



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

Module Name: Entrepreneurial Innovation

Module Code: BMBM4011

Topic: Developing a Venture Plan for
Sustainable Delivery and Longevity

Student Name: Evelyn Jeannette Ramirez de Martinez

Student Number: 2520056

Lecturer: Robyn Griffiths

Deadline: 24th April 2026

Wordcount: 3,000 words

Contents

1. Executive Summary	4
2. Project Overview and Context.....	6
3. Strategy for Longevity	9
4. Business Model Canvas.....	16
5. Viability, Finance and/or Resources.....	17
6. Implementation and Learning Loop.....	25
7. Alternative Solution.	31
Conclusion and Recommendation	33
Appendices.....	34
Reference List	36

Table of Figures

Figure 1: Company Profile	5
Figure 2: Process Diagram Marel i-Cut 130.....	5
Figure 3: Stakeholder Matrix.....	6
Figure 4: Fishbone Diagram	7
Figure 5: Scamper	8
Figure 6: Balance Scorecard	12
Figure 7: RACI.....	13
Figure 8: PEST Analysis	14
Figure 9: Competitor Analysis.....	15
Figure 10: Business Model (CANVAS)	16
Figure 11: Financial Indicators Summary.....	18
Figure 12: Annual Savings.....	18
Figure 13: Payback Period and Discounted Payback Period	19
Figure 14: Return on Investment ROI.....	19
Figure 15: Net Present Value NPV	19
Figure 16: Internal Rate of Return IRR	20
Figure 17: Sensitivity Scenarios	21
Figure 18: 5 Years Comparative Cash Flow (Own Funds).....	21
Figure 19: 5 Years Comparative Financial Statements.....	22
Figure 20: Financial Ratios Comparative.....	23
Figure 21: Financial Health Summary	24
Figure 22: Graphics	25
Figure 23: Critical Path Method	26
Figure 24: Communication Plan	27
Figure 25: First Month GANTT Chart.....	28
Figure 26: Two Years GANTT Chart	29
Figure 27: Traceability Matrix.....	29
Figure 28: Risk Mitigation Strategy	30
Figure 29: Cost-Benefit.....	31
Figure 30: Critical Limitation of Alternatives.....	32
Figure 31: Training Schedule.....	33

1. Executive Summary

At Dunbia Cross Hands, the combination of high meat waste, high staff turnover and underperforming machinery has made it difficult to maintain a competitive edge in an industry where margins are already very tight. The current situation, where inconsistent quality leads to customer complaints, needs a practical solution. My view is that the Marel i-Cut 130 is the best solution, but only if it is backed by Lean and Total Quality Management methods. In a sector like this, a fraction of a percent in yield can be the difference between a loss and a profit for the entire plant.

The real aim is to let automation handle the issues outlined above. It is hard to keep manual cutting consistent when staff are constantly changing, but the Marel i-Cut 130 keeps every portion exactly to the customer specifications. This reduces the pressure on the staff and prevents a decline in quality.

This directly addresses the giveaway, the habit of over-packing meat, which is a significant financial loss. By getting the cutting process under control, the plant can finally deliver a consistent product and stop the complaints that are damaging the brand.

The investment of £380,000 is supported by strong projections. This project delivers an IRR of 59.3% and a payback period of only 1.52 years, which is excellent for this type of equipment. It is necessary that management ensures that production stays steady and that the team on the floor is properly trained to use the new system for this plan to be successful.

Overall, Figure 1 shows Dunbia's market position providing a solid foundation, and Figure 2 illustrates how the introduction of the new Marel i-Cut 130 cutting machine

will, in the long term, transform waste into a quality-focused, waste-efficient operating model, combined with Lean Manufacturing and Total Quality Management principles (Abbas and Kumari, 2023; Sasso et al, 2025). Financial analysis shows that this plan requires an initial investment, but it will result in long-term cost savings, reduced waste, and greater operational sustainability.



