowledge, information, ideas and feelings through speech, gesture or writing in a vocabulary mutually understood by the parties.

2.1.3 Significance of Project Front-end Planning

Project front-end planning has been recognized as critical for project success (Morris, 1997, 1998, 2009, 2013; William & Samset, 2010; Reid & Brentari, 2012; Edkins *et al.*, 2013). Morris (1997) pointed out that a project is in great danger if objectives are not clearly defined and strategic planning underdeveloped. To him “early definition stages set the framework” (Morris, 1998:5), Karkonem (1999, p. 625) agrees, the author averred that “project definition process has great potential to improve significantly the success of the whole Projects”, Whelton *et al.*, (2002:198) added that 80% of a product can be specified at front-end”. Hansen, Too & Le (2018), noted that insufficient FEP will result in: under definition of project, unstable team organization, incomplete project requirements, ambiguous roles and responsibilities, incomplete project plan. These problems will impact project performance resulting to: doing the wrong project, rework will increase schedule and cost overrun and ultimately, schedule and cost overrun and ultimately stakeholders’ dissatisfaction.

The CII Publication, “*Pre-Project Planning: Beginning the Project the Right Way*” stated that well-planned project can:

- Reduce total project design and construction cost by as much as 20% (vs authorization estimate)
- Reduce total project design and construction schedule by as much as 39% (vs authorization estimate)
- Improve project predictability in terms of cost, schedule and operating performance
- Increase the chance of the project meeting environmental and social goals (CII, 1994 cited in Bosfield, 2012).

According to William & Samset (2010:38) choice of concept (solution) which takes place in front-end phase is critical to the overall project success.

Several concepts should be identified, evaluated and the best chosen. One unique benefit of front-end planning is the shaping and refinement (funneling) process. All proposed projects do not just get sanctioned to the traditional project starting phase. Projects are screened analytically and only those that meet requirements are approved for the next stage.

Generally, the front-end phase provide opportunity for knowledge, learning and common understanding of problem and possible solutions to it; minimize wastages and failure by ensuring risk elimination or mitigation; and that investment decisions are based on sound judgements in the PESTIE Context. Wrong decisions at the front-end could affect the project negatively in later stages.

2.1.3 Factors Affecting Project Definition

Front-end planning (FEP) and it’s principles originated from the Construction Industry Institute, CII. CII was established in 1983 as a response to the recommendation from a study by the Business Roundtable, the Construction Industry Cost Effectiveness (CICE) Project, that an organization be established to take leadership in construction research to find solutions to the challenges America was facing at the time. It was conceived as a traid partnership among owners, contractors and the academia and based at the University of Texas at Austin. It was reasoned that the academia will provide independent credibility and knowledge through research and the owners and contractors contribute their first-hand field experiences. The mission is to “improve cost effectiveness of the capital facility delivery process and the competitiveness of its member organisation” (Iron & Gibson, 2006). CII authorised a research to develop the “most effective method for project definition and cost estimating for appropriate approval” (Wang, 2002). The research identified FEP as a critical element in the construction process. The purpose is to “define the scope and effectively identify and evaluate project risk early in the project lifecycle so that organisations can have more successful projects” (Bosfield, 2012).

Literature on front-end is sparse but reviews by some scholars (Babaei *et al.*, 2021; William *et al.*, 2019 and Hansen *et al.*, 2018) have documented issues impacting the front-end of major projects. William *et al.*, (2019) and Hanson *et al.*, (2018) focused on generic project while Babaei *et al.*, (2021) focused on infrastructure mega-projects. However, the findings are similar. Babaei, *et al.*, (2021) identified Six (6) main issues in the project frontend: (i) Frontend project manager (ii) Politicians and decision-makers (iii) Front-end process and outcomes (iv) Human factors (v) Project context and (vi) the early phase of projects (Table 2.1). The authors went further to suggest how these issues could be remedied. The issues listed are generally present and hampering successful project outcomes in the South-South Region, Nigeria. This study identified

44 frontend issues grouped into five: (i) Early phase of the project (ii) Project context (iii) Organizational structures (iv) Front-end process and outcomes and (v) Human factors, which is further grouped into three: human skill/competence, political bias and cognitive biases. However, no contextualised study has been carried out to address the peculiarities of the region.

