

Workflow: Improving the Asset

Toolkit 9.3

Technology and Automation

target audience

Packhouse owners and managers, operations managers, technical and engineering leads, procurement managers.

what it is

Packhouses are automating their operations at ever greater levels of sophistication and using technology and software to improve efficiency and meet the demands of an increasingly discerning market. This toolkit lists some key success factors related to the introduction and use of new technology.

why it is important

The key reasons for improving and introducing new technology, including software systems, are many:

- Automation reduces the need for people to do mundane work. People can be used more effectively.
- Automation reduces the impact of human error and availability.
- The use of Technology can reduce the cost of operations through improved quality, reduced waste, and improved production rates.
- Improving production flexibility.
- Maintaining competitiveness. Market requirements in terms of reduced product variation and consistent quality often force companies to use new technology

However, choosing the correct technology and then using it effectively is extremely important.

- Buying new machinery which is expected to deliver benefits for a decade or two is an important purchasing process and decision.
- Integrating new technology into your current operation successfully is important.
- Utilising the technology optimally and really getting the benefits of automation is equally important. There are many instances where technology was purchased on a promise of delivering benefits which are never fully realised.

success factors

- **Meeting customer and quality requirements** – Ultimately, procuring and implementing new technology and automation must deliver benefits to the customer. This could include:
 - Improving the speed of an operation, increasing productivity, and moving the fruit along the value chain faster.
 - Meeting quality specifications better.
 - Reducing variability in grading, sizing, packing etc.
- **Process improvement** – New technology must deliver a process improvement. Key considerations include:
 - Detailed process mapping – Do you fully understand your processes, exactly where your inefficiencies are, and precisely where new technology will deliver the improvement?
 - Flexibility – Ensure that you fully understand what the new technology delivers and how (process) it does this. Technology, software systems, ERP systems, and high-tech machines are designed to function in a set way. There are many cases where plant operators have acquired new technology because they believed it would increase their flexibility, only to discover that the new technology dictates the work process.
 - The impact on other processes – new technology in one area can directly impact many other systems and processes, e.g., how you manage data and reporting, how you manage maintenance, how you communicate and react etc. Once again, comprehensive process mapping is critical
 - Utilisation – Will the new technology or machine work to its intended capacity, or will it stand unused for long periods? Packhouses by their nature are seasonal operations, and so it is important to calculate actual vs theoretical/potential benefit.
- **Data management** – New technology and automation must improve the way you collect, process and use data.
 - Eliminate the need for manual data collection.
 - Eliminate the need for manual data analysis.
 - Business planning software or an ERP system, can help plant managers can gain visibility into their own processes for improved transparency, giving them the ability to make more informed decisions.
 - Improve root cause analysis and problem solving.

Getting your data management integrated, accurate, efficient, and truly useful is really hard work. Ask yourself:

- How far are you prepared to go, and how much effort, money, and time are you willing to spend to achieve full integration?
- Do you automate your current process, i.e., design based on how you do things now? Or do you buy a system “off the shelf” that has been developed for your specific purposes and change the way you do things as dictated by the system. Generally, experience shows that the latter is ultimately more effective because you get the benefit of a system that has been developed and improved over time, both by experienced developers and through the feedback of thousands of users. Doing it yourself means a “trial and error” process, plus the often, incorrect assumption that your current process is sound, and can ultimately produce a very mediocre system at a much higher cost.

- Do you have the organisational capacity, skill, and discipline to implement the system as required?
- **Integration** – Achieving a fully integrated production process in which technology and automation is optimal is a challenge, but it is important to use technology and acquire the type of technology that will integrate systems as seamlessly as possible:
 - Firstly, internally within your packhouse by systematically eliminating badly integrated systems, duplicate systems, poor or clumsy bolt-on or bridging systems (especially when it comes to data and information transfer).
 - Secondly, externally as you integrate with the greater value chain in the way you receive information from farms, and the way you communicate, plan, and track progress with your logistics providers, agents and clients.
- **Procurement** – Procurement of technology and automated plant machinery is a key success factor since you will have to live with the decision for one or even two decades. Key factors include:
 - Rigorous due diligence of the intended technology, as informed by:
 - Functionality.
 - Specifications.
 - Constraints and limitations.
 - Costs, including the total cost of ownership.
 - Return on investment (ROI).
 - Ongoing support by the vendor.
 - Skills requirements.
 - Reputation, reviews and real-life references.
 - Tracking the availability of new technology. Keeping up with what is available.
- **Project Management** – Your ability to manage the implementation of new technology and machinery is a key success factor (See [Toolkit 9.1 – Capital Projects Planning](#) and [Toolkit 9.2 – Capital Project Management](#) within this workflow).
- **Productivity** – Measurement and tracking productivity before and after the implementation of new technology is important.
 - There have been cases where new technology has been employed only to find that it improved the speed of the packing line, but reduced flexibility, and that it was still necessary to bring in the labour that was supposed to be reduced to compensate for the limitation/inflexibility of the technology.
 - Measuring the performance and utilisation of the machine against the performance promised by the agent, vendor or manufacturer.
- **Automated Asset Management** – Give careful consideration to the benefits that the latest technology can bring with regard to maintenance and sustainability.
 - Sensors can monitor equipment for signs of performance deficiencies, downtime, or impending maintenance. And the data aggregated in enterprise asset management (EAM) systems can detect mechanic deterioration and downtime risk before they become an issue for production.
 - Taking a prescriptive approach to asset management and maintenance can contribute to the overall sustainability of the manufacturing plant, in terms of both energy efficiency and

financial sustainability by ensuring machines are tended to before they break, and through the monitored expenditure of energy.

- **Leading and managing change** – Out with the old and in with the new is easier said than done. Ensure that you plan, lead and manage the change, in particular how your teams will have to change. (See [Toolkit 1.5 – Leading for Change and Improvement](#)).
- **Human resource and talent management** – Until a decade or two ago, knowledge and skills were passed down from one generation to another because, although technology developed and improved, the process and method remained relatively unchanged. Now with AI and the *4th Industrial Revolution* or *Industry 4 Innovations* the pace of change in the type of technology in hardware, software and machine intelligence is so fast that new skills are required. Do you have the skills? Can you develop the skills? Or do you have to find and acquire the skills?

execution steps

See the success factors above.

assessment questions

Please Note: There is no minimum / maximum number of questions you can add.

1.	Is your business case, i.e., justification for acquiring new technology, focused on benefiting the customer?
2.	Are you clear, through rigorous due diligence and process mapping, whether the technology will improve your operational processes?
3.	Can you define any trade-offs you may need to make, e.g., flexibility, changing other processes that work well now, staff redundancies, etc
4.	Can you assure that the anticipated utilisation level of the technology justifies the acquisition?
5.	Does the technology promote and improve integration of your whole system, rather than require additional and clumsy interfaces?
6.	Do you have the procurement expertise in the business to evaluate and finalise a complex, technical purchase?
7.	Do you have the project management expertise to implement the new technology?
8.	Do you have the ability to track before and after project performance, i.e., are you clear on the benefits and promise of the new technology in clear quantitative terms (preferably financial)?
9.	Do you have the skills to lead and manage the broader change within the business, and successfully go through the periods when change usually worsens performance before it improves?
10.	Do you have the human capital and talent to manage new technology and changes to the broader operational process?