Figure 1: Company Profile

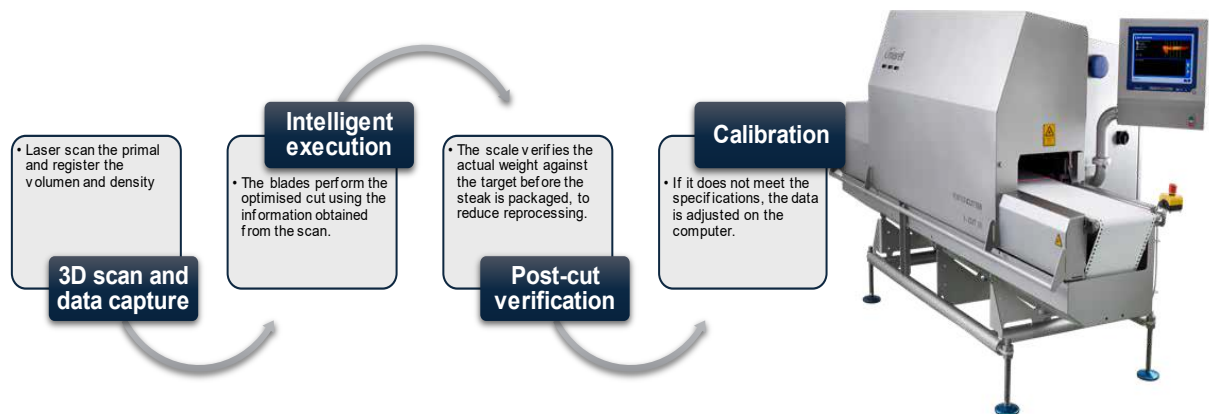
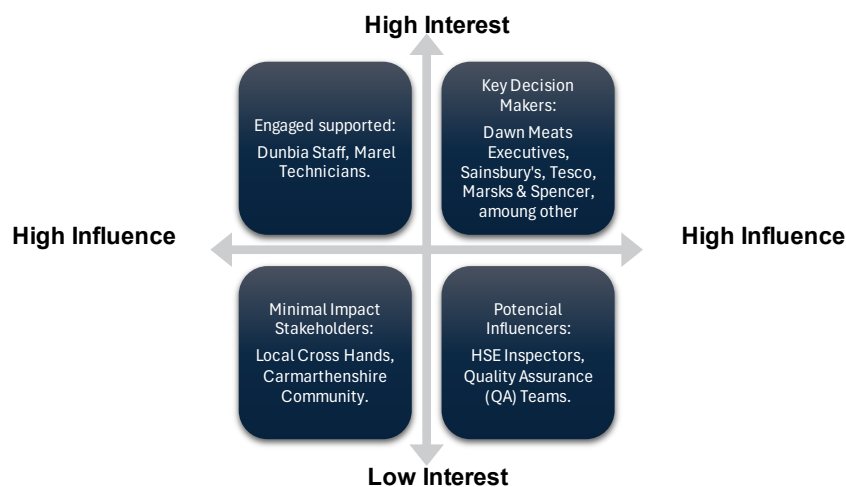


Figure 2: Process Diagram Marel i-Cut 130

2. Project Overview and Context

In the UK meat industry, Dunbia Cross Hands operates in the meat processing industry, characterised by high production volumes, strict food safety standards, fast-moving raw material prices, and large competitors, such as ABP UK and Kepak. The facility processes beef, lamb, and pork products for major supermarkets and retailers (Dunbia, 2026), including Tesco, Sainsbury's, Marks & Spencer, The Co-op, Asda, Morrisons, Amazon, Gousto, Whitbread, and export customers. Buyer power in this industry is high, as large retail customers put strong pressure on price, quality, and credibility. So, a minor quality failure can result in rejected products, financial penalties, or the loss of supply contracts. Figure 3 highlights that retail customers and regulatory bodies possess a strong influence, so clear communication is essential throughout the project.



Success depends on balancing the needs of Key Decision Makers like Dawn Meats executives and retailers while training Engaged Supporters on the factory floor to maintain a steady 3,000 portions per hour.

Figure 3: Stakeholder Matrix

As we see in Figure 4, excessive meat waste remains a big operational issue in the beef cutting operations, coming from human error and old machinery. From a Lean Manufacturing point of view, this waste, underweight or overweight products, represents Muda, because rework and rejected portions add no value for the customer

(Cherrafi et al., 2019). This can make a negative impact on KPI's such as yield percentage, giveaway, waste rate, and right first time (RFT). Although there are multiple quality checks, some actions made by the butchers after machine slicing can cause variations that make steaks miss their specified weight.

