



BENCHMARKING BY DENIS LEONARD



deliver projects better, faster, together



Topic and Speaker

Benchmarking is the process of identifying, sharing and using knowledge and best practices. It focuses on how to improve any given business process by leveraging proven approaches rather than merely measuring the best performance. Finding, studying and implementing best practices provides the greatest opportunity for gaining a strategic, operational and financial advantage.

Denis Leonard has a degree in Construction Engineering, an MBA and PhD in Business & Management (Quality Management) is a Fellow of the Chartered Quality Institute, Fellow of the American Society for Quality and a Member of the Chartered Institute of Building. A Certified Lean Practitioner and Certified Six Sigma Black Belt he has experience with Lean, Six Sigma, ISO9001, ISO14001, OHSAS18001, ISO44001 and the EFQM Criteria. He has worked with Quality Management in the construction industry for 15 years in commercial, civil engineering and home building. He is the Head of Integrated Management Systems for GRAHAM.

Presentation Overview

- **What is Benchmarking?**
- **How to Benchmark**
- **Experiences**
- **Resources**
- **Q&A & Take Aways**

What is Benchmarking?

Benchmarking:

- is a technique in which a company measures its performance against that of best in class companies, determines how those companies achieved their performance levels and uses the information to improve its own performance. Subjects that can be benchmarked include strategies, operations and processes. (ASQ)

Organisations Benchmark to:

- Improve profits
- Accelerate and manage change
- Set stretch goals
- Achieve breakthroughs/innovations
- Create a sense of urgency
- Overcome the 'not invented here' syndrome
- See outside the box
- Understand world class performance



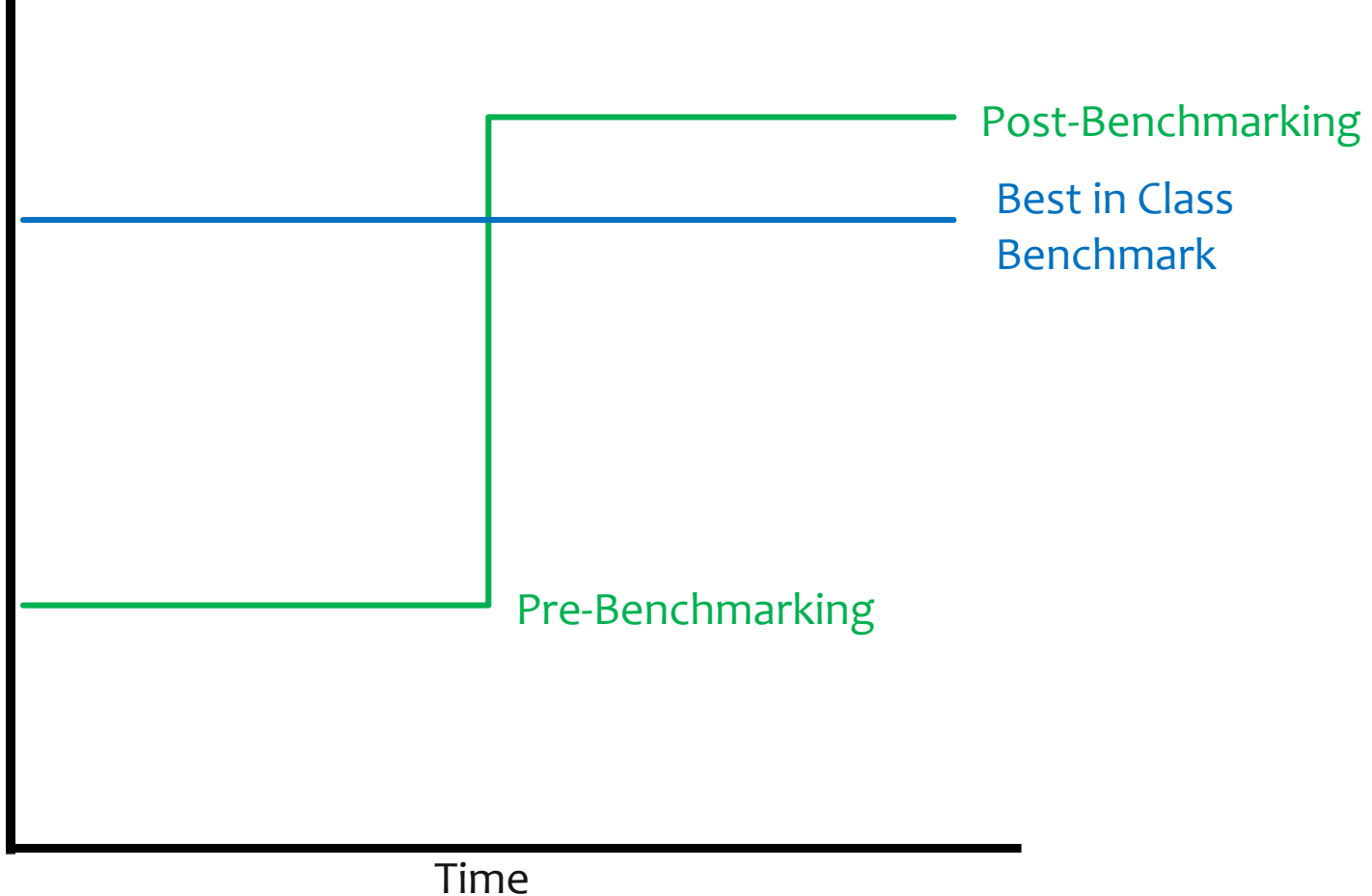
"Our market research indicates that our customers are vague, mysterious phenomena who buy our products randomly for no reason whatsoever."

