

# SURVEY OF AUTOMOTIVE COMPONENT SUPPLIERS IN WALES

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## INTRODUCTION AND BACKGROUND

Is it true that organisations take an unplanned and unstructured approach to the introduction of improvement initiatives? Is it a case of 'let's look for the latest initiative which will save us' approach rather than thinking through the organisational needs and objectives which may require more intense commitment to current improvement mechanisms and doing them properly.

This short survey was undertaken as part of a PhD thesis, which investigated sustainable business improvement. The survey was designed to gather information which could be analysed and used to determine the degree of success or failure of selected 'World Class' initiatives within the automotive manufacturing components supply chain in Wales. A secondary aim was to record the number of initiatives being undertaken by these organisations and thirdly to evaluate whether the initiatives were regarded as being ongoing or complete. The survey is illustrated in Appendix 1.

## QUESTIONNAIRE DEVELOPMENT

A one-page survey was used in order to maximise the possibility of completion by the target organisations without compromising the quality and quantity of data collected. The scale was selected for simplicity. Each respondent was required to rank his/her organisation's degree of success/failure for each initiative attempted, and similarly indicate whether the initiative was completed or ongoing. The content of the questionnaire with regard to the initiatives to be evaluated was developed in line with the author's own experience, a brainstorming session and from reviewing a selection of literature [1], [2] and [3].

## TARGET ORGANISATIONS

Many studies have been undertaken on the automotive industry and it is generally accepted that this industry has a proactive approach to developing and using world-class techniques and philosophies to 'improve' their business and to encourage the use of these tools and techniques throughout their value chain. Much of the current thinking relating to world-class techniques and lean manufacturing can be traced back to studies undertaken in the automotive industry and more specifically the Toyota Production System.

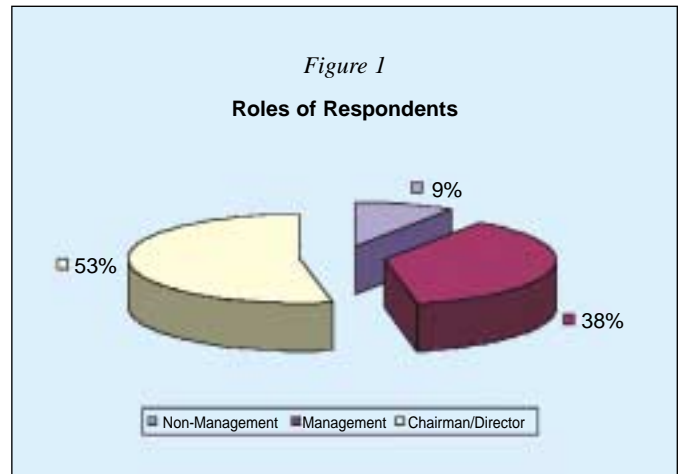
Thus, it was decided to undertake a survey of automotive 'component' manufacturing companies in Wales. The target for the survey was the Managing Director or Chief Executive at the respective location.

The initial response was encouraging with 34 companies (42.5%) responding to the request for information without any prompting. A further 15 were given a polite follow up call and of these, a further five responded to the questionnaire. Thus in total 39 (49%) companies responded to the request for information.

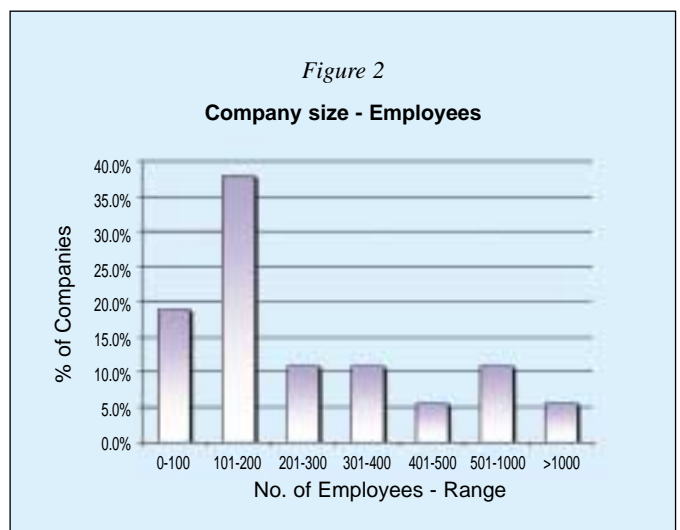
## FINDINGS

As indicated earlier the response rate of 49% was deemed to be quite positive for a survey of this nature. The pie chart – Figure 1 gives an indication of the roles of the respondents. The management representatives were mainly operations/production orientated whilst the non-management individuals consisted of a plant engineer and continuous improvement

employees. Thus, it was felt that a relevant cross section of appropriate individuals contributed to the completion of the questionnaire and this provides some confidence in respect of the accuracy and reliability of the results.



