

High performance work systems – helping improve productivity for the logging industry

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Abstract

Productivity is a measure of efficiency of the use of inputs such as labour, capital, land and energy to outputs of goods and services. Nationally, productivity can be measured as GDP per capita. The importance of increasing productivity is that it is one of the major ways to improve the nation's long-term material standard of living. Statistics New Zealand has been capturing productivity-related statistics since 1978 and comparing this country's productivity to the 34 participating countries of the OECD, the Organisation of Economic Cooperation and Development (Statistics NZ, 2014). New Zealand's GDP per capita has grown at a faster rate than the average OECD participants, but the labour productivity levels are lower than the OECD average. Agriculture and forestry labour productivity performs better than the manufacturing industry.

In 2004 the government began to investigate and implement strategies to identify the main issues affecting New Zealand's workplace productivity. As part of its drive to lift this country's labour productivity, the government launched a workplace initiative to provide practical support to firms wanting to introduce high performance work (HPW) practices. HPW was seen as the most applicable system as its focus is on stimulating more effective employee involvement and commitment to achieving high levels of performance.

Other management philosophies tend to focus more on process improvement rather than people motivation and empowerment. The goal of HPW is to promote wider implementation of HPW systems among New Zealand enterprises, to secure higher productivity through effective employee engagement and improved workplace practices. In this system, employees are to a large degree self-managing and only rely on leaders to develop a clear vision, mission and goals. High-performing employees work as though they are the owner of the company and not simply its employees. As such, they should feel more responsible for the company's success and therefore want to do more to contribute to that.

Seven ways to improve workplace productivity

Earlier work by the Department of Labour (DOL, 2011) identified seven main elements that can improve a company's productivity, and if practised the company would be deemed to be a high-performing organisation.

These seven drivers of workplace productivity were defined as:

Leadership

Effective leadership is about having a clear vision of where the business is heading. It is also about identifying new opportunities and inspiring the team to pursue these. Leadership is required from individuals and from teams.

Workplace culture

Positive relationships between staff, teams and managers are a feature of productive workplaces. A positive work environment is created where people's insights and experience are valued, their ideas help to do things smarter and better, and they are motivated and committed to the organisation.

Clearly defined work processes

Productive workplaces have defined work processes that enable them to adapt and grow as products, technology and markets change. A well-organised workplace is able to get the best out its staff and technology.

Innovation and ideas for improvement

Productive workplaces are innovative in the way they use technology, and plan and organise themselves. Innovative people will try new ideas, and they generally are more highly-skilled and highly-paid.

People and skills

The more skills people have, the more capable they will be with new technology and they can work more quickly with fewer mistakes. They generally require less supervision, accept more responsibility and are better communicators. Extensive training and performance payment leads to higher skills and wages and lower staff turnover.

Networking and collaboration

Workplace productivity can be improved by exchanging ideas and information with other firms in the same industry. Collaborating with others can reduce the cost of doing business and give quick access to new ideas and new technology.

Measuring what matters

Extensive sharing of financial and performance information of the company with all employees helps everyone to understand the things that make the biggest difference in improving workplace productivity.

Background to the HPW project

In 2011, Future Forests Research Ltd (FFR) recognised that the forest industry was slow to implement R&D, especially in the areas of productivity and safety. This was partly due to a number of industry constraints – resources, management, skills, profitability, benefit sharing mechanisms, trust and so on. The solution was seen to be a mix of business management, people management, work organisation, health and safety and R&D implementation. The pathway to the solution was engaging harvesting ‘experts’ in one-to-one field-based mentoring of logging contracting firms to generate and implement improvement initiatives. An important element of this initiative was to challenge the contractor to develop processes for continuous improvement.

In 2012, the Partnership Resource Centre of the Department of Labour – now Ministry of Business, Innovation and Employment – supported a pilot project for FFR to introduce HPW systems to logging contracting firms. It was seen that the economic gains from an HPW initiative could be substantial and would demonstrate the value of the current FFR Primary Growth Partnership (PGP) harvesting research programme. The initiative would develop the partnering concept between forest management companies, who co-fund the PGP programme, and their logging contracting firms to work together for gains to both parties and share the benefits.