Benchmarking is the:

- “search for those best practices that will lead to superior performance of the company” Robert Camp
- “continuous process of measuring products, services and practices against the toughest competitors or those recognized as leaders in any field.” David Kearns, CEO Rank Xerox
- “practice of being humble enough to admit that someone else is better at something and being wise enough to learn how to match and even surpass them at it.” APQC

Exceed

Performance



Time

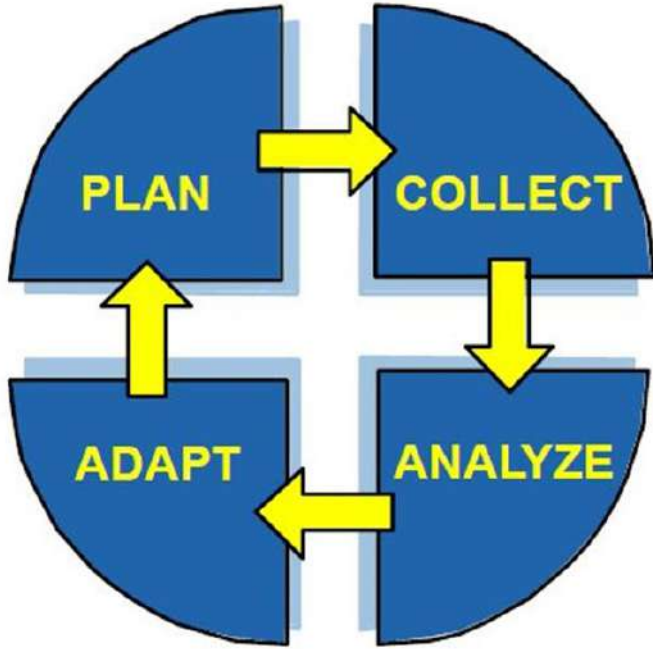
Types of Benchmarking

- **Strategic:** Analysis of world class companies to determine opportunities for strategic change. This is looking at major shifts in the market, new entrants to a market place, economic impacts etc.
- **Performance:** Analysis of relative business performance by comparing key performance indicators/metrics. This allows you to understand if and where gaps exist in your performance.
- **Process or Functional:** Analysis of key processes and functions among best practice companies. This helps you examine why gaps exist and if they do, what to do about them!

How to Benchmark

Benchmarking Model

APQC's Four-Phase Model



Plan

- The study area, key measures and definitions established and documented.
- Data collection tools refined, research conducted to identify the best practice organisations.

Collect

- Collect data
- Lean from the best

Analyse

- Analysing trends and identifying practices that enable and hinder performance
- Final report containing key findings and knowledge transfer
- Develop initial action plan development to adapt and implement what has been learned.

Adapt

- Adaptation and implementation resulting from the best practices.
- Lessons learned from the benchmarking process itself to improve the next opportunity

Tips

- The starting point for any benchmarking is identifying areas within your own organization that have significant impact on your business and need to be improved.
- The next is to analyse these internal processes, activities and metrics in detail so that you understand the details and aspects that need to be improved.
- This will allow you to accurately establish benchmark questions with which to engage in benchmarking.

Tips

- It is also valuable to treat benchmarking like any other project, selecting key team members, establishing responsibilities, timelines, implementation milestones and assessment of impact.
- This structure avoids site visit benchmarking becoming industrial tourism, where you just turn up at a company and ‘look for what interests you’. This usually results in multiple people returning with the same information, huge gaps in the knowledge needed to create successful change and nothing really happening on your return.

Benchmarking Tools

Table 3.1 Tools for different phases of benchmarking process.

