

RESULTS OF KEY INDICATORS FROM LINGUISTIC ACTION PERSPECTIVE IN PANDEMIC: CASE STUDY

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AGENDA

Introduction

- Context
- State of the Art and Practice
- Need and Relevance of Research

Research method

Results

Analysis and discussions

Conclusions

CONTEXT

Lean Practices manage to:

Reduce:

- Construction times and cost
- Energy consumption

Improve:

- Conditions of safety
- Occupational health
- Interpersonal relationships

Focus on:

- ✓ Tangible waste
- x No intangible waste
- ✓ Planning reliability and performance levels

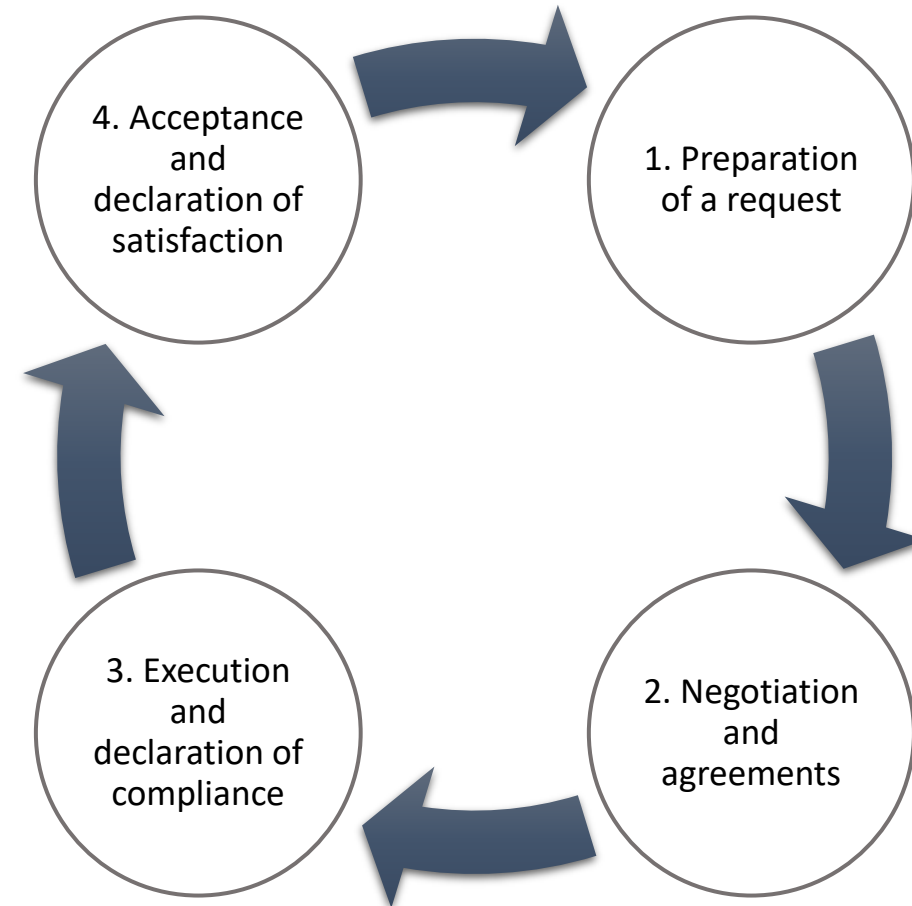
Need of:

- ✓ Adequate commitment management at weekly planning meetings
- ✓ Coordinated action

Presentación

CONTEXT: “*Linguistic Action Perspective*”

Howell et al. (2004) propose Linguistic Action Perspective (LAP) developed by Flores (2015)



STATE OF ART

4 articles regarding “Linguistic Action Perspective” in construction projects

Only one proposal of LAP indicators (Salazar et.al 2021)

Still does not explain the relationship between how these commitments are established and the outcome

Only partial results of the relationship between some LAP indicators, Percentage Plan Completed (PPC) and Social Networks

This case study in the pandemic: measurement and control of commitments indicators in planning meetings focusing on team engagement for the first time.

RELEVANCE OF RESEARCH

1

Shortage of studies detailing how LPS directly affects constructions projects

2

Pandemic, interpersonal relationships at work, engagement and labour productivity

3

LAP “Engagement” indicators aim to review commitment management at weekly LPS meetings

4

Core of Lean Construction are the people

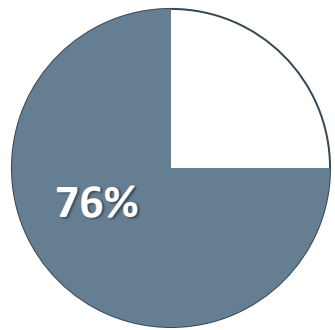
Purpose

- ✓ Measure and analyze “Engagement” LAP indicators to review commitment management at weekly LPS meeting during the pandemic
 - ✓ Repetitive behaviors of the participants could affect a correct commitment management.
- ✓ Study relationship between PPC and “Engagement” indicators

RESEARCH METHOD

❖ Case study:

Allows in-depth and multifaceted scans of complex problems in a real environment (Yin 2003).



