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Sustaining Lean in New Zealand Manufacturing Organisations

**A thesis presented in partial fulfilment of the requirements for the
degree of Master of Technology in Engineering and Industrial
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Abstract

This study has focused on the NZ manufacturing sector. The weak productivity rates of this sector over the last few years prompted the Government (through New Zealand Trade and Enterprise) to take steps to help manufacturers' boost productivity growth through a directed campaign to apply lean manufacturing. Several high-growth potential companies were selected to participate in NZTE's *Aichi* lean programme which ran from 2005 through to 2008. Several companies also joined NZTE's current *Direct* lean programme which kicked-off in 2007. Overseas experience shows that a majority of organisations attempting lean transformations fail to sustain improvements. This study looked at the experiences of a sample of organisations that participated in NZTE's Lean Programme in sustaining their lean transformations.

This study utilised case study research techniques to extract qualitative data from nine manufacturing companies. Eleven organisations were originally selected for study but two companies went into receivership prior to the commencement of data collection. The organisations were assessed for lean sustainability using a recognised sustainability model. In general, lean improvements were not sustained across NZ manufacturing organisations. NZTE's Lean Programmes were successful in promoting lean but proved poor in ensuring sustained improvements. Only one case study organisation looked likely to sustain improvements. There were several common problems experienced by the organisations. These problems were; erroneous understanding of lean, poor change strategy, poor SMT commitment, NZTE funding 'pushing' change, high staff turnover, high staff resistance and failure to develop the lean champion's capabilities.

The root-cause of these problems was lack of organisational leadership. The majority of the leaders chose to attempt lean simply as a tool for short-term gains. Many organisations experienced good initial gains from implementing lean but the majority failed to sustain these improvements. Overseas experience shows that to sustain improvements organisations need to focus on and invest into life-long learning. This study showed that there is a distinct lack of focus on learning within the sample. It is recommended that the 5P model be used as a guide to creating learning organisations within NZ. The 5P model has been developed from the 4P model (Liker 2004) which

is based on the philosophies and principles used by Toyota to become a learning organisation. The 5P's are Preparedness, Philosophy, Process, People and Partners and Problem Solving. Organisations first establish their strengths and weaknesses through a period of preparedness. The next step is to establish a long-term philosophy to enable the successful roll-out of the other P's. Process improvements provide the setting in which to challenge and develop people, which is necessary to achieve a true learning organisation focused on continuous improvement through problem solving.

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List of Abbreviations

<i>Abbreviation</i>	<i>Explanation</i>
BBD	Better-by-Design (an NZTE initiative)
BOD	Board of Directors
CEO	Chief Executive Officer
CI	Continuous Improvement
DOL	Department of Labour
EFQM	The European Foundation for Quality Management
EQA	European Qualifications Authority
GM	General Manager
ISO	International Organisation for Standardisation
KL	Key Leaders
KPI	Key Performance Indicator
LMS	Lean Management System
MBNA	Malcolm Baldrige National Award
MED	Ministry of Economic Development
MM	Manufacturing Manager
NZTE	New Zealand Trade and Enterprise
OECD	Organisation for Economic Co-operation and Development
OFI	Opportunities for Improvement
OM	Operations Manager
PIT	Process Improvement Team
PM	Production Manager
PS	Production Supervisor
SME	Small and Medium Enterprises
SMT	Senior Management Team
SOP	Standard Operating Procedure
TL	Team Leader
TPS	Toyota Production System
TQM	Total Quality Management
VSM	Value Stream Mapping