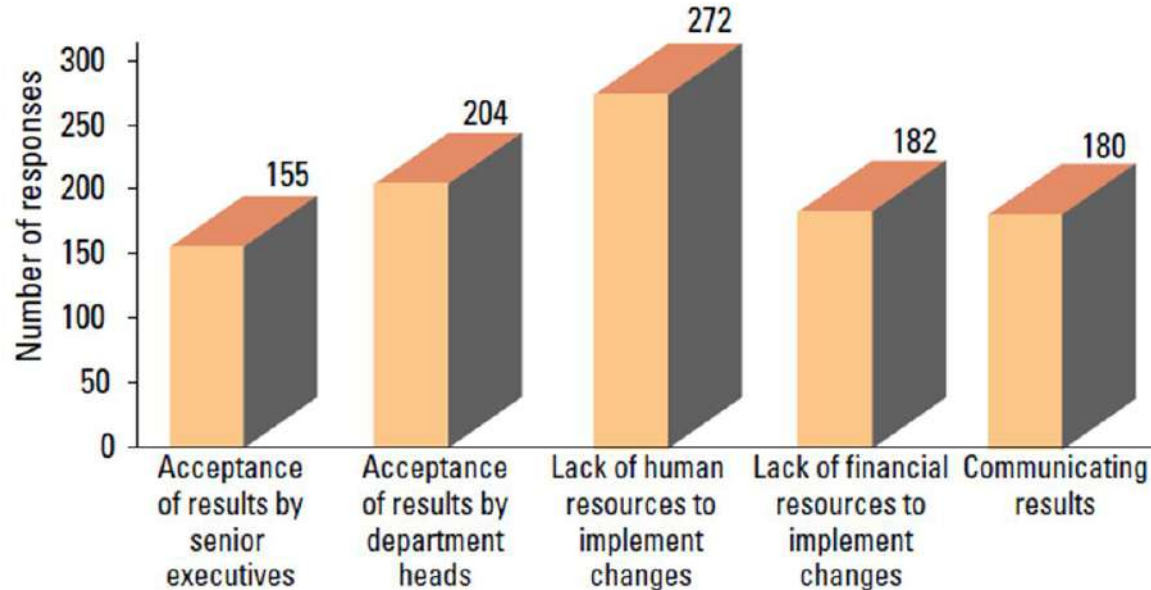
Benchmarking tool	Benchmarking Phase					
	Planning	Data acquisition	Analysis	Integration	Action	Maturity
Focus group	X	X		X		X
Flowcharts	X		X	X	X	X
Radar chart	X		X	X	X	X
Control chart	X		X	X	X	X
Pareto diagram	X		X	X		X
Cause and effect diagram	X	X	X	X		
Run chart	X		X	X	X	X
Gantt chart	X	X	X	X	X	X
Reliability and redundancy				X	X	
Failure mode and effects analysis (FMEA)			X		X	
Cost of quality	X	X	X	X	X	X

Implementation

Successful change management



Biggest Process Improvement Problems



Source: The Benchmarking Exchange survey

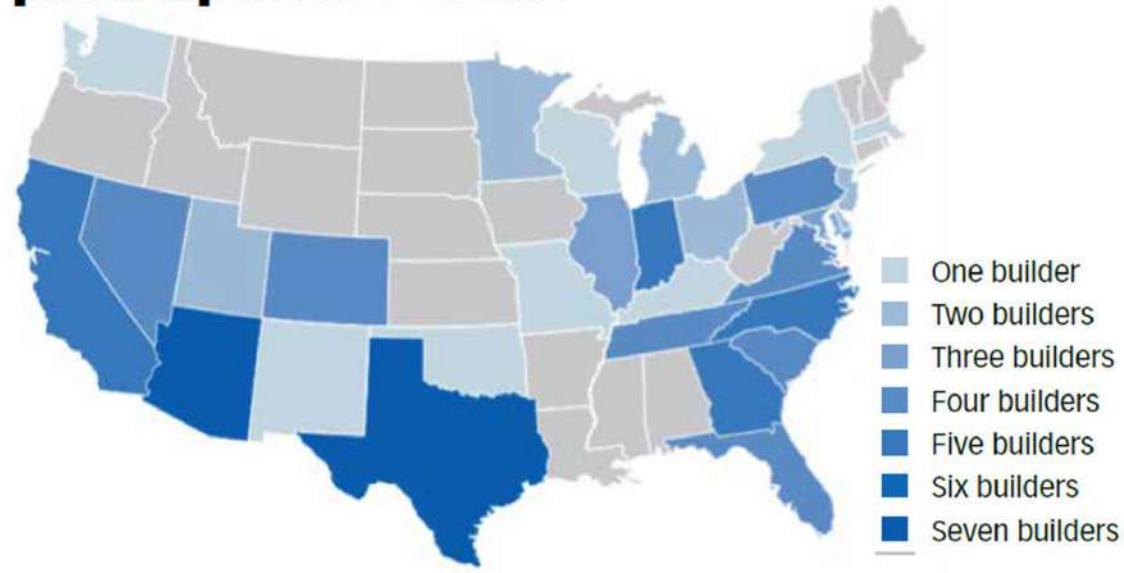
Benchmarking Experiences

Experience

- Bewleys & Coke
- VH & Trek
- National Quality Builder Council US
- Apples to Apples