The size of each of the organisations in respect of the number of people employed is shown in Figure 2 below:

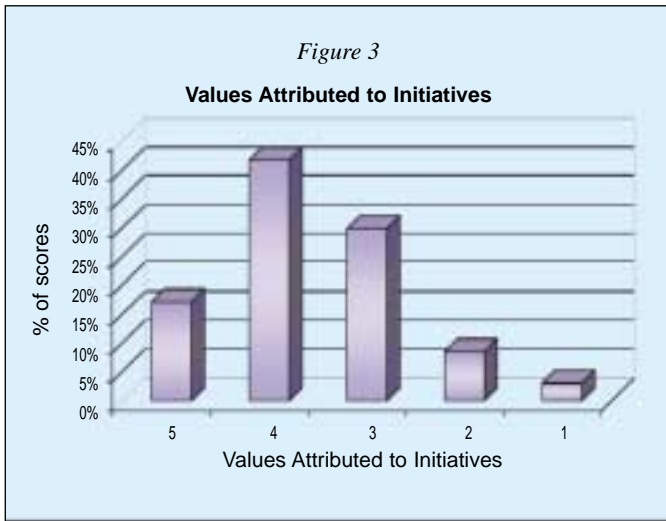


One company that responded added a significant weight to the average number of people employed per company as this organisation currently employs 8,500 individuals. With this company included the average number of employees per organisation is 487 and the range of employee numbers 41 – 8,500, whilst without this organisation the number of employees per company dropped to 265 and the range altered to between 41 and 1400 employees.

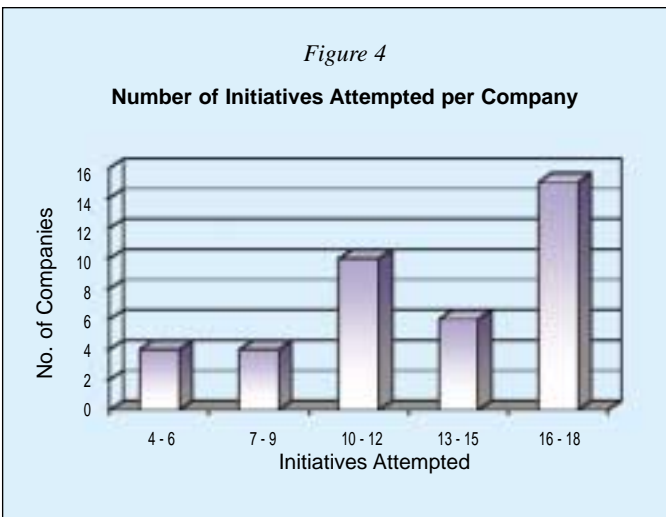
Further analysis of Figure 2 above shows that approximately 55% of the companies employed less than 200 people, whilst around 60% employed less than 300. Only 5% of the organisations reviewed employed more than 1000 at the location analysed.

## Key Results

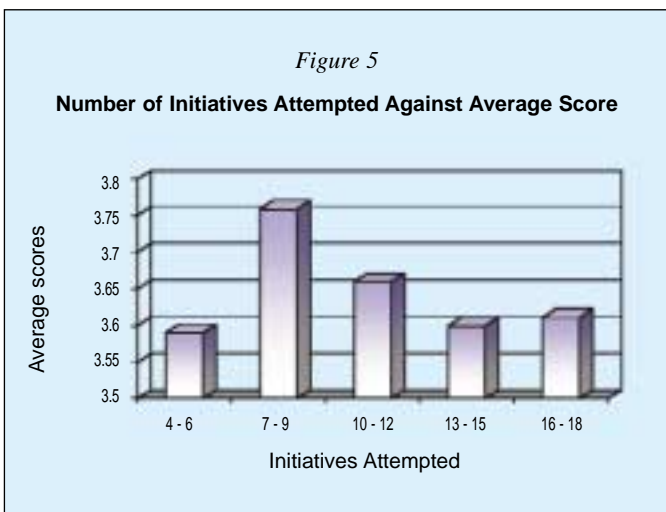
Figure 3 illustrates the percentage of companies, which attributed particular scores to each of the initiatives undertaken. 70% of the scores that were recorded for the



initiatives were ranked as a 3 or 4. 15% of the scores were a 5, whilst approximately 45% of the scores were 3 or under. The average score per company for initiatives undertaken was 3.64 with a range of 2.65 to 4.35. Figure 4 below illustrates the number of initiatives attempted per company.



