

# CASE STUDY IN THE APPLICATION OF THE LAST PLANNER® SYSTEM

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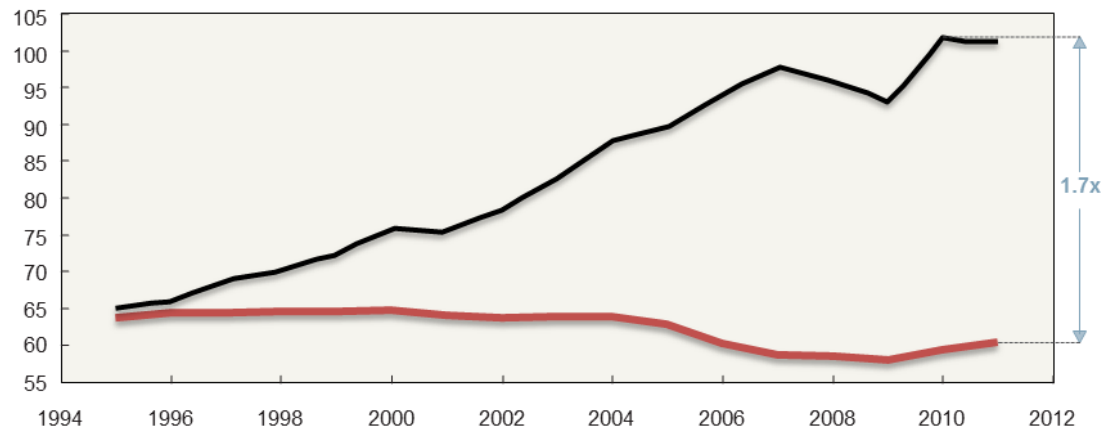
# Global and Irish Context

## Productivity Opportunity <sup>1</sup>

Overview of productivity improvement over time  
Productivity (value added per worker), real, \$ 2005

— Manufacturing  
— Construction

\$ thousand per worker



- Global Productivity Opportunity from Literature
- Irish Context following Global path



Costs of 7% in Dublin 2018<sup>2</sup>



Skill Shortages<sup>3</sup>

- Lean Construction Institute reporting that the adoptions of the Last Planner System

1. McKinsey Executive Report Barbosa et al (2017)  
2. Turner and Townsend 2018  
3. Linesight 2019

# Literature Review – Last Planner® System

- ❑ Developed in 1992 by Glen Ballard and Greg Howell
- ❑ *“focuses on the creation of predictable and reliable workflow in construction production”* Mossman (2018).



## Literature Review – Perceived Benefits

- **95.5%** of practitioners perceived improvements as a result of LPS (Viana et al 2010)
- Similar benefits by all roles
  - Site Engineers, Foremen, Crew Leaders
- Difference in challenges

# Perceived Benefits of LPS from Literature Review

Number	Benefits	Source
1	Improve project delivery / reduce production time	Fernandez-Solis et al. 2013; Viana et al (2010); Alarcón et al (2002); Fiallo et al (2002); Mejía-Plata et al (2016)
2	More reliable planning	Fernandez-Solis et al. 2013; Johansen et al 2010, Viana et al (2010); Johnansen et al (2003);
3	Knowledge expansion and learning among project teams	Fernandez-Solis et al. 2013; Viana et al (2010); Alarcón et al (2002)
4	Improved Communication within team	Fernandez-Solis et al. 2013; Viana et al (2010)
5	Improved supply chain integration	Fernandez-Solis et al. 2013; Alarcón et al (2002)
6	Enhancement of managerial practices in construction	Fernandez-Solis et al. 2013; Viana et al (2010)
7	Improvement in quality of work practice at construction site	Fernandez-Solis et al. 2013
8	Less Firefighting or fewer day to day problems	Fernandez-Solis et al. 2013

*61 Case Studies from USA, Asia and Brazil, Chile, United Kingdom, Finland and New Zealand*