Builder Benchmarking

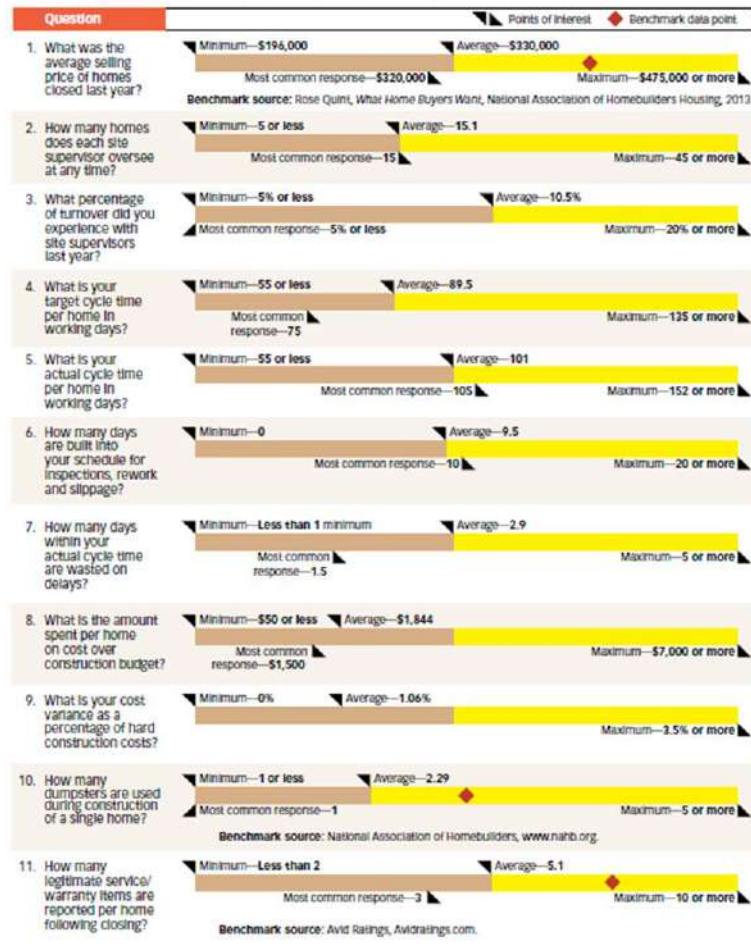
Geographic distribution of builder participants / FIGURE 1



Average metrics: Quality vs. nonquality practitioners / TABLE 1

Question	Performance metric	Quality practitioner (averages)	Nonquality practitioner (averages)
2	Number of homes each site supervisor oversees at any time	12.1	17
3	Percentage of turnover of supervisors	10.25	11.75
4	Target cycle time per home working days	87	91
5	Actual cycle time per home working days	96	103
6	Days built into schedule for inspections, rework and slippage	10	10.4
7	Days within actual cycle time that are wasted on delays	2.5	3.4
8	Amount spent per home on cost over construction budget	\$2,602 (with outlier removed \$935)	\$1,592
9	Cost variance as a percentage of hard construction costs	1.32% (with outlier removed 0.73)	0.97%
11	Number of warranty items reported per home following closing	3.9	5.7

Benchmarking study survey results / FIGURE 2



Note: ▲ The triangles shown above and below the bars mark points of interest along the way, including the average of all builder responses and the mode (or most common response) to each question.

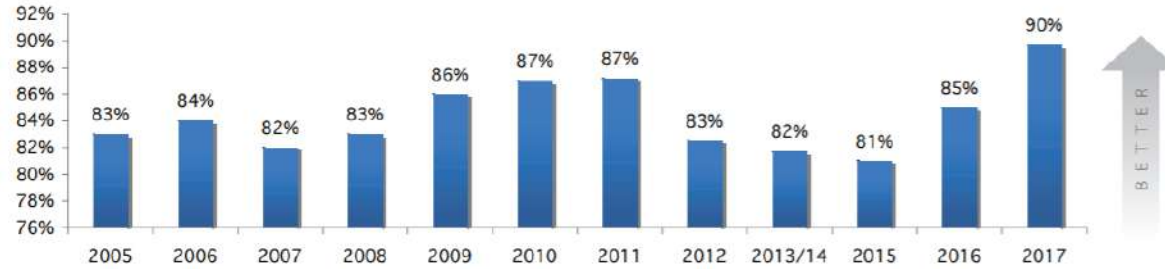
◆ The diamond in the bar is a benchmark data point from our 2014 expert interviews and literature review findings.

Resources for Benchmarking

THE CONSTRUCTION INDUSTRY KEY PERFORMANCE INDICATORS REPORT

[HTTPS://WWW.GLENIGAN.COM/MARKET_ANALYSIS
/CONSTRUCTION-KPI-REPORT/](https://www.glenigan.com/market_analysis/construction-kpi-report/)

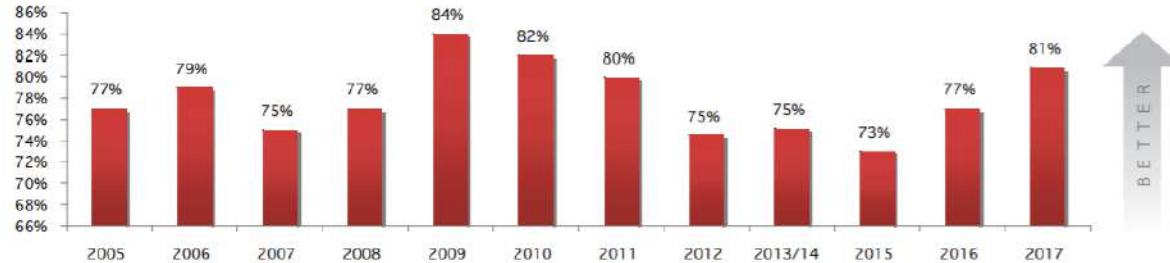
Client Satisfaction - Product



The annual KPI surveys ask clients to rate how satisfied they were with the completed facility on a scale from 1-10. The KPI is the percentage of clients that awarded a score of 8 out of 10 or higher.

