Final report

Early adoption & Evaluation of Masterbeef objective measurement technology

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Abstract

JBS Australia is the country's largest meat and food processing company, with beef and lamb processing operations across the east coast of Australia. JBS Australia's Northern Division operates five strategically placed processing facilities as well as five feedlots across Queensland and New South Wales, producing a range of beef brands including, Grain and Grass production.

With multiple plants and varying branded programs there is a need to ensure we have accurate, consistent grading data across the business.

Traditionally, meat quality attributes are inspected by professionally trained assessors. Even using professionally trained graders, visual inspection of meat quality may lead to inconsistencies and variations (Cheng et al., 2015). Furthermore, manual inspection is labour intensive, time-consuming, tedious and costly, and can be influenced by physiological factors resulting in subjective and inconsistent evaluation (Valous et al., 2016).

At the JBS sites meat grading is completed by trained assessors at each site. With potential variability across assessors and increased difficulties with sourcing and retaining skill labour in the Australian beef processing industry this project aims to deliver objective carcass measurements to the JBS beef grading process. JBS require consistent and uniform grading results to ensure product consistency across all sites and in addition, for brands being packed at multiple plants.

This project's goal was to investigate the functionality and useability of the Masterbeef App and validate the Masterbeef Apps grading results for accuracy and consistency across the JBS plants. 4 Master Beef cameras and shrouds were purchased with validation trials conducted at Beef City and Dinmore plant.

The JBS Masterbeef trial has allowed JBS to develop a deeper understanding of the objective carcase measurement technology. The trial has demonstrated to JBS that the Masterbeef camera is a viable technology and has the capacity to be implemented into the JBS business. The Masterbeef camera was found to be simple to use, light weight and functional and was able to deliver consistent grading results for most traits.

While the trial was a success, the Masterbeef camera technology still requires full AUA-MEAT accredited before it can be fully adopted.

Executive summary

Background

Red meat traits are graded using manual and primarily visual subjective methods. Not only are these manual grading methods tedious, they are also open to inaccuracies in the data captured. Developing precise objective measurement methods is an industry strategic 2025 imperative to capture more accurate data to support alternative pricing methods for producers. There are a number of objective measurement technologies at various stages of validation and accreditation for grading red meat traits.

JBS Northern have conducted initial reviews of the available grading solution and determined that the Masterbeef camera is the best fit for the northern business. Its data capabilities and size will enable JBS to better integrate it into their systems. The Masterbeef camera capabilities will enable JBS streamlined data integration into their systems ensuring they are able to deliver improved analysis of carcase traits for more consistent and accurate feedback back to the producer which in turn will drive producer engagement with brand specs and improve genetic gain. This will lead to improved livestock selection for JBS to better meet brand and/or product specifications. An appealing feature of the Masterbeef program is the reported easy transfer and integration of collected data across platforms.

Objectives

The overall objective of the project is to test the commercial viability of the Masterbeef handheld camera to measure ribeye grading characteristics in beef. This project's primary objective is to ensure consistent grading results to provide the most accurate supply chain feedback. This will drive producer engagement with brand specs and improve genetic gain.
The specific objectives of the project are:

- Test and trial integration of developing equipment and integration of software into feedback systems including MSA grading outputs (across multiple JBS sites)
- Evaluate the integration of the Masterbeef camera solution into JBS's northern operations' workflows and business data management systems, including feedback to producers
- Evaluate device grading capabilities across multiple classes of animals and sites
- Develop protocols on how to integrate new OM technologies including data captured into existing business systems
- Develop generic guidelines for adoption and integration of new OM technologies
- Develop a case study of learnings of integration of Masterbeef into business workflows and operating systems used to develop generic guidelines for adoption and integration of new OM technologies.

Methodology

JBS will partner with MLA and Masterbeef to trial and validate their grading camera across all of the northern sites.