LPS implementation in 2019

❖ Colombian construction company:

- ✓ 27 residential building projects
- ✓ September-November 2020
- ✓ Several years implementing LPS
- ✓ Use of “Engagement” indicators as part of a pandemic labour reactivation strategy



Intention of participate in this research and adopt new tools for improving commitments in projects

❖ Correlation study:

Correlation analysis between PPC and those indicators



Indicators for control and improve interpersonal relationships at work and engagement during weekly work planning meetings.

RESULTS OBTAINED

Table 2. Correlations between Engagement and PPC

	Person is late	Checks the cell phone	Cell phone rings	Talks by cell phone	Leaves the room	Walkie-talkie sounds	Talks on walkie-talkie	Does not speak	Does not take notes	Does not look at the person who is speaking
Project	E1	E2	E3	E4	E5	E6	E7	E8	E9	E10
P1	-0,90									
P2										
P3		-0,76			-0,74					
P4		-0,65								
P5	-0,84								0,66	
P6	0,63	0,84		0,72					-0,82	
P7		-0,66	-0,63	-0,76	-0,87					
P8			-0,79	-0,75					-0,98	
P9		-0,72			0,77					
P10			0,63	0,55						
P11	-0,65								-0,73	
P12			-0,77	-0,77						
P13		-0,79						-0,68	-0,75	
P14		-0,79								
P15		-0,79		-0,73	-0,69					
P16			-0,69	-0,77						
P17		-0,63	-0,79							
P18		-0,81		-0,54	-0,50					
P19		-0,74								
P20		0,77	0,75						-0,85	0,74
P21	-0,68									
P22										
P23										
P24	0,85	-0,92			0,85				0,95	
P25									-0,70	
P26		-0,65							-0,67	
P27			-0,69							

ANALYSIS AND DISCUSSION

- ❑ Different levels of correlations between PPC and LAP
“Engagement” indicators depends on specific characteristics of projects.
- ❑ Strong correlations:
 - ✓ Average PPC was between 60% and 90%;
 - ✓ Project percentage of progress was between 65% and 95%
 - ✓ Use of a “Big Room”
 - ✓ 10 to 20 meetings attendees.
- ❑ Long-term meeting difficult concentration so, managing time is a key. Factors affecting duration:
 - ✓ Size and progress of the project
 - ✓ Number of commitments
 - ✓ Number of attendees (number of subcontractors)
 - ✓ Discussion of technical aspects
- ❑ Week correlations:
 - ✓ Meeting attendance less than 20%
 - ✓ Average project PPC of less than 50%
 - ✓ PPC close to or greater than 90%
 - ✓ Meetings lasting more than 2 hours
 - ✓ Meetings with 10 or fewer attendees
 - ✓ Project percentage of progress was less than 15% and above 95% in some cases.

ANALYSIS AND DISCUSSION

Most often indicators
with strong correlation

Related to cellphone use:

- ✓ “Check the cell phone”
- ✓ “Cell phone rings”
- ✓ “Talk by cell phone”
- ✓ “Does not take notes”

Lower frequency
indicators in correlations

- “Person is late”
- “Does not participate in
the meeting”

Irrelevant indicators

- × “Walkie-talkie sounds”
- × “Talk on Walkie-talkie
- × “Does not look at the
person who is speaking”

ANALYSIS AND DISCUSSION: *Limitations*

Open-pit meetings

Standing meetings

Virtual or semi-face-to-face meeting

Physical distance between people

Outdoor LPS board

CONCLUSIONS

LAP "Engagement" indicators were measured and analyzed in a real context, pandemic construction projects.

There is an important relationship between cell phone use and note-taking at weekly planning meetings and the PPC.

Stronger relationships appear more frequently:

- Project progress rate is between 65% and 95%;
- Average PPC is between 60% and 90% or nearby values;
- meetings are held in enclosed spaces and have 10 to 20 attendees

Control and traceability of LAP "Engagement" indicators in the post-pandemic context is useful to improve the management of commitments and application of LPS construction projects.

CONCLUSIONS

- ❑ New knowledge and contribution to the state of art and practice in LPS on post-pandemic context
- ❑ Indicators measure aspects of the behavior of construction workers that have been understudied to date
- ❑ Barriers to research:
 - Data reliability and variability
 - Number of projects
 - Number of weeks studied
 - PPC as the sole indicator of comparison.
- ❑ Future research:
 - Other methods of relationship, causality and/or prediction analysis
 - Structural equation modeling (SEM)
 - Machine Learning
 - Future methodology for virtual or semi-face-to-face meetings and the study of other performance indicators.

THANK YOU!

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