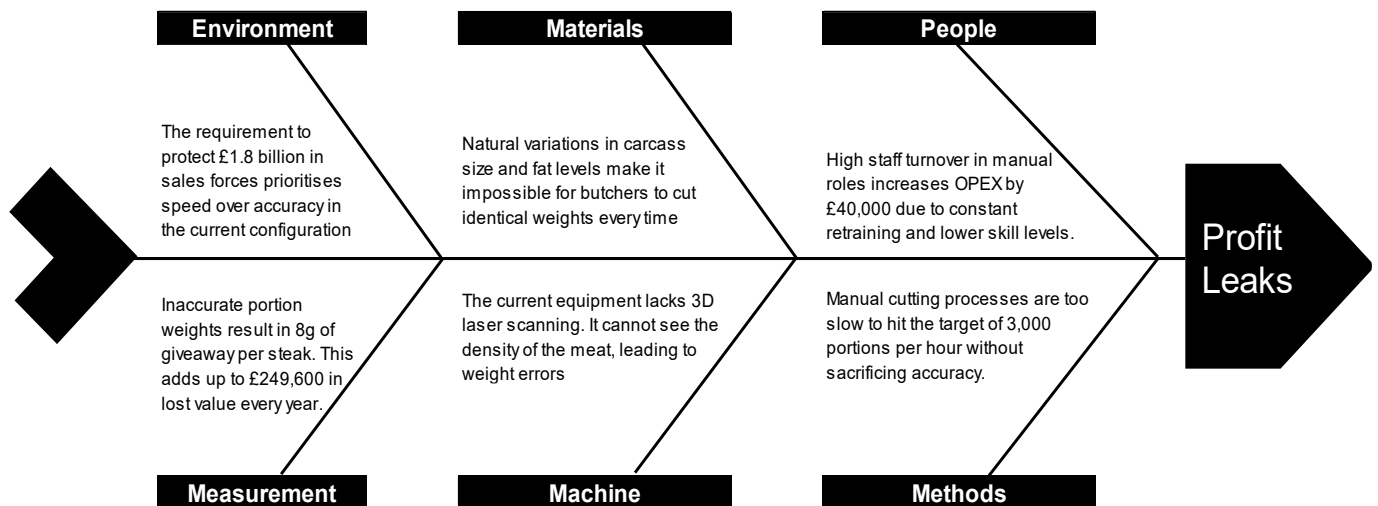


Figure 4: Fishbone Diagram

The investment in the Marel i-Cut 130 cutting machine offers a significant opportunity to improve these KPIs (Sasso et al, 2025). Figure 5 shows how the technology enables precise cutting, integrates customer specifications, and supports improvements. The i-Cut 130 embeds quality into the process instead of relying on inspection at the end of the line (Garcia-Garcia et al, 2022). This plan focuses on ensuring quality right from the beginning. When the machine is set up and monitored correctly, it can increase first-time quality rates, decrease the need for rework, and make output more consistent. This is likely to improve customer satisfaction and cut down on the cost associated with returns. Competitors can adopt similar automation, but Dunbia excels in integrating socio-technical alignment, creating organisational capabilities that are difficult to imitate (Yu et al, 2023).

S	C	A	M	P	E	R
SUBSTITUTE	COMBINE	ADAPT	MODIFY	PUT TO ANOTHER	ELIMINATE	REVERSE/ REARRANGE
Substitute manual hand-cutting with 3D laser scanning and robotic portioning to eliminate human error.	Combine real-time production data with the financial cash flow (OPEX/CAPEX) to monitor margin recovery instantly	Adapt high-speed industrial software to recognise different cattle breeds and adjust cutting density automatically.	Modify the production speed to a steady 3,000 portions per hour to balance precision with downstream packaging.	Put the recovered giveaway meat (8g per steak) back into the premium retail supply chain instead of the low-value trim bin.	Eliminate high-risk manual knife tasks, reducing the £40,000 in hidden costs related to labor churn and safety claims	Rearrange the workforce from Manual Butchers to Technical Operators, creating a more sustainable, high-skill labour model.