Moreover, no framework is provided to systematically remedy the issues. Babaei *et al.*, (2021)

admitted that “due to the front-ends strategic nature (Edkins *et al.*, 2013). The traditional project management framework does not adequately cover all the required expertise for managing the front-end” thus suggesting a ‘tailored framework’ for managing the frontend of building in different contexts. The tension and insecurity in NDR and its impact on projects require special mention in talking about front-end challenges. It increases project cost and duration and sometimes make it impossible for work to be carried out.

Table 2.1: A Comprehensive list of factors affecting Project Definition in Nigeria

S/N	Theme	Group	Issues/Challenges
1.	Early phase of Major projects	Nature of front-end	<ol style="list-style-type: none"> 1. High level of complexity (William <i>et al.</i>, 2019; William & Samset, 2010) 2. High level uncertainty (William <i>et al.</i>, 2019; Willima & Samsemt 2010; Samset & Volden, 2016) 3. Conflicting goals/objectives of stakeholders (Klakegg, 2009) 4. Unclear project goals/objectives (William <i>et al.</i>, 2009; William & Samset, 2010; Klakegg, 2009) 5. Stakeholder dynamics (Samset and Volden, 2016) 6. Scant information for decision-making (William <i>et al.</i>, 2019; Samset and Volden 2016) 7. High opportunity for creating value/benefits (William et al 2019)
2.	Project context (Environment)	Changes/ Characteristics of project context	<ol style="list-style-type: none"> 8. Changes in political group in power often time (Samset & Volden, 2016) 9. Changes in society’s needs and priorities (Volden & Samset, 2016) 10. Corrupt Environment (Flyvberg, 2013) 11. Impact of project environment on the decision-making (William & Samset) 12. Unstable social, political and economic system (Babei <i>et al.</i>, 2021) 13. Poor or absence of regulatory framework for FEP (Nyaminai, 2021)
3.	Organizational Structures	Structures Organizational culture Project management culture	<ol style="list-style-type: none"> 14. Organizational culture 15. Governance system (Aigahtani, 2015 Miller, 2009, Klekarg, 2009) 16. Organizational Commitment to FEP (Gibson & Bosfield, 2012) 17. Organizational Leadership (Larsen <i>et al.</i>, 2021; Chibly <i>et al.</i>, 2021) 18. Lack of front-end management framework (Nyaminani, 2021; Babaei <i>et al.</i>, 2021) 19. Lack of knowledge of the important of FEP (Aghimien & Aigbovboa, 2018). 20. Organizational capacity (funding/technology)
4.	Front-end process and outcome	Conducting the process, generating outcome	<ol style="list-style-type: none"> 21. Front-end sunk cost (Flyvberg, 2007) 22. Long process (Welde & Odeck, 2017) 23. Costly process (Flyvberg, 2007) 24. Lack of awareness and practice of FEP (Aghimien & Aigbouboa, 2021) 25. Ambiguity of process (William & Samset, 2010) 26. Generating unreliable estimate (Samset & Volden 2016) 27. Poor risk identification and evaluation (Gibson & Bosfield 2012).

			<p>28. ‘Wicked problem’ or ‘Wicked mess’ (William & Samset, 2010; Szczepanek, 2009. Whelton & Ballard, 2002).</p> <p>29. Unexplored Opportunity Space (William & Samset, 2010)</p> <p>30. Lack of legal and regulatory framework (Rui <i>et al.</i>, 2017)</p>
5.	Human Factors: A. Front-end project managers	Skill and competence	<p>31. Lack of skill/competency in managing the front-end (William & Samset 2010)</p> <p>32. Unclear roles and responsibilities in the front-end process (William & Samset, 2010)</p> <p>33. Lack of identification and evaluation of alternative concept (William & Samset, 2010)</p> <p>34. Lack of stakeholder engagement and collaboration at FEP (William <i>et al.</i>, 2019, Larson <i>et al.</i>, 2021)</p> <p>35. Lack of effective collaboration and communication at FEP (Larson <i>et al.</i>, 2021)</p> <p>36. Lack of group decision-making (William & Samset, 2010; Larsen <i>et al.</i>, 2021)</p>
6.	Human Factor: B. Politicians and Decision – Makers	Political Bias, Lack of Evidence – based decision – making	<p>37. Principal agent issue at frontend (Volden, 2019a)</p> <p>38. Putting political priorities first (William & Samset 2010, Volden, 2019a)</p> <p>39. Politicians do not represent common interest (society expectation) (William & Samset 2010)</p> <p>40. Unclear decision – making process (William & Samset 2010)</p> <p>41. Putting too much pressure on a particular concept (Samset & Volden, 2016; Volden 2019a)</p> <p>42. Insensitivity to project context (william & Samset 2010)</p> <p>43. Impatience and wild political advocacy (MacGillivray 2016)</p>
7.	Human Factor: C. Cognitive Biases	Cognitive Biases	<p>44. Optimism bias and planning fallacy (William & Samset 2010;</p> <p>45. Underestimating cost, time, risk etc. and overestimating benefits (Flyvberg, 2013; Anderson <i>et al.</i>, 2016)</p> <p>46. Groupthink (William & Samset 2010)</p> <p>47. Bounded – rationalism (William & Sameset 2010)</p> <p>48. Inability to align the long term strategies with project objectives (Samset & Volden, 2016; Anderson <i>et al.</i>, 2016)</p>

