



Measuring Productivity Improvements

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- Why Is Productivity Important?
- Example
- What to Measure?
- Discussion/What do you Measure?

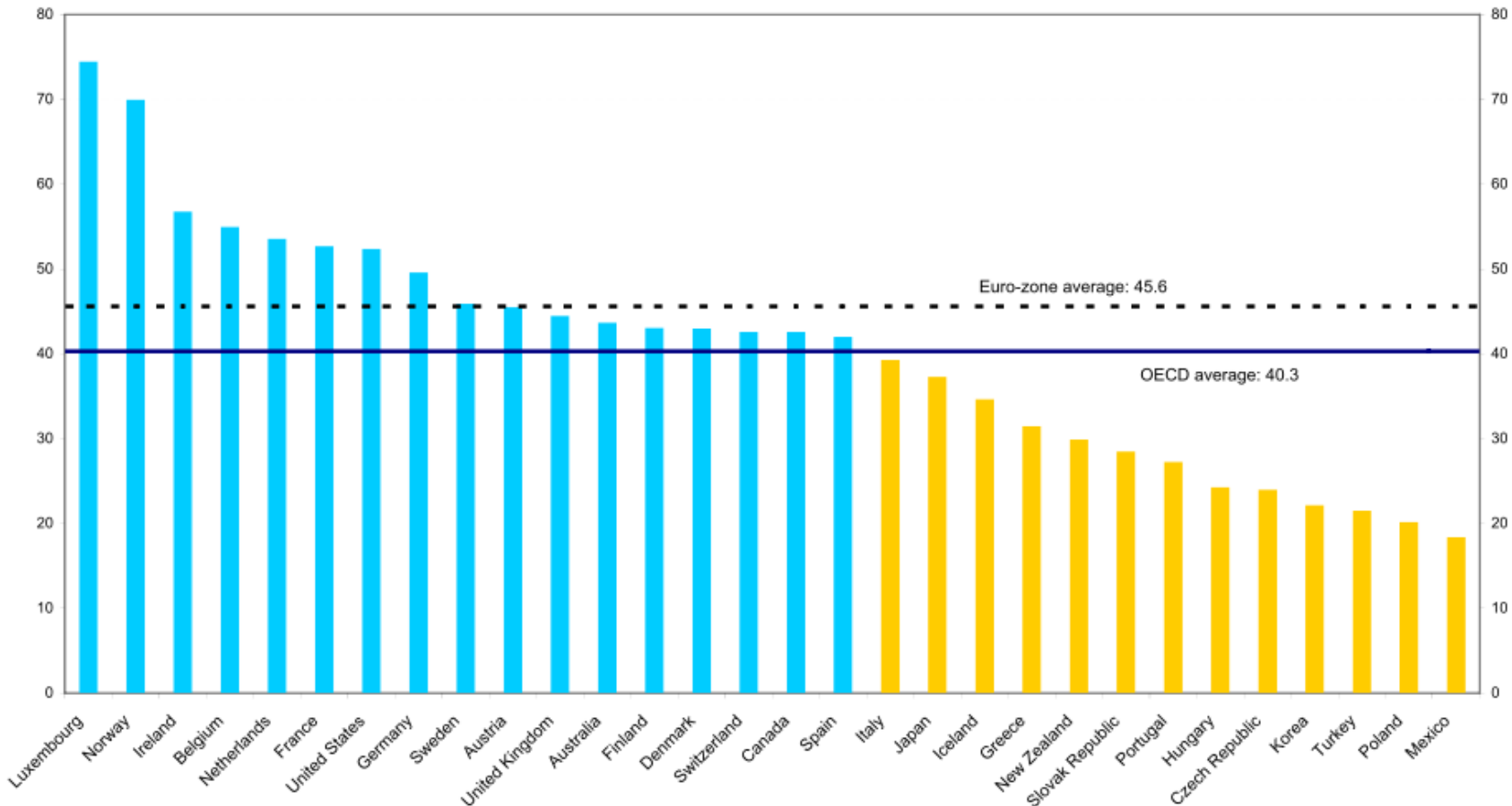
- “Are our current measures customer focused? e.g. based on quality, cost and delivery from the customers perspective?”