- The project will purchase 10 Masterbeef devices (phone and shroud).
- Trials will be conducted at five (5) JBS northern sites over the trial period. Initial focus will be on Dinmore and Beef City to develop data integration requirements.
- Integration of Masterbeef data to JBS systems will be conducted
- Data will be collected, validated and analysed on a daily, weekly and monthly basis to assess performance of the Masterbeef grading solution

- User experience with the device, timesaving's and efficiencies will be measured
- An internal working group will be developed to review the technology. This group will consist of: MSA, Sales, Business analysts, plant operation and existing graders

Results/key findings

The key benefit of the objective carcase measurement is the ability to have a consistent grading measure across multiple sites for the delivery of consistent brand specifications for our customers. The Masterbeef camera offers a number of benefits:

- Simple to use – off the shelf Samsung camera
- App functionality easy to use and configurable
- Light weight, low cost durable shroud
- Limited changes to current grading process
- Images of the actual carcase eye muscle for reference if dispute with supplier / customer

For the JBS business it is believed that increased accuracy of the grading will deliver increased customer satisfaction.

Benefits to industry

For the industry objective carcase measurement technologies will allow for improved feedback to suppliers that will ultimately drive improvements in the quality of cattle being supplied. Objective carcase measurements will drive increased trust through the supply chain as these technologies get adopted across the processing sector.

Future research and recommendations

It is recommended that Masterbeef continues to refine the camera app and complete the AUS-MEAT accreditation requirements.

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1. Background

1.1 Background

Red meat traits are graded using manual and primarily visual subjective methods. Not only are these manual grading methods tedious, they are also open to inaccuracies in the data captured. Developing precise objective measurement methods is an industry strategic 2025 imperative to capture more accurate data to support alternative pricing methods for producers. There are a number of objective measurement technologies at various stages of validation and accreditation for grading red meat traits. This project was submitted in response to an open call for co-investment proposals from businesses seeking to trial and adopt emerging objective carcase and/or live animal assessment technologies. While some technologies may not yet have achieved AUS-MEAT accreditation, the opportunity was open to all technologies for businesses to test and trial integration of developing equipment, and, where applicable, integration of software to enable MSA grading outputs from these technologies to plant systems.

JBS Australia is the country's largest meat and food processing company, with beef and lamb processing operations across the east coast of Australia. JBS Australia's Northern Division operates five strategically placed processing facilities as well as five feedlots across Queensland and New South Wales. With multiple plants and varying branded programs JBS have a need to ensure accurate and consistent grading data across the business.

Traditionally, meat quality attributes are inspected by professionally trained assessors. Even using professionally trained graders, visual inspection of meat quality may lead to inconsistencies and variations (Cheng et al., 2015). Furthermore, manual inspection is labour intensive, time-consuming, tedious and costly, and can be influenced by physiological factors resulting in subjective and inconsistent evaluation (Valous et al., 2016). JBS require consistent and uniform grading results to ensure product consistency across all sites and in addition, for brands being packed at multiple plants.

JBS Northern have conducted initial reviews of the Masterbeef grading solution. The Masterbeef camera is the preferred option for the trial. Its data capabilities and size will enable JBS to better integrate it into their systems. The Masterbeef camera capabilities will enable JBS streamlined data integration into their systems ensuring they are able to deliver improved analysis of carcase traits for more consistent and accurate feedback back to the producer which in turn will drive producer engagement with brand specs and improve genetic gain. This will lead to improved livestock selection for JBS to better meet brand and/or product specifications. An appealing feature of the Masterbeef program is the reported easy transfer and integration of collected data across platforms.

JBS northern operations has investigated the Frontmatec camera. It's current design (size, weight) and access to local technical resources were seen as initial issues that lead to preference to trial the Masterbeef solution. However, the Frontmatec is being trialled in the JBS southern business and comparisons will be able to be measured between the devices.

There are currently no protocols for the adoption, implementation and integration of new objective measurement technologies into processor business operational and feedback systems. This project will develop operating protocols to enable adoption of a grading solution using Masterbeef handheld camera for future adopters. Specifically, the project will evaluate the integration of the Masterbeef camera solution into JBS's northern operations' workflows and business data management systems.