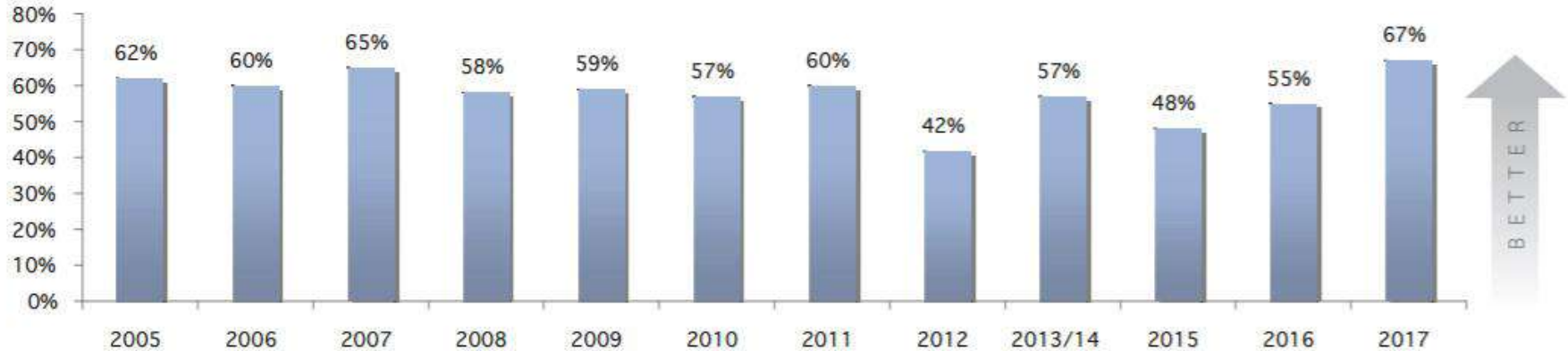
The KPI rose for a second consecutive year, climbing to an all time high of 90%.

Client Satisfaction - Service



The annual KPI surveys ask clients to rate how satisfied they were with the service provided by the project team on a scale from 1-10. The KPI is the percentage of clients that awarded a score of 8 out of 10 or higher.

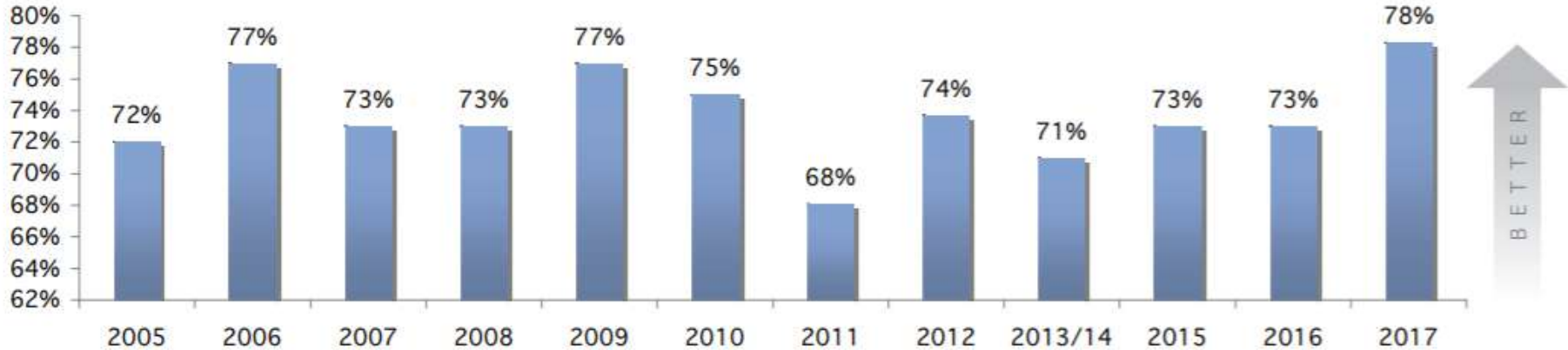
Predictability Time - Construction



The annual KPI surveys ask for the actual out-turn time taken for the construction phase compared with the length of time agreed at the start of that phase. The KPI is the proportion of projects that were on time or better.

The KPI improved in 2017, extending the progress seen in the previous survey.

Defects - Impact at Handover



The annual KPI surveys ask clients to rate the impact of defects in the project at the point of handover, on a scale from 1-10, where 10 represent zero defects. The KPI is the percentage of clients that awarded a score of 8 out of 10 or higher.