Why Is Productivity Important?

Productivity in the OECD 2007

GDP per hour worked, current prices in US dollar. Source: OECD StatExtracts.



A Few Comments

- This week I achieved an unprecedented level of unverifiable productivity.
- We need measures that change in real time and reflect the improvements.
- Keeping up the momentum for change requires bottom line improvements (accounts and board).
- Measures do not change culture, they measure it.
- Measuring is not Lean specific, improving them might be.



What to Measure?

- Measure what adds value to your customer?
 - Quality
 - Cost
 - Delivery
- Focus on reducing waste and adding greater customer value.
 - Value Add
 - Non-Value Add



Example

- Air conditioning unit for Saab
- 12 station production Line
- One week Kaizen activity
- Reduced to 9 station line
 - Line balancing
 - Design changes



Not Right First Time

- Looks at the Quality of the product or service-how often do you meet the specification of the customer.
- Measured in Parts Per Million.
- Can be measured at two points
 - Internally-before it reaches the customer
 - Externally-after it reaches the customer
- Example

	Before	After
Internal	800ppm	300ppm
External	100ppm	66ppm

- Best practice is 100ppm



- Looks at how long it takes (in staff hours) to produce a good quality product or service.
- Example

Staff	Item Count	Staff Hours
12	20	1.67
9	20	2.22

- Either improve output or reduce input.
- Focuses on waste removal.
- Helps you focus on major product costs.



Stock Turns

- Looks at the ratio of stock (includes work in progress, finished goods and raw materials) to sales value.
- Annual sales are \$20,000 with stock at \$5,000.
 - $=20000/5000 = 4$ stock turns
- Tighter controls over the production process requires less stock, less room to store it.
- The higher the number the better
- Industry average is 12-15



Delivery Schedule Achievement

- Looks at how well a supplier delivers what a customer needs.
- Target is 100%
- Example
 - Saab make 144 cars a day
 - We made 144 units per day
 - Delivered 100%
- Needs to be achieved in the most cost effective way
- Includes too much or too little, too early or too late.



Overall Equipment Effectiveness

- Tells you how well the business is using its equipment and staff.
- Three key points to look at, availability, performance and quality.
 - Availability of a machine, if you plan to run for 40 hours but it is available for 20 = 50% (98%)
 - Performance compares the actual output with the ideal output, if a process is planned to take five minutes and takes ten then performance is 50% (92%)
 - Compares good parts produced with the total, 20 good parts out of 40 = 50% (99.99%)
- $OEE = 50\% \times 50\% \times 50\% = 12.5\%$
- $OEE = 98\% \times 92\% \times 99.99\% = 90.1\%$
- Focuses on reducing waste and improving quality



Value Added Per Person

- Shows how well people are used to transform raw materials to finished goods.
- Example:
 - A company makes phones that sell for \$60, the components cost \$10 and 20 staff are needed to assemble the phone.
 - = $(\$60 - \$10)/20 = \$2.50$ per person

Sales Price	Component Cost	Staff	VAPP
118	78	12	\$3.33
118	78	9	\$4.44

- A higher VAPP means you are utilising staff time better, or reducing cost of parts.



Floor Space Utilisation

- Measures the sales revenue generated per square metre of floorspace.
- Example:
 - A company owns 2,000m² factory space. Sales turnover is \$10,000 a month.
 - = $\$10,000/2000 = \$5/m^2$

Turnover	Floor space	FSU
\$356,832	72	\$4,956
\$356,832	54	\$6,608

- Reducing floor space allows for company expansion without expensive facilities being added.
- Focus Lean waste reduction



Quality, Cost & Delivery

Measure	Quality	Cost	Delivery
Not Right First Time	●	●	●
People Productivity		●	
Stock Turns	●	●	●
Delivery Schedule Achievement	●	●	●
Overall Equipment Effectiveness	●	●	●
Value Added Per Person		●	
Floor Space Utilisation		●	



Question?

“Are our current measures customer focused?
e.g. based on quality, cost and delivery from the
customers perspective?”





Discussion