1.2 Project scope

This project will trial the commercial viability of integrating the Masterbeef App and grading camera solution into JBS's northern operations' workflows and business data management systems. If feasible, this technology will improve analysis of carcase traits for more consistent and accurate grading, and improve producer confidence in feedback. This will facilitate increased producer engagement with brand specifications and provide opportunities to improve genetic gain and management to better meet brand and product specifications. This project was a successful application from the 2021 Objective Measurement open call for proposals targeting the increased adoption of OM technologies. General learnings from this project will be used to develop generic guidelines for adoption and integration of new OM technologies.

1.3 Expected outcomes

The outcomes of the project include:

- Consistent and uniform grading results across all sites
- Ability to grade more carcasses more efficiently with less labour and less cost
- Improve the transparency of the grading process to the producer
- Improve livestock selection to better meet brand and/or product specification
- Improved Data analysis
- The ability to deliver accurate and consistent feedback on carcase traits back to the producer.
- Accurate, consistent and "equal" assessment of both full ribbing and spencer roll rib eye sites by the Masterbeef camera
- Accurate and consistent assessment of the complete marble score range

This project will contribute to a series of case studies generated through concurrent early adoption projects of several objective measurement (OM) technologies that were identified through an Open Call process. General learnings from this project will be used to develop generic guidelines for adoption and integration of new OM technologies. The outcome will be a comprehensive final report that captures the lessons learnt, including challenges encountered and solutions identified to improve opportunities for future adopters.

2. Objectives

The overall objective of the project is to test the commercial viability of the Masterbeef handheld camera to measure ribeye grading characteristics in beef. This project will contribute to a series of case studies generated through concurrent early adoption projects of several objective measurement (OM) technologies that were identified through an Open Call process. General learnings from this project will be used to develop generic guidelines for adoption and integration of new OM technologies.

This project's primary objective is to ensure consistent grading results to provide the most accurate supply chain feedback. This will drive producer engagement with brand specs and improve genetic gain.

The specific objectives of the project are:

- Test and trial integration of developing equipment and integration of software into feedback systems including MSA grading outputs (across multiple JBS sites)
- Evaluate the integration of the Masterbeef camera solution into JBS's northern operations' workflows and business data management systems, including feedback to producers
- Evaluate device grading capabilities across multiple classes of animals and sites

- Develop protocols on how to integrate new OM technologies including data captured into existing business systems
- Develop generic guidelines for adoption and integration of new OM technologies
- Develop a case study of learnings of integration of Masterbeef into business workflows and operating systems used to develop generic guidelines for adoption and integration of new OM technologies.

3. Methodology

JBS will partner with MLA and Masterbeef to trial and validate their grading camera across all of the northern sites.

- The project will purchase 10 Masterbeef devices (phone and shroud).
- Trials will be conducted at five (5) JBS northern sites over the trial period. Initial focus will be on Dinmore and Beef City to develop data integration requirements.
- Integration of Masterbeef data to JBS systems will be conducted
- Data will be collected, validated and analysed on a daily, weekly and monthly basis to assess performance of the Masterbeef grading solution
- User experience with the device, timesaving's and efficiencies will be measured
- An internal working group will be developed to review the technology. This group will consist of: MSA, Sales, Business analysts, plant operation and existing graders

3.1 Project planning and design [Milestone 1]

The following method and process steps were applied in project planning and design phase, including:

- Conduct start-up meeting with JBS project team, Masterbeef and MLA
- Form steering project group
- Trial plans
- Design and integration requirements

The progress report, including trial plans, design and integration requirements will be submitted to MLA for approval.

3.2 Equipment order and commission [Milestone 2]

The following method and process steps were applied in equipment order and commission (i.e. Milestone 2), including:

- Order & commission trial ready Masterbeef devices and systems (x 10)
- Review data integration protocols
- Device training and technical support
- Conduct initial device trials at 1 JBS site
- Initiate testing protocols

The progress report, including equipment order and commission will be submitted to MLA for approval.

Equipment order and commission phase required ordering & commissioning trial ready Masterbeef devices and systems (x 10). Specifically, four devices were ordered with two of the devices in use at

the initial pilot JBS Beef City plant. Data uploaded to the Masterbeef site daily, whereby the grain fed beef analyst reviews from an excel report weekly.

Go/No Go decision Point: Trial-ready Masterbeef devices commissioned, initiated training and testing protocols, and trial plan approved as scheduled.