Eighteen initiatives were listed on the questionnaire. One organisation included an additional initiative (Gemba Kanri). On average over 72% of the initiatives were attempted per company. Fifteen companies (39%) attempted 16 or more initiatives whilst only eight companies (20%) attempted 9 or less initiatives. The average number of initiatives attempted per company was 13 (12.97), and the range varied from 4 to 18 initiatives. Figure 5, shows the average scores for each company linked to the number of initiatives attempted.



As indicated earlier the average score was 3.64. Interestingly the graph shows that the highest average scores are grouped around companies that attempted between 7 and 12 initiatives with the 7 to 9 grouping being the highest scoring area overall. The other three groupings all scored below average. This tends to indicate that organisations attempting between 7 and 12 initiatives are more successful at implementing them than organisations who only attempt a very small number (less than 6) and those that have attempted 13 or more. Table 1 below has been developed to compare a number of variables.

*Table 1*

**Comparison of Key Data from Survey**

Number of Initiatives attempted	Score	Average Size (Employees)	Range (Employees)
16 - 18	3.61	329	90 - 1400
13 - 15	3.60	518	230 - 1400
10 - 12	3.66	237	49 - 380
7 - 9	3.76	163	50 - 381
4 - 6	3.59	162	41 - 245

It is tempting to conclude from the above table that the optimum company size for introducing initiatives successfully is between 49 and 381 employees or more specifically between 163 and 237 employees. In respect of the survey undertaken this conclusion is probably valid, but it would be inappropriate to apply this as a broad principle as the range of employee numbers within the survey and number of companies reviewed is insufficient. However, it is interesting to note that the larger companies generally attempted more initiatives but with a lower success rate.

### Individual Initiatives

The top four most successful initiatives

Initiative	Score
Failure Modes and Effects Analysis (FMEA)	4.03
Kanban	3.97
Lean manufacturing	3.88
JIT & Kaizen	3.83

The bottom four or least successful initiatives

Initiative	Score
Theory of Constraints	2.50
Total Productive Maintenance (TPM)	3.12
Business Process Re-engineering (BPR)	3.14
Benchmarking	3.16

Most popular initiatives

Initiative	% of Companies that attempted the initiative
FMEA	92.30%
Kaizen	89.74%
Lean Manufacturing	87.18%
Statistical Process Control	84.62%

## Least popular initiatives

Initiative	% of Companies that attempted the initiative
Theory of Constraints	30.77%
Business Process Re-engineering	35.90%
Taguchi	46.15%
Supplier Integration	64.10%

The percentage of initiatives completed and those ongoing:

15% complete  
72.8% ongoing

Note that this does not add up to 100% because not every company that responded to the questionnaire answered this question.

Table 2 Initiatives Currently Ongoing - Top 4 Highest % Score			
Initiative	% ongoing that started initiative	% that started initiative	% ongoing based on total no. of companies
1. Kaizen	88.57%	89.74%	79.48%
2. Lean Manufacturing	82.35%	87.18%	71.79%
3. 5s	84.38%	82.02%	69.20%
4. SMED	83.33%	76.92%	64.09%

Table 2 shows the percentage of companies that actually started each initiative and are continuing with it – column 1. In the second column is the actual percentage of companies that actually started the particular initiative. The third column was produced by multiplying columns 1 and 2 together to obtain the percentage of companies continuing with a particular initiative against the number of companies in the survey. Theory of constraints was clearly the least tried initiative (30.77%) and was ongoing in only 25% of the companies surveyed. Thus only 7.69% of the companies surveyed were currently pursuing theory of constraints.

## CONCLUSIONS

- FMEA, Kaizen, Lean Manufacturing and Statistical Process Control (SPC) were recorded as the most popular initiatives and with the exception of SPC these were also included amongst the top four most successful initiatives. SPC ranked 7th overall.
- At the opposite end of the popularity scale, Theory of Constraints, Business Process Re-Engineering (BPR), Taguchi and Supplier Integration were recorded as the least popular initiatives. Again, Theory of Constraints and BPR were two of the four least successful initiatives, Taguchi scored 3.17 which was .01 of a percentage point higher than benchmarking and Supplier Integration scored 3.52 which was well below the average value of 3.64.
- The average number of initiatives attempted per company was 13 (12.97), and the range varied from 4 to 18 initiatives. This staggering statistic suggests a number of potential issues.
  - A lack of understanding of the commitment required.
  - A lack of understanding of the long-term nature of these initiatives and the desired outcomes.

- Initiatives being ‘forced’ through the supply chain by the major car manufacturers.
- No strategic approach to the introduction of these initiatives.
- A general lack of understanding of how to implement the initiatives.
- A combination of all the above.