Source: Author Generated (2024)

2.1.4 Frontend Factors Influencing Project Performance

Project performance is a measure of how well a project met the objectives of the project in its final form in terms of scope, cost, schedule, safety, quality, user satisfaction etc (Ofori-Kuragu *et al.*, 2016). A typical project management goal could be ‘to bring a project to completion on time, within budgeted cost, and to meet the planned performance or end product goals’ (Dvir *et al.*, 2003). Such goal presupposes that all performance requirements and project end goals are always well defined in advance, thus putting emphasis on defining, organizing and on planning the project (Kusters, 2016). However, most projects do not go as contemplated. Literature and interviews show that in the current situation, public organizations in the South-South

Region of Nigeria struggle with five problematic project performance aspects: Scope, Time, Cost, Strategy and Integration. These problems are symptoms of underlining causes which can be traced to poor project definition and poor risk identification at the front-end of the project (Elkjaer & Felding, 1999). In order to prescribe appropriate cures, it’s important to diagnose the root cause of the problem (Contarelli *et al.*, 2010) by going back to the front-end.

Several factors of the front-end phase affect project performance in the execution and use phases. Among these are: (i) Legal and regulatory framework which make compliance, stakeholder engagement, public interest, health and safety, resource management and conservation, permitting and approvals of work

processes obligatory (Ndumia, 2015; Rui *et al.*, 2017); (ii) Organisational culture, project management culture and project manager competencies/skills (Alqahtani *et al.*, 2015); (iii) Use of structured stage-gate process, application of value-improving practices and having well integrated and collaborative team (Weijde 2008); he posits that if these concepts are well conducted it will lead to a well thought-through approach and design, minimizing the need for late design changes, which are strongly related to poor performance; (iv) Eliminating Non-Value Adding Activities, NVAAs (Emuze, 2011); Human resources and project requirements (Al-Nabae & Sammani, 2021). It must be noted that of all these factors human resource (Project Manager and team members) have the most significant influence on project performance (Al- Nabae & Sammani, 2021, Alqahtani, *et al.*, 2015). This is because the knowledge, leadership, commitment, information and communication,

motivation of project manager and project team translates to the productivity of the organization and quality of their work. Xiang *et al.*, (2016) and Yang (2017) posited that generally, project performance is directly influenced by the work quality in the phase of requirement analysis, project definition. Adopting innovation, skill and training empowers the project manager and project team to coordinate, integrate and direct work processes and human efforts to achieve optimal performance. Table 2.2 and Figure 2.6 captures factors influencing project performance in the front-end phase. The 38 factors identified are grouped into four themes: Project Context (ii) Human Resources (Stakeholders) (iii) Organisational Structures and (vi) Frontend Process. It must be noted that influencing factors can be positive or negative. When addressed, they influence the project positively and when not addressed, they influence the project negatively.