3.3 Conduct device trials across JBS sites as per trial plan [Milestone 3]

Conduct device trials across JBS sites as per trial plan, including:

- Commence trials as per agreed plan
- Data collection and data integration
- Review device performance and usability

The progress report, including conduct device trials across JBS sites as per trial plan will be submitted to MLA for approval.

3.4 Final report [Milestone 4]

Confidential report of commissioned, training and testing protocols, data collection, integration systems, and trial results. Public case study of lessons learnt for early adoption of OM devices. Final reports (confidential & public) submitted & approved by MLA.

4. Results

4.1 Project planning and design [Milestone 1]

The initial planning and design phase was delivered by:

- Conduct start-up meeting with JBS project team, Masterbeef and MLA
- Form steering project group
- Trial plans
- Design and integration requirements

4.1.1 Conduct start-up meeting

The initial project start-up planning meeting with JBS and MLA was conducted on 28 April 2022 to initiate the development of the trial plan. Ongoing engagement and project planning between JBS and provider (Masterbeef) were conducted, as required.

4.1.2 Form project steering group

The project steering group was formed, including JBS, Masterbeef and MLA participants:

JBS: Michael Finucan; Linden Cowper (Other JBS, as required)
Masterbeef: Darren Hamlin
MLA: Jack Cook; Richard Apps; Dean Gutzke (Other MLA, as required)

4.1.3 Trial plans, including design & integration requirements

Draft trial plans, including design and integration requirements, were developed with ongoing changes, as required.

4.2 Equipment order and commission [Milestone 2]

The following method and process steps were applied in equipment order and commission (i.e. Milestone 2), including:

- Order & commission trial ready Masterbeef devices and systems (x 10)
- Review data integration protocols
- Device training and technical support
- Conduct initial device trials at 1 JBS site
- Initiate testing protocols

4.2.1 Order & commission trial ready Masterbeef devices and systems

Equipment order and commission phase required ordering & commissioning trial ready Masterbeef devices and systems (x 10). Specifically, four devices were ordered with two of the devices in use at the initial pilot JBS Beef City plant. 1 device has been deployed to Dinmore with 1 remaining in head office.

4.2.2 Review data integration protocols

Details of the data integration requirements have been discussed and a Grading Process Flow map developed and shared with Masterbeef. The current DCU unit system facilitates up and back data transfer. JBS will require the Masterbeef solution to be integrated in a similar way (i.e. Requirement for graders to only operate one device and be able to upload PBR). The aim of replacing DCU with Masterbeef camera is to improve speed, accuracy and usability.

There will be a need for the Masterbeef App to be integrated with MyMSA and requiring Masterbeef to have a license agreement in place with MSA to grant approval for access the algorithm. License agreement in place with Masterbeef will be critical to ensure efficient data flow up and back to the cloud and real time grading. In addition, due to the size of the daily grading file, JBS and Masterbeef reviewed and implemented the process of extracting the data via the API to have the data available to the JBS data lake for further analysis. Refer to Grading process map (See Figure 1].

