Final report

Beef Export Supply Chain Tracking – a Pilot Trial

Executive summary

Background

The project was contracted to identify and implement current technologies that will be used to prevent counterfeit Australian red meat products within an Australian Wagyu beef supply chain. It was to highlight the value proposition of these technologies to the entire supply chain through questionnaires conducted through mobile applications.

Aims/objectives

This project was contracted to deliver the following:

- Trusted beef provenance, with Blockchain-enabled app to boost the value of Australian beef and protect against fraudulent imitation products.
- Ensure meat quality and food safety with real-time meat condition monitoring and reporting, allowing on-the-spot corrective actions
- Test the value of the technologies for beef producers and their customers through the pilot trials and customer feedback on value and usage of the technologies

Methodology

Three shipments were to be conducted with the IoT and Blockchain systems. Questionnaires were to be designed to collect feedback from trial customers. A pilot trial report was to be prepared to discuss implementations, benefits, value, lessons learnt, future development directions, and challenges.

These outcomes were to be delivered through technology development and shipment trials. Some of the technologies have been developed in University of Technology Sydney (UTS) in collaboration with Ultimo Digital Technologies (UDT). These technologies were to be further developed and adapted for the purpose of the trials.

Results/key findings

Unfortunately, the contract was never executed and therefore the project did not commence.

Recommendations

Unfortunately, none were provided.

Table of contents

1. Background

Product tractability is integral to food safety and quality assurance. Traceability, from on-farm through the supply chain, enables the Australian red meat industry to protect our reputation of clean, safe and natural and underpins product quality.

Currently, across industries there is a lot of interest in blockchain technology and there is significant investment occurring internationally. In Australia there is also much activity, however most is still at the proof of concept stage with limited measurable impact. MLA is undertaking several levy and MDC funded research projects to identify valuable blockchain use cases for the red meat industry. Please follow this link for more information.

2. Objectives

- Effectively trial how a Blockchain-enabled app can verify beef provenance
- Effectively trial real-time meat condition monitoring and reporting that will allow on-the-spot corrective actions to ensure meat quality and food safety
- Evaluate the value of integrity technologies for beef producers and their customers through both the pilot trials and customer feedback on value and usage of the technologies

As the contract was not executed, none of these objectives were delivered.

3. Methodology

Three shipments were to be conducted with the IoT and Blockchain systems. Questionnaires were to be designed to collect feedback from trial customers. A pilot trial report was to be prepared to discuss implementations, benefits, value, lessons learnt, future development directions, and challenges.

These outcomes were to be delivered through technology development and shipment trials. Some of the technologies have been developed in University of Technology Sydney (UTS) in collaboration with Ultimo Digital Technologies (UDT). These technologies were to be further developed and adapted for the purpose of the trials.

4. Project outcomes

At the time of contracting, it was expected that with Blockchain secured IoT systems, food fraud could be significantly reduced, thus providing consumers with a trusted provenance and traceability system. The Australian brand will be better protected. It was also expected that digital technologies would simplify document handling processes and improve supply chain efficiency.

5. Conclusion

While this project was not able to deliver any findings to industry, a number of other MLA investments have. More information can be found below.

5.1 Benefits to industry

MLA invests in food and product traceability activities include benchmarking, standards and building the capacity of the industry.

Benchmarking and standards
MLA collaborates with Codex Alimentarius activities, food safety systems and GS1 product identification systems to ensure that the work we do aligns with global directions.

Capacity building
Possible technology solutions: MLA has developed a service provider catalogue for use by industry (follow this link to request access).

Marker technology: A project has been initiated to pilot country of origin 'marker' technology. This will scientifically distinguish beef and lamb produced in Australia from meat produced in other countries. Focusing on trace elements and isotopes, the technology aims to deliver an innate chemical fingerprint. This fingerprint will tie products to their production or manufacturer origin. Not only will this support provenance claims, but it will identify substitution and counterfeit goods.
If the technology is successful, the industry will be in a position to audit (test) any products labelled as Australian beef and lamb are true to their claimed country of origin.

Commercial case studies: Several commercially based case study trials are currently running to determine the best way/s to provide customers and consumers with confirmation of the authenticity of product. These trials are up and running with different supply chains into Singapore, Japan, the United Arab Emirates, China and the United States. The trials will not only test the technology offerings but communicate the key learnings via case studies to help build capability in other supply chains.

Market research: MLA has funded a project (*V.MFS.0447: Commercial application of supply chain integrity and shelf life systems*) to undertake market research to better understand:
- Who generates value from implementing a traceability system and therefore if implementation is 'worthwhile'
- How supply chain participants can be incentivised to participate.
- Identify which products and markets (or market segments) are most likely to derive value from implementing an integrity system for various attributes.
- Findings from this work can be found here.

Education and awareness-raising: MLA is working with commercial partners to promote Australia's red meat integrity systems and programs right through to end-consumers.

6. Future research and recommendations

Recommendations from V.MFS.0447: *Commercial application of supply chain integrity and shelf life systems* included:
- validation of the fraud issue and preparation of an industry response
- study of the feasibility of implementing industry wide integrity enhancements
- promoting cold chain integrity and its impact on shelf life
- bridging the gap between the red meat industry and technology/service providers
- understanding of what integrity systems represent for consumers and what would stimulate their willingness to pay more for them.