Table 2.2: Front-End Factors Influencing Project Performance

S/N	Factor	Researcher/Reference
A	Project context (Environment)	
1	Political, social and economic climate	Babaei <i>et al.</i> , (2022) William <i>et al.</i> , (2019) Aubry & Lovoie – Trembly (2022); Samset & Volden (2016)
2	Corruption	Flyvbjerg (2013)
3	Strategic misrepresentation (of cost and time)	
4	Security	Babaei <i>et al.</i> , (2012)
5	Legal and regulatory framework <ul style="list-style-type: none"> – Compliance – Risk management – Permitting and Approvals – Stake holder engagement – Public interest, health and safety 	Rui <i>et al.</i> , (2017); Ndumia (2015)
B	Human Resources (Stakeholders)	
6	Early engagement of stakeholders	Larson (2022); PMI (2017); Aragono's – Beltran <i>et al.</i> , (2017)
7.	Stake holder alignment	Al-Nabae & Sumnani (2021)
8.	Stake holder collaboration	Alqahtani <i>et al.</i> , (2015); Larsen (2021)
9.	Stake holder communication	Chibaly (2021)
10.	Knowledge sharing and learning	Whelton <i>et al.</i> , (2020);
11.	Group decision – making Group dialogue	Larson (2021)
12.	Common vocabulary Common understanding	Chibaly (2021)
C	Organizational Structures	
13.	Organizational culture <ul style="list-style-type: none"> – Values – Norms – Artefacts – Leadership – Weak institution 	Anderson & Lannon (2019) Alqalitani <i>et al.</i> , (2015) Armstrong (2009) Enwudor (2013)
14.	Project management culture <ul style="list-style-type: none"> – Strategic emphasis – Top management support – Organizational communication – Collaboration 	Stare (2011) Piccioto (2020)
15.	Project Manager/Project team <ul style="list-style-type: none"> – Competence/skill – Capabilities 	Amantmula (2010) Larson (2018) Chibaly (2022)

	<ul style="list-style-type: none"> - Self – Efficiency - Leadership (Transformational) - Commitment/collaboration - Motivation - Knowledge and communication - Experienced team - Training and development 	Emenike <i>et al.</i> , (2017)
D	Front-end Process	
16.	- Clear goals/objectives	-Williams <i>et al.</i> , (2019) CII (2012); PMI (2017) Samset & Volden (2016)
17.	-Adequate Requirement, Identification, Documentation /Analysis	-Yang (2017); Xiang <i>et al.</i> , (2016)
18.	-Thorough risk identification and analysis	-Kusters, 2016; William & Samset (2010)
19.	-Clear/reliable information	
20.	-Adequate project definition	-Macgillivan (2016)
21.	-Proper funding of front-end planning	-Esty (2014)
22.	-Process Integration	-Wang <i>et.al</i> (2018), Demirkesen & Ozorhon 2017
23.	-Process coordination and control	-Kerzner (2013); Jorge (2016); PMI (2017) Stare 2011
24.	-Responsive design and design changes	-Larsen <i>et al.</i> , (2020); Caixeta <i>et al.</i> , (2021)
25.	-Structured Stage-Gate Process	- Weijde (2008)
26.	Scope Control	-CII (2012); PMI (2017)
27.	-Application of value improvement processes	-CII (2012); IPA (2009) Weijde (2008)
28.	-Project Complexity	-Bjorvatn & Wald (2018)
29.	-Execution Strategy	An <i>et al.</i> , (2018); Anantatmula (2015)
30.	-Knowledge Management	-Horner <i>et al.</i> , (2017); Lindhard & Larsen 2016
31.	- Generating reliable estimates of cost and time	-Al Safar (2018); Welde & Odeck 2017
32.	-Clear role and responsibilities	-PMI 2017; CII 2017
33.	-Using a management framework	Rui <i>et.al</i> (2017); Nyamamani (2021), Armstrong (2009)
34.	-Correct sequencing of activities	-PMI, 2017
35.	-Choice of right concept	-Samset & Volden (2010); Samset & Christensen
36.	-Importance of Management	-Larson 2022; McClory, Read & Labib (2017)
37.	Elimination of NUAAs	-Emuze 2011
38.	-Governance	-Samset & Volden (2016); Burger <i>et.al</i> 2019