Figure 5: Scamper

Lean Manufacturing provides a structured framework for eliminating waste, but its application in a meat processing plant must acknowledge the variability of raw materials (Kazancoglu et al., 2021). Unlike automotive production, beef and lamb naturally vary in fat, muscle, density and weight; this means that standardisation has limits. Lean alone cannot fully remove the variation in waste, especially in meat processing (Cherrafi et al., 2019). When Lean principles are combined with precision technology such as the Marel i-Cut 130, the company can better control sources of waste and reduce them. Technology enhances Lean capabilities by stabilising the cutting operation, ensuring improvements are sustainable rather than temporary (Bortolotti et al., 2015). Due to the accomplishment of targets and retailers' pressure, Lean often fails in food production when managers focus only on targets instead of stability because they tend to focus on the short-term volume over long-term stability (Hagl et al., 2024). If the socio part of the socio-technical system is ignored when they intentionally bypass the machine to hit speed targets, the introduction of technology will fail. The same will happen if leadership does not change behaviour, waste will return even when the new system is introduced (Hagl et al., 2024). This is why cultural change is as important as the machinery.

However, achieving sustainable KPI improvements depends on the effective integration of human and technical systems (Hagl et al., 2024). Figure 6 shows how

performance will be measured across different areas, not only financial results. Investment in training enhances productivity and maximises the technological investment. High staff turnover, limited training, and low employee motivation currently undermine the full potential of the i-Cut 130 (Chuang et al, 2025). It requires alignment between advanced technology, standardised work practices, and a motivated workforce.

3. Strategy for Longevity

This section outlines the long-term strategic initiatives required for Dunbia Cross Hands to become a resilient, self-sustaining organisation over the next 2 years. As illustrated in Figure 7, the management structure provides a clear division of labour, which is essential to staying on track and meeting project deadlines.

Sustainability Plan. For long-term efficiency, it is necessary to reduce meat waste. Lean and Green manufacturing principles highlight the elimination of non-value activities and minimise the waste (Cherrafi et al., 2019). Waste is defined by lean as the use of equipment, supplies, materials, time, and area that does not enhance the final product. Seven categories of waste are identified: transport, inventory, motion, waiting, unnecessary processing, excessive production, and deficiencies. These wastes include processes that customers do not want to pay for and have a direct impact on cost, quality, and performance (Cherrafi et al., 2019). Research by Adeyemi et al. (2024) suggests that lean methods are no longer optional for businesses facing rapid market shifts. Implementing these concepts allows firms to streamline operations, which directly feeds into better quality and reduced waste (Lepistö et al, 2024). Adeyemi et al. (2024) look at efficiency, and Lepistö et al (2024) at customer satisfaction. This plan brings both ideas together, showing how reducing waste

improves retailer trust. The company should foster a collaborative culture, so all employees are involved in problem-solving and improvement. According to Schwarz et al. (2025), providing the right tools and training is the first step toward managing this change. However, this must be supported by a lean strategy that reorganises existing tasks and identifies where waste can be cut from the system (Cherrafi et al., 2019).

Productivity can increase through structured work practices and just-in-time inventory management (Bortolotti et al, 2015). To drive continuous growth, Dunbia must prioritise a culture of constant improvement where key performance indicators are reviewed on a frequent basis.

Total quality management embeds quality at every stage of the production process rather than relying on final inspection. However, its success depends on employee behaviour and process control (Lepistö et al, 2024). By executing detailed audits, the company understands exactly where resources are lost. This allows management to implement clear standards that simplify how waste is cut and managed across all production stages (Bortolotti et al, 2015). The establishment of team-based improvement projects encourages shopfloor workers to take ownership of their tasks, leading to more practical and immediate solutions on the floor. While Lean focuses on removing waste (Cherrafi et al., 2019), Total Quality Management focuses on preventing mistakes (Lepistö et al, 2024). When these two approaches are combined, they strengthen long-term performance.

The i-Cut 130 reduces mechanical issues, but the long-term success will depend on how well it fits into the work environment. In the meat industry, technology alone is not enough because raw materials fluctuate. So, the success is based on operators being able to read and use data for precise adjustments. When a company values accuracy

over raw output, it builds a different way of working that is very difficult for other companies to copy or imitate.

Employee Retention and Culture. When employees are well-trained and stay with the company, it becomes much easier to increase efficiency and improve the quality of work. According to Human Capital Theory, when a company invests in its people's growth, the result is a boost in both efficiency and overall performance (Schwarz et al., 2025). High turnover and staff frustration at Dunbia Cross Hands frequently stem from inadequate training. Implementing inductions and refresher courses, the facility can build the competence and confidence employees need to succeed (Bortolotti et al, 2015). While Herzberg's Two-Factor Theory explains motivation, in this context, its impact may be limited if performance targets continue to prioritise speed over quality (Martínez et al., 2025). Instead of pushing for speed, the performance initiatives are connected to quality and waste reduction. This approach makes sure that help long-term goals.