The 2017 KPI rose to a record high of 78%.

THE INDUSTRYWEEK BEST PLANTS WINNERS AND FINALISTS STATISTICAL REPORT: 2013-2017

[HTTPS://WWW.INDUSTRYWEEK.COM/INDUSTRYWEEK-BEST-PLANTS-AWARDS/INDUSTRYWEEK-BEST-PLANTS-WINNERS-AND-FINALISTS-STATISTICAL-REPORT-0](https://www.industryweek.com/industryweek-best-plants-awards/industryweek-best-plants-winners-and-finalists-statistical-report-0)

Please indicate the extent to which the theory of constraints has been implemented:

<u>Year</u>	<u>None</u>	<u>Some</u>	<u>Significant</u>
2013	8	69	23
2014	14	50	36
2015	10	40	50
2016	8	50	42
2017	11	53	37
2013-2017	10	51	39

Please indicate the extent to which the Toyota production system has been implemented:

<u>Year</u>	<u>None</u>	<u>Some</u>	<u>Significant</u>
2013	0	54	46
2014	0	29	71
2015	0	20	80
2016	0	31	69
2017	5	26	68
2013-2017	1	30	68

Please indicate the extent to which lean manufacturing has been implemented:

<u>Year</u>	<u>None</u>	<u>Some</u>	<u>Significant</u>
2013	0	0	100
2014	0	0	100
2015	0	5	95
2016	0	15	85
2017	0	21	79
2013-2017	0	9	91

Please indicate the extent to which Six Sigma has been implemented:

<u>Year</u>	<u>None</u>	<u>Some</u>	<u>Significant</u>
2013	0	23	77
2014	21	14	64
2015	5	45	50
2016	8	69	23
2017	11	58	32
2013-2017	9	43	48

Quality techniques extensively implemented (% of plants):

<u>Year</u>	<u>Six Sigma</u>	<u>Quality function deployment</u>	<u>Poka-yoke (mistake-proofing)</u>	<u>Failure mode effect analysis (FMEA)</u>	<u>Total Quality Management</u>	<u>Employee problem-solving teams</u>
2013	92	31	69	77	62	100
2014	64	7	86	86	50	93
2015	55	10	70	75	65	95
2016	69	39	77	92	77	92
2017	58	26	79	90	79	90
2013-2017	66	22	76	84	67	94

Quality techniques extensively implemented (% of plants):

<u>Year</u>	<u>Plan/do/check/act</u>	<u>Advanced product quality planning (APOP)</u>	<u>Manual SPC</u>	<u>Computerized SPC</u>	<u>Design of Experiments</u>	<u>Taguchi methods</u>
2013	92	39	31	92	69	8
2014	93	43	50	50	43	21
2015	70	40	55	50	40	10
2016	100	85	31	62	39	15
2017	100	58	58	37	47	5
2013-2017	90	52	47	56	47	11

Current first-pass yield, typical finished product (%):

<u>Year</u>	<u>Median</u>	<u>Mean</u>	<u>Minimum</u>	<u>Maximum</u>
2013	98.3	95.4	80.1	99.7
2014	98.5	94.0	66.4	99.9
2015	97.7	96.3	89.2	100.0
2016	98.9	97.3	90.1	99.9
2017	98.3	95.7	64.0	99.9
2013-2017	98.3	95.8	64.0	100.0

Adoption of 5S (% of plants):

<u>Year</u>	<u>None</u>	<u>Some</u>	<u>Wide</u>
2013	0	0	100
2014	0	21	79
2015	5	10	85
2016	0	8	92
2017	0	11	90
2013-2017	1	10	89

Adoption of level scheduling (% of plants):

<u>Year</u>	<u>None</u>	<u>Some</u>	<u>Wide</u>
2013	0	39	62
2014	0	21	79
2015	5	25	70
2016	0	8	92
2017	6	39	56
2013-2017	3	27	71

Value-stream mapping (% of plants):

<u>Year</u>	<u>None</u>	<u>Some</u>	<u>Wide</u>
2013	0	8	92
2014	0	36	64
2015	10	35	55
2016	0	46	54
2017	5	42	53
2013-2017	4	34	62

Scrap/rework (% of sales):

<u>Year</u>	<u>Median</u>	<u>Mean</u>	<u>Minimum</u>	<u>Maximum</u>
2013	0.8	1.7	0.1	4.7
2014	0.2	0.9	0.0	3.7
2015	0.9	1.7	0.0	8.3
2016	0.5	1.1	0.1	6.0
2017	0.3	0.6	0.0	2.1
2013-2017	0.5	1.2	0.0	8.3