Source: Author Generated, 2024

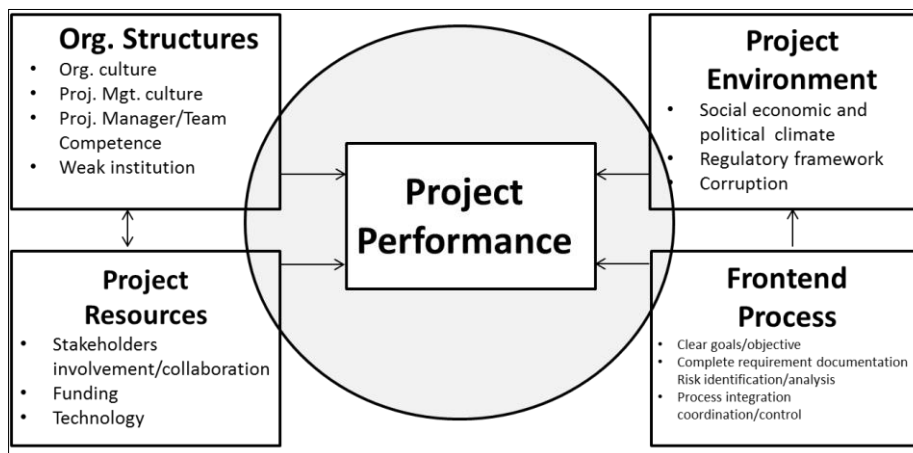


Fig. 2.6: Frontend Factors Influencing project Performance

Source: Author Generated, 2024

Generically, performance is a metrics that can be measured, quantified, adjusted, and controlled. However, key performance indicators (KPIs) serve as early – warning signs that if an unfavorable condition exists and is not addressed, the result could be poor (Kerzer, 2013). To measure performance, one need a

reference point or baseline from which measurement can be made.

- Without a baseline, performance cannot be measured
- If performance cannot be measured, it cannot be managed

- Performance that can be measured gets watched
- What gets watched gets done

For a project to be controlled, it must be organized as a closed system with baseline established for scope, time, and cost at a minimum (Kerzner 2013).

2.1.5 Relationship between Project Frontend and Project Performance

In a construction project lifecycle, there is a relationship between the phases. The out-put of an earlier phase is used as the input of a later phase. The realization that out-put of the earlier phases, the front-end phase is used as input for managing the project execution phase clears any doubt that the early project phase can directly or indirectly affect the project execution or outcome. Since the early phases has the greatest opportunity for creating value and benefits and for influencing the project outcome (Kusters, 2016), it is most beneficial to put extra efforts in the frontend in order to enhance the performance of the project by embedding control.

According to Son *et al.*, (2015), frontend planning is the most important phase in the project lifecycle as the preparations and decisions, which are made in this phase of the project have impact on the final cost, schedule, quality and scope of the project, which are seen as the performance indicator of the project. Green & Perry (2008) also stated that the level of project definition and project performance are directly proportional, the higher the level of scope definition, the better the performance of the project, and that the relationship can be examined through the overall project cost.

2.1.6 Project Control

Every project has four resources to control: Money, Manpower, Materials and Machinery, and Project Scope. These resources must be monitored constantly and adjustment required to bring them back on track. Where this is not done, it will go out of control. In the frontend, the machinery will not be needed. So it is not necessary to monitor or control.

A major challenge currently facing front-end planning is 'Unstructured Processes'. This lack of formal structure or framework makes it difficult to improve control over a process that is not exactly known (Kusters, 2016). To improve the performance of the project in the 'problematic' areas, the project team must have control over the project by following a structured approach, a standard guide, a baseline. PMI (2013) define project control as "A Project management function that involves comparing actual performance with planned performance and taking appropriate corrective actions (or directing others to take this action) that will yield the desired outcome in the project when significant

differences exists". This definition implies monitoring and comparing with a baseline plan and taking corrective actions.

Jorge (2016) research on fit-for-purpose project control identified 131 control measures grouped into twenty categories most of which apply to this study (Table 2.3). Similarly, Ofori-Kuragu *et al.*, (2016) and Kara (2018) provided effective performance measures in their studies. The importance of project control can be seen in the fact that the controlling and monitoring process run through the project life cycle (PMI, 2013).

2.1.7 Conceptual Framework

The project front-end consist of two components: the primary processing, ideation and stakeholders at the definition stage (Williams *et al.*, 2014). The conceptual framework is drawn from the literature based on Engestron (2015) model of the Human Activity system in which people interact in a community of practice to create or define an object, in this case a building. According to Miles & Huberman (1994, p.18) conceptual framework is a medium that "explains, either graphically or in a narrative form the main things to be studied-the factors, concepts or variables and the presumed relationships among them". The authors added that conceptual framework is vital as it helps in clarifying the concepts and theories upon which the research is based.

Nyaminami (2021) sees conceptual framework also called research paradigm as the researcher's idea of how to the research problem was explored. This study is based on the idea that a complete definition of the project undertaken by stakeholders collaboration (public client, designers, constructors, end-users etc) will significantly result to increased benefits/value creation, project efficiency, project sustainability and user satisfaction. The frameworks is made up of three parts. Part 1, front-end activities involved identifying and carrying out critical front-end activities as the independent variable. Part 2, Stakeholder collaboration, the interaction of the client, designers and end-users in defining the project as the intervening variables and Part 3 the result (Project success) benefits/value creation, project efficiency, project sustainability and user satisfaction as independent variables.