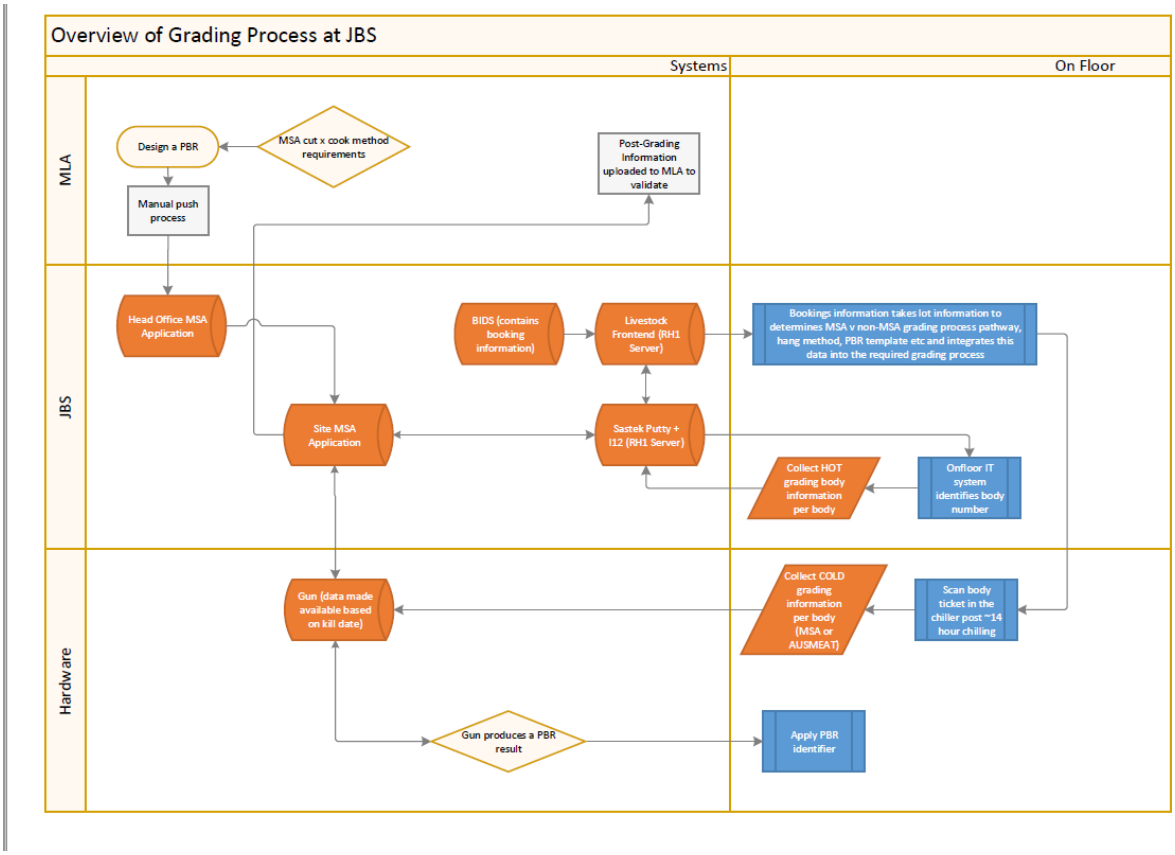

Figure 1: Grading Process Map

4.2.3 Device training and technical support

Training with the devices has been delivered and ongoing technical support supplied as required. There was a colour assessment issue which was rectified once the devices were calibrated. The colours and EMA assessment size improved into line with the graders with the Angus carcases. New calibration cards have been issued.

4.2.4 Conduct initial device trials at 1 JBS site

Current device trials involve collecting camera images on a cross section of cattle with approximately 300-350 carcases per day for four days per week. These numbers involve a mix of cattle and carcase type – MSA and AUSMEAT and across section to include all types including Angus.

4.2.5 Initiate testing protocols

Testing protocols involve collecting camera images on a cross section of cattle with approximately 300-350 carcases per day for 4 days per week. These numbers involve a mix of cattle and carcase type – MSA and Ausmeat and a cross section to include all types including Angus.

4.2.6 Data analysis & camera performance

Preliminary imaging results at JBS are indicating the Masterbeef camera appears to be less accurate (compared to the manual grader's result) at the low marble score range. This is

evidenced by JBS graders having to override some images due to incorrect marble scores (when marbling is low).
JBS commissioned Neville Jopson from AbacusBio Limited to review a sample of the grading data.

The results show that the Master Beef camera system has some predictive ability in beef carcass grading, although there were a reasonable proportion of carcasses where there was not close agreement.

- The camera was moderately accurate at measuring marble score, but it consistently assigned higher marble score gradings compared to a human grader
- Meat and fat colour were the least accurate of all the measures tested. This is likely because of the difficulty in getting uniform illumination and is known to be problematic in this kind of application
- Eye muscle area was measured with moderate accuracy compared to the assessed eye muscle area from human graders, but it is unclear which method has the higher accuracy
- Revenues were predicted with relatively high levels of accuracy. However, this was strongly influenced by hot dressed weight which was the same for all measurement methods. Differences in marble score between methods did result in significant differences in carcass revenues.
- It should be noted that the camera has an inherent benefit of being an objective measure and so should produce the same result repeatedly under the same conditions. Research has shown human graders tend to be reasonably consistent, but scores can vary considerably between graders.