## DISCUSSION

### Representativeness and Reliability

The response to the survey of 49% is quite high for a survey of this nature and adds some credibility to the information gathered. Similarly a review of the respondents, added further credibility to the validity of the responses as described earlier. The results are also consistent with the personal experience of the author in respect of the numbers of initiatives attempted by companies. The results are also consistent with the study undertaken by the University of Sheffield [4] in which twelve practices were evaluated. This study concluded that:

The overall pattern is clear: most of the practices are relatively recent, having been introduced during the 1990s in particular, more than 75% of initiatives in the areas of BPR, Empowerment, Learning Culture, TQM and Team-Based Working started during this period. *It is apparent there has been a high level of activity in these areas during the 1990s.*

## IMPLICATIONS

An average of thirteen initiatives were attempted per company with 39% attempting more than 16 initiatives. Is it any wonder that many organisations fail to take full advantage of the potential benefits of the initiatives that they attempt to introduce given the commitment required to enable success in even one major improvement process let alone thirteen. This suggests that initiatives are often chosen for the wrong reasons, eg. they are fashionable, the Chief Executive has been to a conference, they are the latest fad and ‘wonder’ solution etc., not as part of an overall strategic approach. Also it is often suggested that they are implemented for the ‘quick fix’ effect and lack a process which will encourage sustainability.

There is a need for new methods, processes and values, which move beyond quick fixes to longer-term permanent solutions. Fundamental questions about what to do and why, how to do it, and when, need to be asked and the proposed actions need to be carefully considered. However, does this mean that initiatives are worthless and improvement should be put on hold? Of course not. Many organisations that attempt to introduce initiatives still obtain significant benefits even if they ‘fail’ in the eyes of the purist. What appears to be a weakness is that organisations fail to determine specifically what they want to improve and how they can improve it. They also fail to measure progress and re-evaluate whether they are succeeding or not. Many initiatives then just wither away and people become disillusioned and see any attempt at further improvement as a game.

It is apparent from the above research that individual companies appear to be attempting to introduce too many initiatives, which are even possibly in conflict. It is highly possible that inconsistent, non-congruent, manufacturing/business policies or strategies have helped to drive this. There is a desperate need for a seamless but planned approach to any changes through the introduction of new tools and techniques under the umbrella of ‘what’s right for our business’. This really is the only true initiative.

## REFERENCES

- [1] Euske K.J. and Player SR., "Leveraging Management Improvement Techniques", *Sloan Management Review*, Fall, 1996, pp69-79.
- [2] Grint K., "TQM, BPR, JIT, BSCs and TLAs: Managerial Waves or Drownings?", *Management Decision*, 35/10, 1997, pp731-738.
- [3] Wallace TF. and Bennett SJ., "*World Class Manufacturing: Instant Access Guide*", Oliver Wight Publications, 1994.
- [4] Waterson, P.E., Clegg C.W., Bolden R., Pepper K., Warr, P.B. and Wall T.D., "*The Use and Effectiveness of Modern Manufacturing Practices in the UK*", ESRC Centre for Organisation and Innovation, Institute of Psychology, University of Sheffield, 1997.

## About the author

**Alun Batley** MIOM BA MSc MIPD is a director of Blue Sky Business Solutions Limited an innovative training and consultancy organisation that believes in working with customers to help them achieve measurable growth by inspiring and developing their people, and through performance improvement.

Alun has an active interest in World-Class Manufacturing improvement initiatives and Management Development programmes and is currently completing a PhD with the Open University. His research is aimed at determining sustainable business improvement mechanisms for organisations.

## Appendix 1

### SURVEY OF SUCCESSFUL AND UNSUCCESSFUL IMPROVEMENT INITIATIVES

COMPANY \_\_\_\_\_ NO. OF EMPLOYEES \_\_\_\_\_

YOUR NAME & JOB TITLE (OPTIONAL) \_\_\_\_\_

Please indicate by ticking the appropriate box, your perception of the degree of success or failure of improvement initiatives that have been undertaken at your site. Use the scale indicated as follows: 5 highly successful, 4 successful, 3 neither a success nor a failure, 2 moderate failure, 1 total failure. Also indicate whether the initiative is completed or ongoing. Any initiatives that you have undertaken that are not shown below can be added and graded accordingly.

Improvement Initiative	Success - Failure					Completed	Ongoing
	5	4	3	2	1		
Just-in-Time							
TQM							
Lean Manufacturing							
Kanban							
SMED (Quick changeovers)							
Poka - Yoke							
Statistical Process Control (SPC)							
Kaizen							
Business Process Re-engineering							
5 'S'							
Total Productive Maintenance							
Cellular Manufacturing							
Benchmarking							
Taguchi – D.O.E.							
Failure Mode & Effects Analysis							
Supplier Integration							
Quality Circles (or equivalent)							
Theory of Constraints							