We argue that the relationship between the independent variables (IV) and the dependent variables (DV) are significantly improved when project definition (variable) is mediated by Context/Environment, Early involvement of stakeholders, collaboration, communication, Group Decision-Making, team Skill/Competence, legal and regulatory framework and organizational structures. Others are funding, technology, front-end management framework, integration, coordination and control.

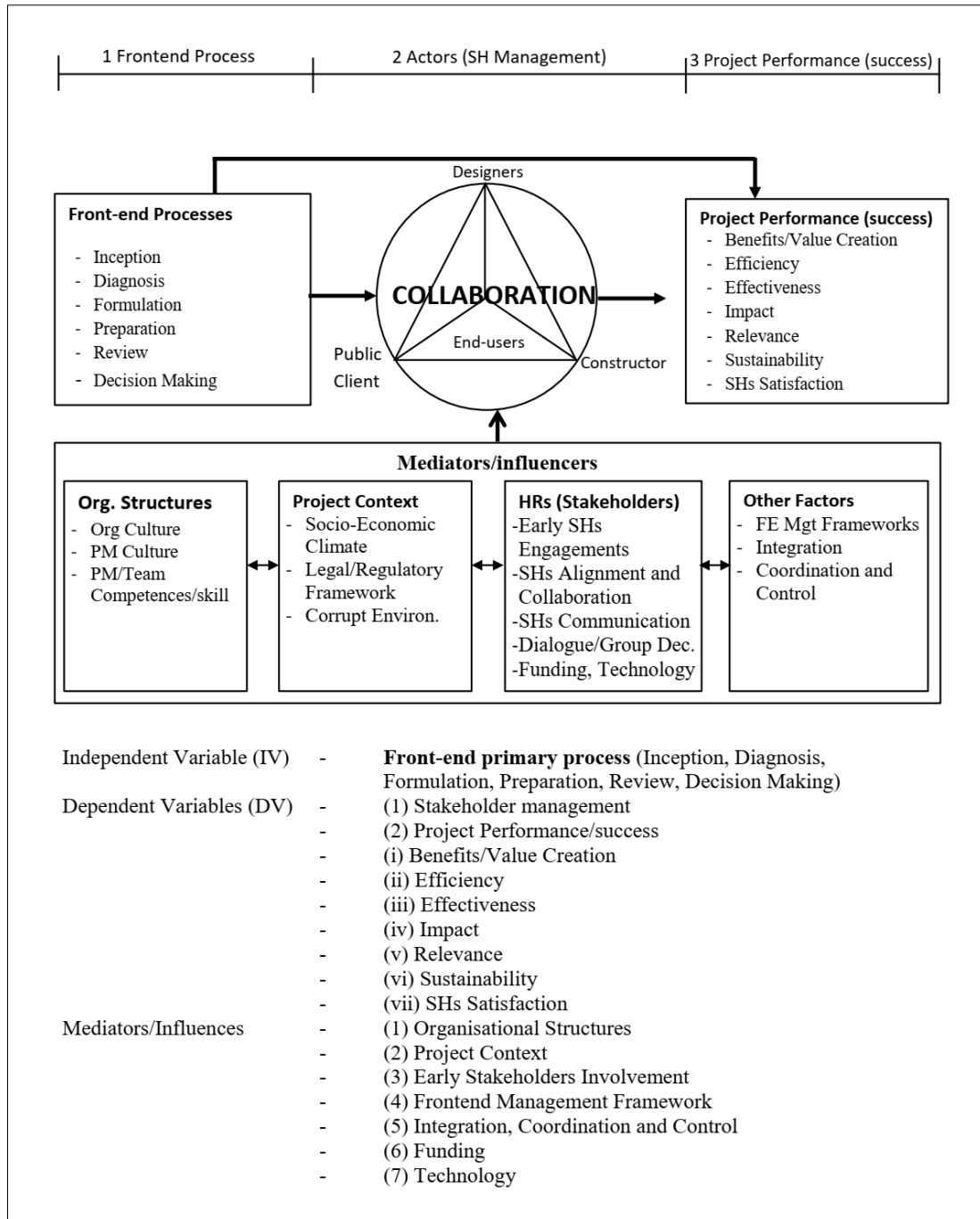


Figure 2.1: Conceptual Framework

Source: Author (2024)

CONCLUSION

Literature review and semi-structured, interviews revealed the factors that affect project definition and the front-end factors that influence project performance which include the project environment, organizational structures (organizational culture, project management culture, project manager/team skill and competence), project resources, others (project management framework, integration, coordination and control) interact with front-end processes to enhance project performance. These factors are mapped to develop the conceptual framework (figure 2) for

enhancement of project performance. This paper is part of a larger investigation aimed at developing a framework for effectively managing the front-end of public building project in the South-South Region, Nigeria.