However, investment in training only generates returns when managers encourage employees to apply their skills. In high-pressure production environments, short-term targets can be an obstacle to quality, limiting the impact of the training (Hagl et al., 2024). If managers and supervisors are rewarded only on volume metrics, the skills that have been improved may not be transferred to the improved yield performance (Hagl et al., 2024). As seen in Figure 6, implementing a Balanced Scorecard is important to align incentives with long-term goals (Agarwal, 2021). It also aligns the daily work with the company's long-term goals. If managers continue to reward only production speed, quality improvement will not last (Garcia-Garcia et al, 2022). Performance measurement must change for behaviour to change. Measuring financial results with quality performance, employee development, and customer satisfaction,

Dunbia will ensure that training becomes a strategic investment instead of an initiative (Garcia-Garcia et al, 2022).

	Strategic Objective	Performance Indicator (KPI)	Strategic Initiatives (Action Plan)	Timeline	Responsible
Financial	Maximise Investment Return	Internal Rate of Return (IRR) > 59.3%	Implementation of Marel i-Cut 130 to reduce giveaway and labour costs.	Months 12 - 24	Finance Director
	Cost Optimisation	Annual Savings: £249,600	Waste reduction program focused on Muda (Lean) elimination in the cutting line.	Months 9 - 24	Site Manager
Customer	Product Excellence	Customer Complaint Rate < 1%	Automation of portion control to ensure 100% weight consistency for retailers	Months 8 - 24	QA Manager
	Strategic Partnerships	Service Level Agreement (SLA) Compliance > 98%	Quarterly business reviews with Tier 1 UK retailers to align on quality standards	Months 10 - 24	Commercial Manager
Internal Processes	Operational Efficiency	Yield Increase: +3.5%	Transition from manual to laser cutting technology.	Months 4 - 24	Operations Manager
	System Reliability	Machine Downtime < 5%	Predictive maintenance contract with Marel and on-site engineering	Months 4 - 24	Engineering Lead
Learning & Growth	Technical Upskilling	100% Operators Certified	Structured training programme for line operators on software	Months 5 - 7	Training Officer / HR
	Continuous Improvement	Learning Loop Review Completion	Execution of the Double-Loop feedback sessions to adjust strategy based on information	Months 10, 16, 22	Operational Excellence Manager

Figure 6: Balance Scorecard

Innovation and Technology. Investment in technology like i-Cut 130 new machinery will deliver efficiency gains and the integration with employee skills and operational processes. Socio-technical systems theory highlights the need for alignment; however, failure to address behavioural factors may limit the benefits of new technology (Yu et al, 2023). Motivational drivers in the social dimension are essential for aligning individual efforts with organisational goals and improving teamwork (Thomas, 2024). People may become inactive without proper incentives. Thomas (2024) and Yu et al (2023) agree that fostering intrinsic motivation through habits, respect, and leading by example creates behavioural change. Machinery performance audits, improved operator training and preventive maintenance schedules would help optimise

performance and reduce downtime. Involving employees in machinery optimisation would also improve acceptance and effective use.

Automation often fails when companies see technology as a technical solution to behavioural and cultural issues (Thomas, 2024). Socio-Technical System Theory highlights that technology gives value only when it is accompanied by leadership, employee engagement and structured processes (Yu et al, 2023). The phased implementation plan, RACI framework, and involvement of operators ensure that the Marel i-Cut 130 becomes embedded with daily operations, increasing the opportunity for financial projections and operational benefits over the 2-year horizon. Figure 7 explains exactly who is responsible for each part of the plan.