Masterbeef has access to the large number of images taken from these trials which will be utilised in “training” the camera to assess the lower marbling scores.
Issues calibrating due to amount of data stored on the devices will be the focus of the next phase. All data has been uploaded, so in order to clear the date is to uninstall and reinstall the App and then all stored files will be removed from the phone.

From a commissioned independent report, the results show that the Master Beef camera system has some predictive ability in beef carcass grading, although there were a reasonable proportion of carcasses where there was not close agreement.

4.3 Conduct device trials across JBS sites as per trial plan [Milestone 3]

4.3.1 Commence trials as per agreed trail plan

The initial trials commenced at Beef City, where there is a mix of marbling scores and grading types (MSA and Ausmeat) within our grain fed programs. Approximately 10,000 carcases have been graded with the camera at Beef City.

Labour remained a constant issue in our plants during 2022 and this really determined which plant was going to be the second trial site – being Dinmore. There is not a specific data set available as yet at Dinmore. Dinmore side bones and uses a process called “spencer roll opening” and this presents an altered eye muscle for assessment. The eye muscle area (EMA) and consequently the marbling can be distorted as the rib eye is stretched out.

After the initial trial with camera set in the traditional shroud, Masterbeef and JBS ascertained

assessing the “up” eye muscle would not only provide more accurate data, but also obtain a complete image of the eye muscle.

Currently we have tested 3 modifications of the shroud, and believe we’re getting close with the re-design.

4.3.2 Data collection and data integration

Originally the technology was going to be integrated into the JBS systems, however, the business decided the complete data analysis needed to be completed internally first. The details of the mapping process have been detailed in Milestone 2.

Details of the data integration requirements have been discussed and a Grading Process Flow map developed and shared with Masterbeef. The current DCU unit system facilitates up and back data transfer. JBS will require the Masterbeef solution to be integrated in a similar way (i.e. Requirement for graders to only operate one device and be able to upload PBR). The aim of replacing DCU with Masterbeef camera is to improve speed, accuracy and usability. There will be a need for the Masterbeef App to be integrated with MyMSA and requiring Masterbeef to have a license agreement in place with MSA to grant approval for access the algorithm. Having a license agreement in place with Masterbeef will be critical to ensure efficient data flow up and back to the cloud and real time grading. In addition, due to the size of the daily grading file, JBS and Masterbeef reviewed and implemented the process of extracting the data via the API to have the data available to the JBS data lake for further analysis.

Grading process map can be seen in figure 1 above.

4.3.3 Review device performance and usability

There was a colour assessment issue which was rectified once the devices were calibrated. The colours and EMA assessment size improved into line with the graders with the Angus carcases. New calibration cards were issued.

As reported in Milestone 2, preliminary imaging results at JBS indicated the Masterbeef camera appeared to be less accurate (compared to the manual grader’s result) at the low marble score range. This was evidenced by JBS graders having to override some images due to incorrect marble scores (when marbling is low).

JBS commissioned Neville Jopson from AbacusBio Limited to review a sample of the grading data. This can be viewed as an appendix to this report.

The results show that the Master Beef camera system has some predictive ability in beef carcass grading, although there were a reasonable proportion of carcasses where there was not close agreement.

Following the first report, and using the large number of images taken from these trials, Masterbeef utilised these to “train” the camera to assess the lower marbling scores. In addition, Masterbeef implemented into the camera assessment technology a “glare” function. Lower marble score product can display a “sheen” to it, not unlike the cut surface of the eye round.

JBS commissioned AbacusBio Limited to complete a second review of a smaller grading data set.

The results show the Master Beef camera system improved the correlations for a range of carcass traits compared to the previous report with the implementation of the “glare” function. Eye muscle area has improved by the greatest amount, but correlation with marble scores have also improved significantly. There is little change in the prediction accuracy for meat and fat colour, which remains very low.

The graders are showing the new technology is learned with ease.