REFERENCES

- Algahtani, F., Chinyo, E., Mushatat, S and Oloke, D (2015). Factors affecting performance of projects: A conceptual framework. *International Journal of Scientific and Engineer Research*, Vol. 6 Issue 4.

- Al-Nabae, N and Sammani, D (2021). Factors that influencing project management performance: A review. *International Journal of Academic Research in Business and Social Sciences*. Vol. II, No. 8, E-ISSN: 2222-6990.
- Babaei, A., Locatell, G and Sainat, T. (2021). What is wrong with frontend of infrastructure magaprojects and how to fix it: A systematic literature review science direct.com.
- Bal, Menoka, Briyde, David, Fearon, Damian, Ochieng and Edward (2013). Stakeholder Engagement: *Achieving Sustainability in the Construction Sector: Sustain. J.* 6, 695-710.
- Bosfield, R. P. (2012), *Front-end Planning in the Modern Construction Industry. M.Sc Thesis*, Arizona State University.
- CABE (2003). *Creating Excellent Buildings: A guide for clients*. CABE London.
- Caixeta, M. C and Fabricio, M. M (2021). Physical-digital model for co-design in healthcare buildings. *J. Build*, 34, 101900.
- Cano, J. L. and Lidon, I. (2011). Guided reflection on project definition. *International Journal of Project Management*, 29 (5), 525-536.
- Chbaly, H., Forgues, D and Rajeb, S. B (2021). Towards a framework for promoting communication during Project definition. <https://www.mdpi.com/journal/sustainability>.
- Construction Industry Institute CII (1994), *Pre-Project Planning Beginning a Project the Right Way*. Special publication 39-1 Austin, Texas: *Construction Industry Institute*, The University of Texas at Austin.
- Contrarelli, C., Flybjerg, B., Mokia, E.Z. and Vau-Wee, B (2010). Cost overruns in large scale transportation infrastructure projects: explanations and their theoretical embeddedness. *European Journal of Transport and Infrastructure Research*, 10(1), 5-18.
- Dvir, D., Raz, T and Shenbar, A. J (2003). An empirical analysis of the relationship between project planning and project success. *International Journal of Project Management*, 21, 89-95.
- Edkins, A.; Geraldi, J., Morris, P., and Smith, A. (2013). Exploring the front-end of Project Management. Working Paper Proceedings, *Engineering Project Organization conference*. Rheden, The Netherlands.
- Edkins, A.; Geraldi, J., Morris, P., and Smith, A. (2013). Exploring the front-end of Project Management. Working Paper Proceedings, *Engineering Project Organization conference*. Rheden, The Netherlands.
- Elkjaer, M and Felding F (1999). Applied project risk management loop of control. *Project management*, 5(1), 16-25.
- Englund, R. L. and Graham, R. J. (1999) Englund (1999) from experience linking projects to strategy.pdf *Journal of Project Innovation Management* 16 (1), 52-64.
- Hansen, S., Too, E and Le, T (2018). Retrospective look on front-end planning in the construction industry. a literature review of 30 years of research. *International Journal of Construction Supply Chain Management* 8 (1): 19-42.
- Hansen, S., Too, E and Le, T (2018). Retrospective look on front-end planning in the construction industry. a literature review of 30 years of research. *International Journal of Construction Supply Chain Management* 8 (1): 19-42.
- Horsely, A.; France, C.; and Quatermas, B. (2003). Delivery of Energy Efficient Building: A Design Procedure to Demonstrate Environmental and Economic Benefits. *Construction Management and Economic*, 16, 65-73.
- Irons, K. T and Gibson, G.E (2006). Case Study Analysis in Support of Front-end Planning Implementation, CII University of Texa, Austin.
- Kahkonen, K. (1999). Multi-character model of the construction project definition process. *Automation in construction*, 8 (6), 625-632.
- Kerzer, H (2013). *Project Management: A Systems Approach to Planning, Scheduling and Controlling*; 11th Edition, John Wiley and Sons Publishers Hobokon.
- Kusters, J. F (2016). The value and necessity of the project management plan: the pre-ward phase of BV projects from the vendors perspective. Delfr University of Technology, Rotter dam.
- Kwak, Y.H.; Liu, M.; Patanakul, P. and Zwikael O. (2014). *The Challenges and Best Practice of Managing Government Projects and Programmes*, Newton Square. PMI.
- Larsen, A.S.A., Karlsen, A. T and Andersen, B (2021). Exploring collaboration in hospital projects' front-end phase. *Internal Journal of Project Management*, 39, 557-569.
- Leyva, J. A. M. and Matovic, V. (2011). *Project Management Practices at the Front-End of Management Consulting Projects. An exploratory study of the perspectives of Swedish management consultants*. Umea school of Business: Umea University.
- Morris, P. G. (1997). *The management of projects*. London: Theories Telfund.
- Morris, P. G. (1998). Issues in project management in J.K. Pinto (Ed), the project management: *Project management handbook*, San Fransisco Jossey-Bass Publishers.
- Morris, P. W.G. (2013). *Project Management Reconstructed*, Willey Blackwell, Chicester.
- Morris, P. W.G. (2013). *Project Management Reconstructed*, Willey Blackwell, Chicester.
- Morris, P. W.G. (2013). *Project Management Reconstructed*, Willey Blackwell, Chicester.
- Nyaminani, E (2021). Development of a front-end construction project management framework in