Objectives

This initiative involved a small pilot project for introducing HPW systems to six logging contractor firms to help them develop a culture of improvement. This report summarises what was done and investigates the usefulness of these systems for logging contractors as a way of improving productivity and profitability.

Method

Six logging contractors were selected to work with and develop the processes required to achieve HPW. The contractors had to meet certain criteria to be eligible. A one-day time study of each crew was undertaken. The data from each crew were analysed to gain an understanding of how the crew worked and whether there were production losses occurring or changes that could be made to help improve production. A one-day workshop was held with each crew and the objectives were to:

- Familiarise each crew with HPW system processes
- Complete a baseline questionnaire to gauge the crew's understanding of HPW systems

- Discuss how the crew was performing currently and any improvements that could be made
- Begin the process of developing vision and mission statements and goals with assigned accountabilities and completion dates
- Agree on how the achievement of each goal might be measured.

The outcome of the workshop was a business plan document for the crew which included all the ideas that were to be put in place or tried. Some of the ideas needed capital investment, and in all cases a net present value was calculated to check on which ideas would be best to pursue and what rate of return the crew could expect from their investment. Over the course of the project six trials were planned to investigate a selection of improvement initiatives:

- Better directional felling to help improve breaker out performance
- Better data collection of productivity performance, especially delay time
- Improving the safety culture in the crew
- Introducing a camera to monitor the breaker outs and display on a screen inside the hauler cab so the hauler operator can see the break out and in-haul phase
- Purchasing a second hauler pole to reduce delays and increase the number of work days available
- Installing lights on grapples to allow extended shifts.

Meetings were held with the forest management companies to discuss their contractor participants' improvement initiatives. The main outcome of these forest management company meetings was that the contractor could clearly identify and articulate improvement initiatives to improve productivity and cost.

Results

The six crews selected varied from high-performing crews to lower-performing crews. The selection criteria were not met by all crews in entirety, but in all cases the crews were highly involved in the process. A baseline survey showed that none of the crews had heard the term ‘high performance work’, but all were doing parts of HPW as it seemed a natural way to manage a small group of staff. Two examples of the baseline survey results are highlighted below:

The first crew had never heard of ‘high performance work’. The contractor showed good leadership but did not have a business plan in place. Creating a good place to work was important to him. The contractor involved the workers in the operational plan and targets were well known, and any ideas for improvement were well received but a formal process was not in place. Both the contractor and employees agreed there was some training being done. The employees of this crew stated they worked as a team but each team member did not necessarily make it easier for the next person in the

chain. Good production records were being kept, but there was no production meeting held.

In the second example the crew had never heard of 'high performance work' either. The contractor showed good leadership but did not have a business plan in place. The contractor made some effort in creating a good place to work. Ideas for improvement were taken on board and the employees could voice their opinion about operational plans. Training plans were in place and both the employee and contractor agreed some training was being done. This crew stated they worked as a team and tried to make it easier for the next person in the chain. Good production records were in place.

A one-day study of each crew showed there were production losses occurring at each crew. The losses in general were not recognised as they were considered 'normal' logging practice. Because the losses were considered normal no-one was trying to resolve them. Two examples of these are highlighted below.

The first crew's operation was using a 'scab' configuration over a maximum distance of 450 metres. On many occasions while watching this operation the drag would hit and get stuck on a stump not far from the landing where deflection was critical. The operation would stop and the drag reversed and then lifted before in-haul could start again slowing the operation and putting extra stress on the hauler operator. On entering the landing chute the butts occasionally became tangled in the heads of the trees that were already in the chute, again causing the in-haul operation to stop before the drag was lifted clear to continue in-haul. Each cycle the tail rope was slackened to lower the drag to the ground.