Baldrige Recipients since 1988

http://patapsco.nist.gov/Award_Recipients/

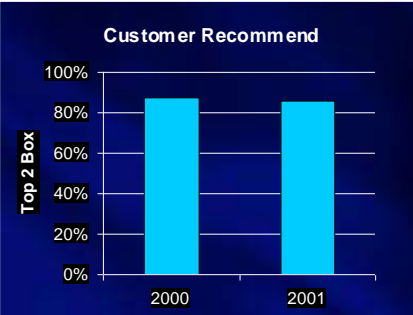
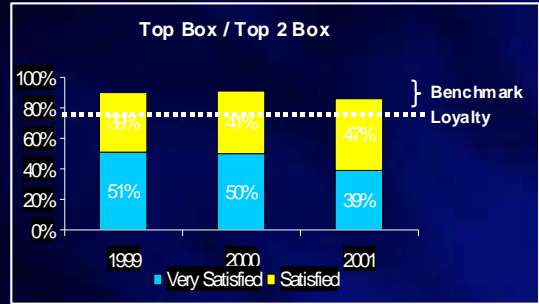
Our process ... Customer Listening

Aligned by:
•Key Core Process
•Industry

	End Users	Dealers	Cat Business Units
Focus Groups	✓	✓	✓
Surveys	✓	✓	✓
Complaint Resolution	✓		
Cat Industry Councils	✓		
Customer Visit	✓	✓	✓
Weekly Reports	✓	✓	✓
Dealer Associations		✓	
Trade Shows	✓		
CatFinancial.com	✓	✓	
CRM	✓		
Benchmarking	✓		
6 Sigma VOC	✓		



Benchmark Performance Levels In Customer Satisfaction



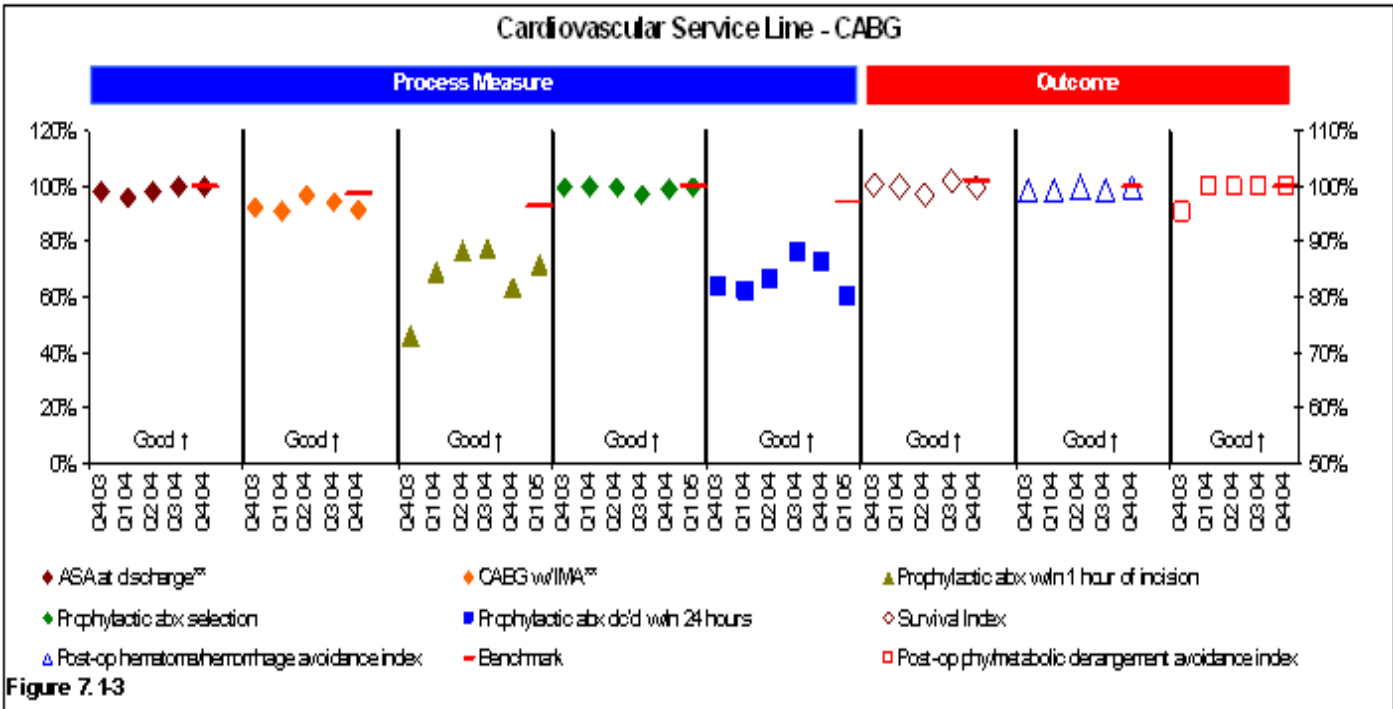
- Process Correlation: -6% top box, -13% top 2 box: "Source: Market Probe"
- Benchmark Performance at 80-95%: "Source: ARI Research and Griggs Anderson/Gartner"
- Loyal Customers at 75%: "Source: Taylor Nelson"



