A Framework for Understanding the Dynamic Nature of Value in Design and Construction

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Outline

• Introduction
• Research Scope & Methodology
• Value Theory
• Stakeholders Theory
• Multi-attribute Integration Framework
• Conclusion
Introduction

Construction

LEAN

Value

- Lean theory and practice
- TFV theory and applicability
- Concepts
Delivering value in projects has been a major concern in the construction industry.

• Maximizing value delivery to the paying customer or the client;
• Encompassing the end customer or the user;
• Involving other stakeholders in the supply chain;
• Similar emphasis is expressed in the lean approach regarding the idea of maximizing value to different customers, the purchasers, users, and producers-representing the entities who deliver the system (Ballard et al. 2001).

The problem in Delivering value

- The major struggle in the construction industry is **understanding project value** and its generation throughout the project phases. Koskela (1996) admitted that it is theoretically and conceptually hard to understand value generation during projects.

- Value is seen as **an ambiguous term** and it is still **not well communicated** (Salvatierra-Garrido et al. 2012).

- **Value conflicts** are found to be high in construction organizations leading to low commitment from internal stakeholders (Panahi et al. 2017).

- The literature is found to be **diverse** in connection with **value concepts** and complications.

This paper is at the level of diagnosis to understand the dynamic nature of value through understanding its concepts.
Problem Statement

• How many times have you heard about value concepts at the IGLC conference?

• What are the different contexts in which value concepts were used?

• How many times have you heard about the different factors that affect value delivery on projects?
Objective

- The overall objective is to identify the research trends concerned with value in construction and indicate the probable gaps in knowing the following suggesting areas that need further investigation.
- The authors aim to comprehend the different attributes and the different models presented in the body of knowledge. The research presented in this paper is a primary step towards a more in-depth analysis of value through linking the ideas in one coherent framework.

We aim at building a unified platform for future research endeavors.
Research Scope and Methodology

1. Collecting references from the IGLC conference papers and other google scholar papers from the fields of construction as well as fields of marketing and business discussing customers value and concepts related to value generation and enhancement;

2. Exploring and scrutinizing the papers and identifying the diverse topics included;
3. Categorizing the references according to the topics and keywords identified;
4. Developing the framework based on the identified subjects; and
5. Making sense of the mapped topics and the framework by adding the different related dimensions in a logical manner based on the overall readings and on the experience of the authors in the construction industry.
WHAT'S OUT THERE?

VALUE-RELATED RESEARCH

WHAT'S OUT THERE?
Value Theory

- Value is often defined as the understanding and achievement of the client’s needs or the client’s objectives (traditionally connected to: cost, time and quality) (Bertelsen and Emmitt 2005).

- Value is the result of an ‘evaluative judgement’ where values represent the basis for such judgement (Sánchez-Fernández and Iniesta-Bonillo 2007).

- In a project’s context, the design and construction involve multiple stakeholders and parties; These were categorized into three entities: responsible stakeholder, impacted stakeholder, and interested stakeholder (Zhang and El-Gohary 2016).

- Project value is the result of negotiated and shared guiding principles to which all stakeholders shall subscribe (Thomson et al. 2003):

  “When individuals collaborate to realize a common goal, projects are formed. A value system can emerge if values are expressed and shared between them”
Value Theory

- Having to agree on a common perspective of what the project value constitutes is explicitly faced with hurdles concerning:
  - Communication
  - Willingness to compromise
  - Position or authority of different stakeholders
  - Changing or evolving nature of value over time

- Ballard and Howell (1998) stressed on the role of the designer to clarify the effects of customer’s desires (means), which could make an influence on their goals.

(Rozenes and Cohen 2017)
Stakeholders Theory

• Donaldson and Preston (1995) elaborated on the stakeholders theory stressing on its core concept which is acknowledging the fact that each stakeholder has ‘diverse interests’, thus, it is a moral obligation to have a “mutually supportive framework”.

• Stakeholders are said to have hidden ‘reservoirs of power’ that they exercise during their interactions within the social network (Bourne and Walker 2005).