# Perceived Challenges of LPS from the Literature Review

Number	Challenges	Source
1	Resistance to change	Fernandez-Solis et al. 2013; Mejía-Plata et al (2016); Hunt et al (2018); Alarcón et al (2002); Viana et al (2010); Koskenvesa et al (2005)
2	Lack of Experience of LPS / lack of training / Quality of information	Fernandez-Solis et al. 2013; Mejía-Plata et al (2016); Alarcón et al (2002); Viana et al (2010); Johansen et al 2010
3	Lack of time to plan / implement	Alarcón et al (2002); Viana et al (2010); Johansen et al 2010
4	Misinterpretation of PPC indicator	Fernandez-Solis et al. 2013; Alarcón et al (2002)
5	Partial or Late implementation of LPS	Fernandez-Solis et al. 2013; Hunt et al (2018)
6	Short term vision	Fernandez-Solis et al. 2013; Alarcón et al (2002)
7	Lack of stakeholder support	Fernandez-Solis et al. 2013; Mejía-Plata et al (2016)
8	Poor use of information generated during implementation	Fernandez-Solis et al. 2013; Viana et al (2010)
9	Lack of commitment/leadership to LPS implementation	Fernandez-Solis et al. 2013, Hunt et al (2018)
10	Bad team chemistry or lack of collaboration	Fernandez-Solis et al. 2013

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# Gaps in literature

- No Irish Case Study published with respect to the:
  - A) perceive benefits and challenges of LPS
  - B) perceive benefits and challenges between roles within the organisation
  - C) perceive benefits and challenges between project types

# Methodology

- Single Case Study; Ardmac (Yin 2009, Stake 2003)
- On Line Survey (Fowler 2013)
  - Sub Group 1 – All Responses (49 respondents)
  - Sub Group 2 – Leadership (Operations Managers and Directors) and Direct Staff (Site Managers, Project Managers, Staff)
  - Sub Group 3 – Sector types (Pharmaceutical and Fit Out)
- Thematic Analysis completed on Data (Braun et al 2006)



# Key Findings – Perception of Benefits of the LPS

Group	LPS
All Respondents	92%
Leaders	100%
Employees	88%

Sector	% Perceive LPS beneficial
Pharmaceutical	95%
Fit Out	78%

**All:** 92% of All Respondents perceive the LPS of benefit

**Group:** 100% of Leaders compared to 88% of Employees perceive LPS to be of benefit

**Sector:** 95% of Pharma projects compared to 78% of Fit Out project

**Conclusion:** Overall results aligns with Viana et al (2010) of 95.5% for all subgroups except Project Type, with Fit Out Projects reporting a 17% difference in perception

# Benefits of the Last Planner® System

Benefits of Last Planner® System	All Responses
Improved Planning Accuracy	40%
Improved Real-Time Control	21%
Improved Proactive Control	19%
Improved Engagement	14%
Improve Design Quality for Construction	7%

## 5 Key Benefits Identified

### Similarities

- 60% of participants aligned with Fernandes-Solis et al (2013)

### Difference

- Focus within design improvements in the case study compared to work quality from the literature review

# Challenges of the Last Planner® System

## 5 Key Challenges Identified

Challenges of Last Planner® System	All Responses
Lack of Full Engagement	31%
Lack of Customisation to suit client type	23%
Lack of Time to Implement	19%
Other	12%
Person versus Process Focus when using PPC indicator	8%
Lack of Standardisation across projects	8%

### Similarities

- Lack of time to implement and lack of full engagement are common to both case study and literature review

### Differences

- Lack of customisation and standardisation cited as a challenge within the case study that was not identified from the literature review
- Lack of training not cited as a challenge, compared to it being number 2 from literature review

# Key Findings

## Similarities to Literature

- Overall results aligns with Viana et al (2010) of 95.5% for all subgroups
- 60% of participants aligned with Fernandes-Solis et al (2013) in the area of perceived benefits including improved planning accuracy, real time control.
- Lack of time to implement and lack of full engagement are common to both case study and literature review in terms of key challenges

## Differences to Literature

- Fit Out Projects reporting a 17% difference in perception compared to Viana et al (2010)
- While quality was perceived as improved in both literature and case study, the focus was different. The case study highlighted improved design quality compared to literature of improved work practices
  - Lack of customisation and standardisation cited as a challenge within the case study that was not identified from the literature review
  - Lack of training not cited as a challenge, compared to it being number 2 from literature review

# Limitations of Research

- Single Case Study
- Part Time Nature of Researchers

# Recommendations

- ❑ Research Case Study Organisation with over a 2 year maturity in the application of the LPS
- ❑ Increase the number of Irish case studies in the application of LPS
- ❑ Further research to understand the new challenges outlined in research



Thank You