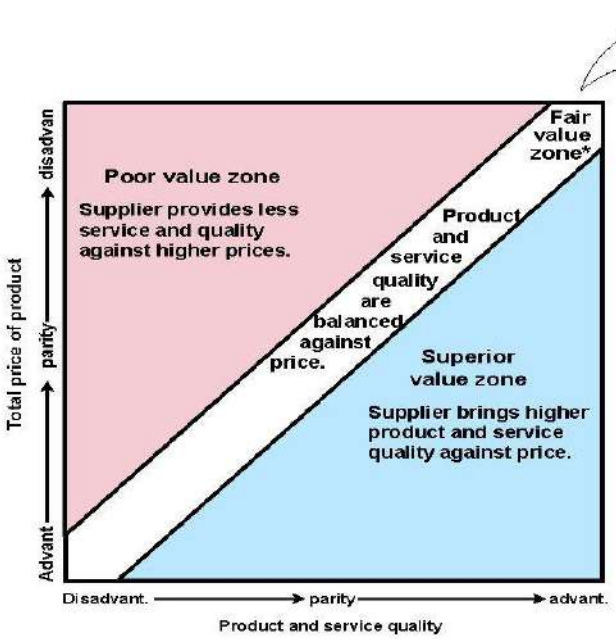
Quest for Excellence
March/April 2003



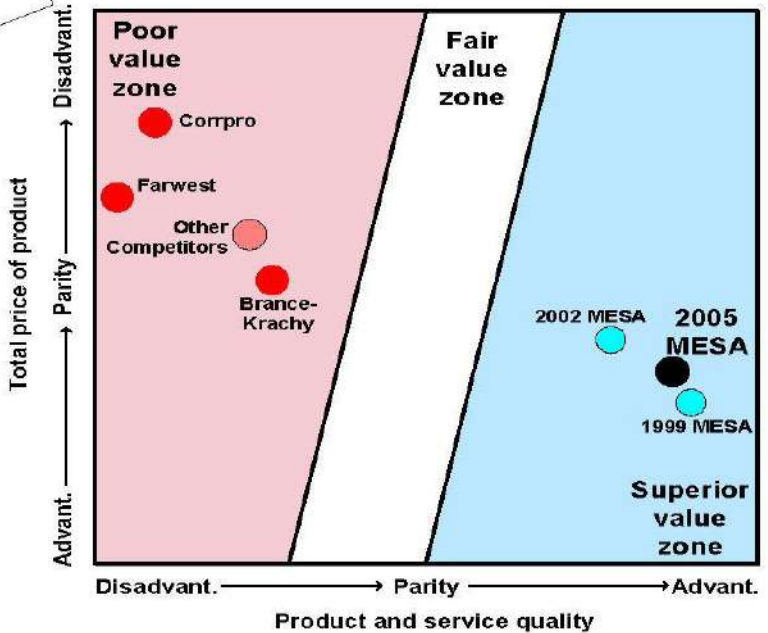
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MESA



*Fair value zone width reflects volume, market change, customer relationship variability



Benchmarking Tools and Comparisons



Offices in Dublin and Belfast

Benchmarking 5 min video (ASQ TV)

http://videos.asq.org/benchmarking?utm_content=&utm_source=email&utm_medium=email&utm_campaign=communications_asq%20weekly%20_04132016

Thank you, Questions and Take Aways

Take Aways from Webinar

- E copy of a benchmarking book
- Paper on benchmarking in construction

Thank you

- You can contact me for more information @ Denis.Leonard@Graham.co.uk

Overview of Lean Construction Ireland

About LCI

WHO WE ARE...

Lean Construction Ireland is an all-island, independent, and not-for-profit association whose members passionately believe that Lean Thinking & Practices can enable and sustain enhanced effectiveness, efficiency, productivity, and profitability for the Irish Construction Sector, Clients, and Supply Chain.

WHAT WE DO...

Lean Construction Ireland leads a community of learning and practice that promotes the application of Lean Thinking & Practices throughout the Irish Architecture, Engineering, Construction (AEC) sector so as to realise value-add for all stakeholders in the value chain. It supports the open exchange of knowledge, information, and experiences around good practices and case studies. It also supports ongoing research into Lean practices nationally and globally, their application to AEC, and their sharing with the wider Lean Construction Ireland Community. It is aligned to LCI USA.

CORE VALUES...

Collaboration. Leadership. Teamwork. Commitment. Knowledge. Innovation. Integrity.

VISION...

Deliver Projects Better, Faster, Together

STAKEHOLDERS...

- Public & Private Capital Project Clients & Owners.
- AEC Supply Chain.
- AEC Representative Bodies & Agencies.
- AEC Professional Bodies.
- AEC Academics.
- Lean Construction Trainers & Consultants.
- Lean Business Ireland.
- Ireland Inc.

OBJECTIVES...

To achieve this Vision Lean Construction Ireland will:

- Promote the application of Lean Thinking & Practices in the Irish AEC sector.
- Develop a national network of members committed to the application of Lean Thinking & Practices.
- Challenge the status quo of current project thinking and delivery methods.
- Advance amongst all stakeholders the business case for Lean Construction knowledge and skills.

Contact LCI



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