5. Key considerations on adoption of OM [JBS Northern Masterbeef Case study]

JBS Australia is the country’s largest meat and food processing company, with beef and lamb processing operations across the east coast of Australia. JBS Australia’s Northern Division operates five strategically placed processing facilities as well as five feedlots across Queensland and New South Wales, producing a range of beef brands including, Grain and Grass production.

With multiple plants and multiple branded programs there is a need to ensure accurate, consistent grading data across the business. At the JBS sites meat grading is completed by trained assessors at each site. With potential variability across assessors and increased difficulties with sourcing and retaining skill labour in the Australian beef processing industry this project aims to deliver objective carcass measurements to the JBS beef grading process. JBS require consistent and uniform grading results to ensure product consistency across all sites and in addition, for brands being packed at multiple plants.

5.1 Project brief [Snapshot]

This project investigated the commercial viability of integrating the Masterbeef App and grading camera solution into JBS’s northern operations’ workflows and business data management systems.

This project assessed the functionality and useability of the Masterbeef App and validated the Master Beef Apps grading results for accuracy and consistency of beef grading across the JBS plants. 4 Master Beef cameras and shrouds were purchased with validation trials conducted at Beef City and Dinmore plant.

5.2 Process of adoption

The project allowed JBS to trial the Masterbeef camera at 2 sites. While final adoption of the technology wasn’t completed during the project phase the project allowed JBS to understand the commercial viability of the technology and develop an understanding of what needs to occur for the technology to be viable and fully integrated into the JBS business.

One of the key metrics for adoption of the camera, is the requirement for the camera to have AUS-MEAT accreditation for both AUS-MEAT grading and MSA grading traits. At the conclusion of the project the Masterbeef camera was still pending full AUS-MEAT accreditation.

The trial demonstrated that once these AUS-MEAT accreditations are complete JBS would be able to commercially adopt the technology.

5.2.1 OM Technology install & evaluated for trial ready

The Masterbeef grading camera is a Samsung phone and comes with the Masterbeef app installed. The instillation for the trial was very simple with the phone only needing to be connected to WIFI. Application upgrades where made throughout the trial and calibration cards used to ensure the camera accuracy was retained.

5.2.2 Data integration protocols

A review of the data integration requirements was conducted with the JBS IT team and a grading process flow map developed to understand the system requirements to fully integrate the camera into the JBS operating systems. For the trial phase of the project JBS determined to operate the camera outside of the JBS operating systems and utilised Masterbeef's data cloud storage system to collect grading data. This data was then merged with JBS grader data to run the comparisons and validation reviews. In order for the camera to be fully integrated in to the JBS operating systems APIs will need to be developed between Masterbeef and JBS for data transfer.

5.2.3 Training dedicated OM device

The Masterbeef system was very simple to use. The training involved an introductory session and demonstration in the chillers with Masterbeef and the JBS graders. Following the training and demonstration the JBS graders were able to use the camera.

5.2.4 Data analysis and visualisation

JBS conducted a detailed review of the camera grading accuracy in comparison with the JBS graders throughout the project and worked with Masterbeef to make improvements to the camera. These included:

- Refining the calibration of the eye muscle area
- Improving the meat colour and fat colour
- Addressing camera flash glare to refining the marble scoring

JBS also engaged a third party data analysts to assist in the analysis of the grading validation. The results show that the Master Beef camera system has some predictive ability in beef carcass grading, although there were a reasonable proportion of carcasses where there was not close agreement.

Following the first report, and using the large number of images taken from these trials, Masterbeef utilised these to "train" the camera to assess the lower marbling scores. In addition, Masterbeef implemented into the camera assessment technology a "glare" function. Lower marble score product can display a "sheen" to it, not unlike the cut surface of the eye round

5.2.5 Review business rules to get the most out of OM

Implementing the Masterbeef camera into the JBS would require limited changes to business processes. The grader will still play a pivotal role in the camera grading process with oversight of the grading accuracy and ability to override the camera results if they do not agree with result.

5.2.6 External company support

In order to adopt the camera technology there is a requirement for ongoing technical support from Masterbeef. This is to ensure the camera remains calibrated and that the application is updated with latest software updates. The remaining requirements such as data integration into JBS systems and external systems such as MyMSA would all be managed by the JBS IT team.