• Researchers have suggested several methods to address this engagement through project management approaches:

  Stakeholders Impact Index (stakeholders’ influence)  Critical Success Factors (CSF) “managing stakeholders with social responsibilities”

(Olander 2007)                                    (Yang et al. 2009)
VALUE-RELATED RESEARCH

HOW CAN THESE INFO BE COMPILED?
Multi-attribute Integration Framework

• A conceptual framework is “an interconnected set of ideas (theories) about how a particular phenomenon functions or is related to its parts. The framework serves as the basis for understanding the causal or correlational patterns of interconnections across events, ideas, observations, concepts, knowledge, interpretations and other components of experience” (Svinicki 2010, p.5).

• The framework developed is considered a visual mapping for the broad topics interfering with value perceptions, generation, and enhancement.
Multi-attribute Integration Framework

A  Value Concept

B  Project Setup

C  Dynamic Value
First, the research delves into recording Value Characteristics which is observed to be a hot topic and a path to understand the ‘ambiguous’ concept (Barima 2010).

Value is argued to be
(1) a subjective judgement due to the interference of human personal interest,
(2) an objective measurement when considering and comparing alternatives as to which is more valuable,
(3) a context-dependent matter,
(4) a dynamic issue as it changes over time,
(5) information-dependent, and
(6) instrumental for projects (Thyssen et al. 2010).
Value Concept

First, the research delves into recording *Value Characteristics* which is observed to be a hot topic and a path to understand the ‘ambiguous’ concept (Barima 2010).

Second, researchers examined *Value Types* in construction projects, and the most common terminology found is differentiating between product value and process value.

**Process value** represents both soft values (e.g. resolving conflicts, better communication) and hard values (e.g. adhering to budget and time requirements).

**Product value** represents the built facility or the project with respect to firmness, commodity, and delight, or the Vitruvian values (Emmitt et al. 2005).
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Value Assessment
Third, value on projects need to be evaluated so that management practices could take place effectively.

True value, Perceived value & Estimated value
Core value & Added value

(Drevland et al. 2018)
(Salem Khalifa 2004)
Project Setup

Project Characteristics
- Project Features and Legal Aspects
  - Cost
  - Time
  - Quality
  - Safety
  - Legislation
- Triple-bottom-line (Sustainability Aspects)
  - Social
  - Environmental
  - Economic

Organization Structure (Stakeholders Network)
- Role within the Social Network
  - Active/Passive Responsibilities
- Categories of Stakeholders
  - Power
  - Urgency
  - Legitimacy
- Position and Relations between Stakeholders
  - Nature of Power and Influence

Mode of Operation
- Contractual Provisions
- Delivery Method
- Knowledge Sharing System
- Communication Strategy
- Business Strategy
- Governance
Project Setup

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**Project Characteristics** are associated with the project features that are normally set at the beginning of every project.

(Novak 2012)
Organization Structure is a fundamental category that reflects on the stakeholders’ important role in value creation and enhancement.

Not all stakeholders take an active role in the project to maximize value and some are passive recipients of value (Drevland et al. 2017).
The **Mode of Operation** is the third core aspect that has a direct effect on enhancing value generation on projects. The delivery method, the contractual provisions, and the knowledge sharing system are basic drivers when it comes to value delivery.
Tackling: Value Models
Practical vs. Conceptual Level

Value Management
Value Engineering

Multi-attribute Integration Framework

Value Concept
Value Characteristics
Value Types
- Product vs Process
- Personal vs Organizational

Value Assessment
- True Value
- Perceived Value
- Estimated Value
- Core Value & Added Value

Project Setup
Project Features and Legal Aspects
- Cost
- Time
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Value Perceptions
Conceptual Level

Value Management

Models to Enhance Value Generation & Alignment of Value
Practical Level

Dynamic Value Considerations with respect to time evolution and project progression
The aforementioned factors and attributes are not constant and might change with time.

The value concept and the three main categories of the project setup are subcategories of one another.

Any potential change in any of the categories would affect other factors in other categories.

Construction processes are described as emergent and highly dynamic systems in an emergent setting with a complex-emergent customer organization (Bertelsen and Emmitt 2005).
Conclusion

• The value concept has been gaining momentum in construction specifically in the lean construction industry.

• A synthesis of the encountered topics within the literature resulted in a conceptual framework for understanding the diverse categories and attributes in regards to value generation, communication and enhancement.

• The framework helps in establishing a shared understanding about the concepts, factors, and aspects addressing value in design and construction.

• Certain gaps were observed on the practical level mainly regarding enhancing project value based on the collective attributes. Therefore, project management practices need to cater for the different factors within the organization structure and the mode of operation.
THANK YOU