The tail rope took a minute to wind up each cycle before out-haul could begin. Winding up tail rope took an hour per day in total. During the course of the day no-one thought to cut the problem stump closer to the ground, no-one took responsibility to talk the drag in at the landing to help the hauler operator, and no-one appeared to be analysing the productivity and whether a change of system would be advantageous. Even so the operation achieved good volume for the day.

The second crew's operation had difficulty landing and holding the trees at the landing while working a north bend system. The operation was fully mechanised, using electronic chokers and as such operated with no pole man. Two issues were occurring when trying to land the trees. The first issue was one electronic choker was not releasing well, which meant the hauler operator had to get out of the hauler and manually release the problem choker, taking valuable time. The second issue was the tree on the back strop wanted to slide off down the hill, which meant the releasing of chokers was taking longer than it should have. Again no-one tried to eliminate these landing issues. Even with these operational interferences, this crew still pulled good production on the day.

A one-day business planning workshop was held with each crew. This is essential and helps contractors

to focus on what is happening currently, but also allows careful scrutiny of what may happen in the future and how that view of the future might change what contractors need to do now. The business planning process was very beneficial and all crews were fully engaged and interactive about their view of the future, their weaknesses and strengths, and target setting. As part of the process, the formulation of ideas of how the crew might reach future targets was outstanding and all crew members with no exception were fully involved in the conversations around ideas for improving what they did. At the end of the process it was clear that the contractor's employees should be included in a process for capturing ideas to help improve the industry's productivity.

Two examples of the high-level business plan goals are highlighted below as well as the crews' performance against the goals during the project:

One crew's high level goals were to:

- Improve productivity from 58,000 tonne per year to 65,000 tonne
- Have a breaker out incentive payment system in place
- Develop a good safety culture within the crew.

This crew ranked 21st out of 25th on the forest company's crew-ranking system at the start of the project and wound up 13th at the end, and narrowly missed their aim of a top 10 placement. Production-wise, this crew improved over the project timeframe which was attributable to better work performance and the purchase of a Boman motorised carriage.

Another crew's high level goals were to:

- Improve productivity from 55,000 tonne per year to 60,000 tonne
- Have a productivity incentive payment system in place and working.

This crew produced 90,000 tonne per year and over-achieved their goal of 60,000 tonne. At the time of the business planning session this contractor was in financial difficulty and three months behind with payments to creditors. As such, any ideas that needed capital were going to be difficult to achieve. The crew terminated their contract with the forestry company to pursue another business venture, but decided to continue with the HPW programme. Within the year this operation went from financial difficulty to good cash flow surpluses. Even though the improvement ideas did not originally include the purchase of a drop line carriage, the contractor bought one during the year and performance improved as a result. This crew did put in place good production record-keeping and an incentive payment scheme.

Achievement of HPW processes

Leadership

In all cases the contractors showed good leadership and tried to develop a good place to work. Only one

contractor had a written business plan and he was very clear about where he wanted to be and shared his aspirations for growth. The other five crews knew their plan for the year and what they needed to do to achieve it in terms of production and finances. The relationship the contractors had with their staff ranged from good to very good and all employees enjoyed their work. On a day-to-day basis the employees knew the plan for the day in five of the crews. The sixth crew started discussing the day's plan with the appropriate employees soon after the start of the project.

Workplace culture

In all cases both employees and contractors thought they had a pretty good work culture and that everyone in their respective crews was working as a team. All employees also thought they could make more effort in making the next person's job easier. This was reinforced in the one-day time studies where all but one crew showed instances where things were made more difficult than they needed to be for the next person in the chain.

Clearly defined work processes

In all cases work processes were clearly defined. All employees had job descriptions and in most cases were employed to do a specific task. In some instances these organisational boundaries worked against teamwork and productivity.

Innovation and ideas for improvement

On developing ideas for improvement, all employees agreed that their boss would listen to ideas for improvement but only one contractor had a formal process in place. During the workshops each crew came up with many ideas to improve problematic issues.