5.3 Key considerations, insights & lessons learnt

The project has allowed JBS to trial new objective measurement technology and begin the journey of adoption of these technologies into the JBS business. The Masterbeef camera was able to provide an easy to use, light weight and functional camera grading option. The biggest barrier to adoption is the completion of the AUS-MEAT accreditation. Once these have been completed a full adoption plan could be implemented.

5.4 Benefits, value proportions & potential impacts

The key benefit of the objective carcase measurement is the ability to have a consistent grading measure across multiple sites for the delivery of consistent brand specifications for our customers. The Masterbeef camera offers a number of benefits:

- Simple to use – off the shelf Samsung camera
- App functionality easy to use and configurable
- Light weight, low cost durable shroud
- Limited changes to current grading process
- Images of the actual carcase eye muscle for reference if dispute with supplier / customer

For the JBS business it is believed that increased accuracy of the grading will deliver increased customer satisfaction. For the industry these technologies will allow for improved feedback to suppliers that will ultimately drive improvements in the quality of cattle being supplied.

5.5 Potential barriers to adoption

The current major barrier to adoption is the AUS-MEAT accreditation. This is required to fully implement the Masterbeef system into the JBS business and streamline the grading process. The objective is to continue to support Masterbeef with their accreditation process.

Table: Apparent barriers to OM adoption from JBS's journey

Apparent barriers	Opportunity
Trust the data	✓ Continue to support early OM adoption ✓ Support data comparison & benchmarking
Capability & capacity	✓ Training device company champions ✓ R&D investments in semi- & full auto devices ✓ Support data integration in business IT systems

OM impacts on $	✓ Support data comparison & benchmarking ✓ Support provided to help review/revise business rules
OM solution(s) costly	✓ Customised support offering for each OM early adoption pilot
Right time to adopt OM	✓ Enhanced awareness that both accredited & non-accredited solutions can provide value

5.6 Conclusion & Recommendations

5.6.1 Conclusion

The JBS Masterbeef trial has allowed JBS to develop a deeper understanding of the objective carcase measurement technology. The trial has demonstrated to JBS that the Masterbeef camera is a viable technology and has the capacity to be implemented into the JBS business. The camera has the capacity to deliver more consistent grading results for the business and ultimately deliver improved customer satisfaction with JBS beef brands.

The project allowed JBS to trial the technology and work through a number of adoption challenges and technology refinements to drive improvements in the camera. The Masterbeef camera was found to be simple to use, light weight and functional and was able to deliver consistent grading results for most traits.

While the trial was a success, the Masterbeef camera technology still requires to be fully AUS-MEAT accredited before it can be fully adopted.

5.6.2 Recommendations for future work

It is recommended that Masterbeef continues to refine the camera app and complete the AUS-MEAT accreditation requirements.

6. Conclusion

The JBS Masterbeef trial has allowed JBS to develop a deeper understanding of the objective carcase measurement technology. The trial has demonstrated to JBS that the Masterbeef camera is a viable technology and has the capacity to be implemented into the JBS business. The camera has the capacity to deliver more consistent grading results for the business and ultimately deliver improved customer satisfaction with JBS beef brands.

The project allowed JBS to trial the technology and work through a number of adoption challenges and technology refinements to drive improvements in the camera. The Masterbeef camera was found to be simple to use, light weight and functional and was able to deliver consistent grading results for most traits.

While the trial was a success, the Masterbeef camera technology still requires to be fully AUS-MEAT accredited before it can be fully adopted.

6.1 Key findings

The key findings of the projects were:

- Simple to use – off the shelf Samsung camera
- App functionality easy to use and configurable
- Light weight, low cost durable shroud
- Limited changes to current grading process
- Images of the actual carcase eye muscle for reference if dispute with supplier / customer

6.2 Benefits to industry

For the industry, objective carcase measurement technologies, will allow for improved feedback to suppliers that will ultimately drive improvements in the quality of cattle being supplied. Objective carcase measurements will drive increased trust through the supply chain as these technologies get adopted across the processing sector.