- Rwanda: A case of Rwanda Housing Authority (RHA). Jono Kanyatta University of Agriculture and Technology, Kenya.
- Project Management Institute PMI (2006), *Government Extension to PMBOK 3rd ed.* Newton Square. PMI Inc.
 - Project Management Institute PMI (2013) *PMBOK Guide 5th Ed.* Newton Square, PMI Inc.
 - Project Management Institute, PMI (2017): Case Study: *Milestones to Efficiency –Factors that Influence Programme Management, Success in U.S. Federal Agencies. Pulse of the Profession.* Naton Square PMI Inc.
 - Rui, Z., Li, C., Peng, F., Ling, K., Chen, G and Zhou, X (2017). Development of industry performance metrics for offshore oil and gas project. *Journal of Natural Gas Science and Engineering*, 39, 44-53.
 - Safapour, F and Keruanshanchi, S (2019). Identifying early indicators of manageable rework causes and selecting mitigating best practices for construction. *J. Manag. Eng.* 35, 4018060.
 - Serugga, J., Etge, B.M., Bernardi, E. R., Kagioglio, M and Tzortzopoulos, P (2020). Front-end design and value generation: A housing project analysis. 28th Annual conference of the international group for lean construction.
 - Shenhar, A. J.; Tishler, A.; Dvir, D.; Lipovetsky, S. and Lechler, T. (2002). Refining the search for project success factors: A multivariate, Typological Approach. *R & D Management*, 32 (2), 111-126.
 - Wang, Y (2002). Project Risk Management Using Project Definition Rating Index (PDRI), CII University of Texas, Austin.
 - Wateridge, J. (1998). How can IT Project be measured *International Journal of Project Management*, 16 (1), 59-63.
 - Wheltons, M. and Ballard, G. (2002). Project definition and wicked problems. *Proceedings of the international group for Lean construction 10th Annual Conference* (P.13).
 - Wheltons, M. and Ballard, G. (2002). Project definition and wicked problems. *Proceedings of the international group for Lean construction 10th Annual Conference* (P.13).
 - Wideman, R. M. (1990). *Total Project Management of Complex Projects, Improving Performance with Modern Techniques.* Presentation in five cities in India for the Consultancy Development Centre New Delhi.
 - William, T. (2016). Identifying success factors in Construction Projects: A case Study. *Project Management Journal* 47 (1), 97-112.
 - Winter, M. and Szezepanek, T. (2009). *Images of Projects.* Surrey; Gower Publishing.
 - Xiang, C., Yang, Z and Zhang, L (2016). Improving is development team performance during requirement analysis in projects the perceptivities from shared mental model and emotional intelligence. *International Journal of Project management*, 34 (7), 1266-1279.
 - Yang, L (2017). Requirement engineering practice to improve project performance and competitive advantages, *IJSMS*, 2 (3), 27178.