Activity / Decision Area	SM	OM	PM	QM	E	HR	CI	LO	ME	CM
Business case and ROI approval	A	R	C	C	C	C	C	I	I	C
i-Cut 130 purchase and contract	A	R	I	I	C	I	I	I	C	C
Site Acceptance Test	C	A	R	C	R	I	I	C	R	I
Machine installation and commissioning	I	A	C	I	R	I	I	C	R	I
Customer spec programming	I	R	A	C	C	I	I	R	C	C
Standard work and SOP update	I	C	R	A	C	I	R	C	I	I
Operator and butcher training	I	C	R	C	C	A	I	R	C	I
Operator certification control	I	C	A	C	I	R	I	R	I	I
KPI definition and targets	C	A	R	R	C	C	R	I	I	C
Daily KPI monitoring	I	C	A	R	I	I	C	R	I	I
Waste root cause analysis	I	C	R	A	C	I	R	R	I	I
Preventive / predictive maintenance	I	C	I	I	A	I	I	R	C	I
Change management and communication	A	R	C	C	C	R	I	I	I	I
Employee engagement and retention	C	C	C	I	I	A	I	R	I	I
Customer performance reviews	I	I	I	R	I	I	I	I	I	A
Continuous improvement roadmap	C	C	C	C	C	I	A	R	I	I

SM – Site Manager	Carlos Silva
OM – Operations Manager	Thomas Murianski
PM – Production Manager	Robert Bajor
QM – Quality Manager	Pasqua Filindeu
E – Engineering	Engineers
HR – HR Manager	Amanda Williams
CI – Continuous Improvement Lead	Evelyn R.
LO – Lead Operators / Senior Butchers	Ian Dumbill
ME – Marel Engineers	Marel Engineers
CM – Commercial Manager	Theresa Edwards

RACI
R (Responsible): Executes the task
A (Accountable): Owns the outcome (one only)
C (Consulted): Provides input
I (Informed): Kept aware

Figure 7: RACI

Customer Retention. Since contracts in the retail industry often demand high performance levels, retaining customers is a top priority. When a company provides consistent quality alongside reliable service, it builds the trust necessary for lasting business relationships. Structured customer feedback systems and shared quality performance information will help resolve issues, reducing returns and improving trust (Lee and Song, 2025). Quality is not negotiable, and it is linked to personnel satisfaction and the company's reputation. According to Lepistö et al (2024), Total Quality Management helps organisations achieve their goals and understand what customers need and expect. They also mention that Total Quality Management helps monitor processes and regulate company operations according to the customer's specifications, thereby reducing waste.

Market Adaptability. The meat processing industry faces regulatory, labour and cost pressures. Market adaptability requires continuous monitoring using tools such as PEST analysis and competitor comparative evaluation (Mussayeva, Savina, and Panzabekova, 2025), as seen in figures 8 and 9. Cross-trained employees, flexible production systems, and shift patterns allow a fast response to demand and regulatory change. As shown in Figure 8, external factors such as regulations and costs can affect the business, so flexibility is important.

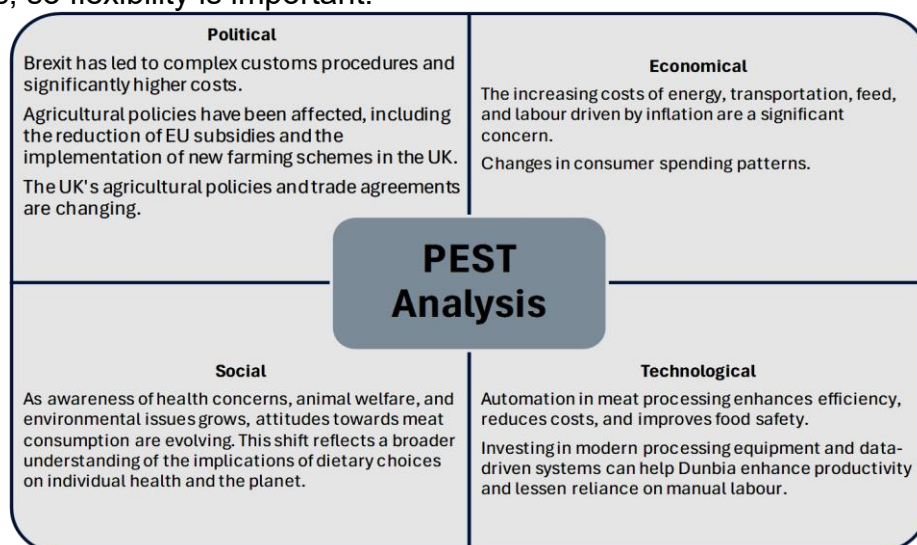


Figure 8: PEST Analysis

Figure 9 highlights the level of competition in the market, showing why efficiency is important for staying competitive, and Dunbia must be more efficient to be ahead of competitors.