People and skills

A key element of HPW systems is there is extensive training in place. Employees thought there was some training done for the role they were in and only one crew carried out training for employees for other roles. In general, the contractor's view of the amount of training given was higher than the employee's view. Only one contractor thought the cost of training was included in his logging rates. A general observation arising from the pilot project was that there was a lack of extensive training.

Networking and collaboration

A feature of HPW systems is collaboration with other firms in the industry. It was surprising how little effort was made by the crews to work in with other crews or to keep abreast of latest techniques for improvement. Importantly, however, contractors understood that there is a huge risk to their business associated with escalating costs. The contractors who were part of this project were relatively conservative in terms of productivity improvement investment.

Measuring what matters

Three crews were paying incentives for additional production and their systems were working to keep employees motivated. The other three crews at the beginning of the project were contemplating incentive payment schemes. None of these schemes were based on the direct financial performance of the logging crew and nor was the financial performance of any of the crews discussed with the employees.

Research on HPW systems suggests that employee earnings should be linked to company profits so that each employee works in a manner akin to a contractor. It would be very unlikely in the logging industry for the contractor's financial information to be divulged to the crew now or in the future. In all crews except one the employees worked hard to meet targets and assumed if they met these the contractor would be okay.

Sustainability of HPW systems

An important success factor in HPW systems is definition of the business strategy, vision, mission and goals. A contracting firm will not achieve high performance unless their efforts are in alignment with the forest company's mission and goals. All contractors should be encouraged to develop business plans and generate ideas for business improvement, such as increasing productivity or reducing costs. This business planning should be a contractual requirement of all contractors, unless open market tendering is the procurement mechanism in place.

To be sustainable, the forest management company and the contractor must work together to have an agreement in place on how the improvement process will operate and how any benefits shall be shared. Considering the improvement ideas the six crews in this pilot project generated in a short period of time, there is no doubt that not only the contractor but also their employees should be part of this process. A simple process to encourage improvement initiatives to be captured, tested and implemented is shown in Figure 1. This would enable the common goal for both the forestry company and the contractor to be achieved of becoming more profitable.

The development and success of HPW systems will be based on its contribution to strategy implementation, both within the contracting firm and the forest management company. Organisations that are more successful at applying the process in Figure 1 will be better at implementing the organisation's strategy.

As demonstrated in this pilot project, properly implemented HPW systems will increase productivity and contracting firm performance. Neither the contractor nor the forest management company can appropriate all the gains from this improved performance without losing the cooperation and willingness of the other party to further innovate. There is still a lack of trust evident in the logging industry between logging contractors and forest management companies when it comes to sharing in gains from new methods of work.

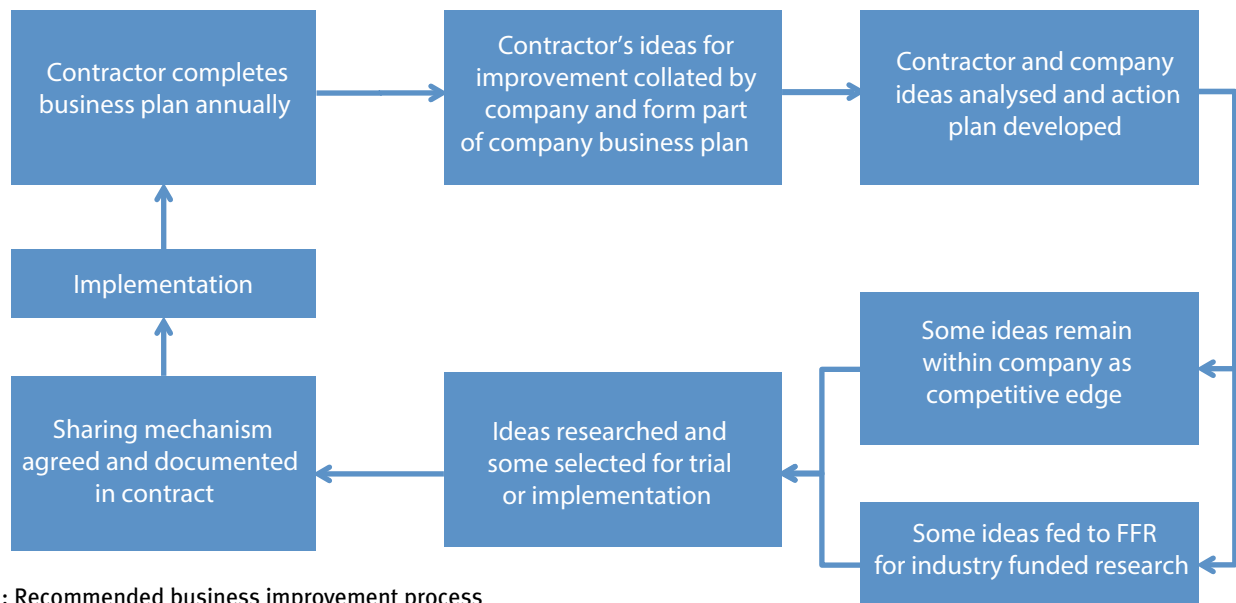


Figure 1: Recommended business improvement process

Health and safety legislation requires the contractor to ensure the safety of their employees. Logging requires decisive management as operational plans can change often during one day. One person therefore needs to be responsible for changing plans and conveying the new plan to all employees and ensuring the appropriate health and safety management is in place. Leaving decisions to capable staff who do not have an overview, as would be expected in an operation using HPW systems, could pose a serious health and safety liability for the contractor and hamper their full introduction.

Conclusions

At the start of the project none of the participating firms had heard the term 'high performance work'. However the crews were using some of the elements of HPW systems simply because it seemed obvious or the right thing to do. This project showed good leadership was in place, and all crews were motivated to do well and were observed working hard. It was noted from discussions with the employees of all six crews participating in this pilot project that their respective employers were reasonably good at keeping the focus and ensuring that motivation remained high. Employees generally liked their work and a good working culture was in place.

Self-managed employees may work in the manufacturing industry, but the health and safety liability of having them in the uncontrolled environment of logging may prove too high. This may limit the full adoption of HPW systems in the logging industry.

Even though previous researchers have suggested that partial use of HPW systems is unlikely to be productive, there would be benefit for the logging industry for some of the elements of these systems to be incorporated into the day-to-day running of logging contracting firms. A process of strategic planning incorporating developing annual business plans, and

for capturing new ideas and innovations aimed at improving productivity and reducing costs within each contracting firm, would be hugely beneficial. The expectation of both the logging contractor and the forest management company about how and when to share the benefits from improvements should be agreed on and stated in the contract.

Elements that are either not evident, or well developed, include extensive management development training linked to the needs of the business. Training within individual contracting firms appeared to be limited by funding. Training was viewed as a cost that can be reduced for a period of time. All the employees within the six crews in this pilot project were trained for their current role, but only one crew was training employees for different roles. In-depth training in cable mechanics, tension, deflection and its impact on cable payload is lacking. Consequently, the critical effect of these factors on logging productivity is not well understood by all employees. Higher level training of cable crews in these subjects would be beneficial.

Some of the main features of HPW systems are also evident in the relationship between forest management companies and logging contracting firms in New Zealand. These include rigorous recruitment and selection procedures – through the contract procurement process – and performance-based compensation systems. However, many of the main features of HPW systems are also not evident, including employment security (contract tenure), self-management and decentralised decision-making, reduction in status distinctions and barriers, and extensive sharing of financial and performance information.

For the past 25 years most forest management companies in New Zealand – but not all – have operated 'at arm's length' from their independent contractors. With the changes to employment and health and safety legislation, it may be time to consider revising

this management approach and developing more of a partnership approach with logging contracting firms. This would involve agreeing on a mechanism for sharing of the benefits of improvement ideas, to help drive and support the implementation of those improvements. Some forest management companies already have this approach in place and others are actively encouraging the mentoring of individual contracting firms.

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