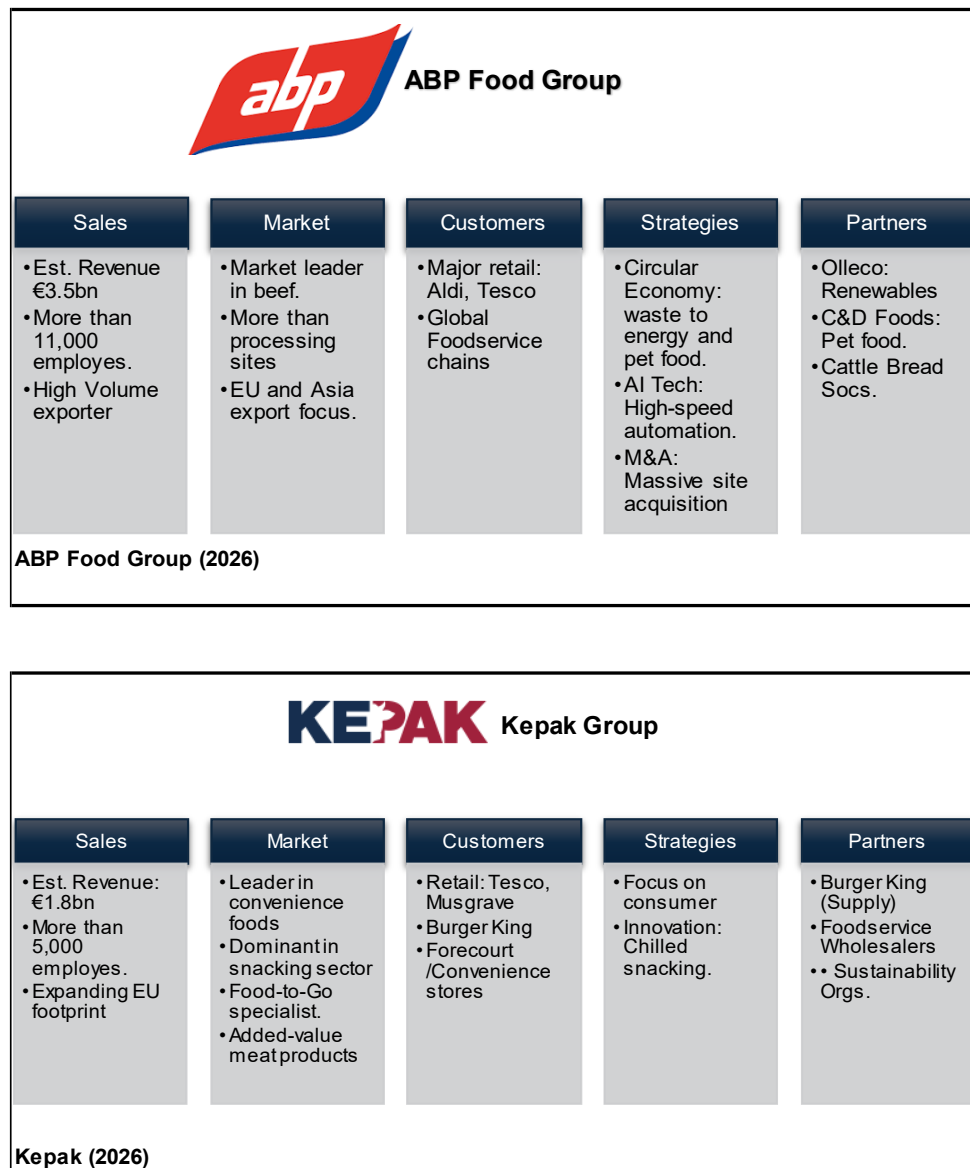


Figure 9: Competitor Analysis

Revenue and Growth Models. Revenue adaptability can be improved through adding value to the products, adding premium-quality lines, improving performance efficiency, and long-term contracts connected to quality KPIs (Remeňová et al, 2020). Waste reduction effectively increases merchandise inventory without increasing input costs, strengthening margins. All of these will be done with the introduction of the new machinery, i-Cut 130.

4. Business Model Canvas

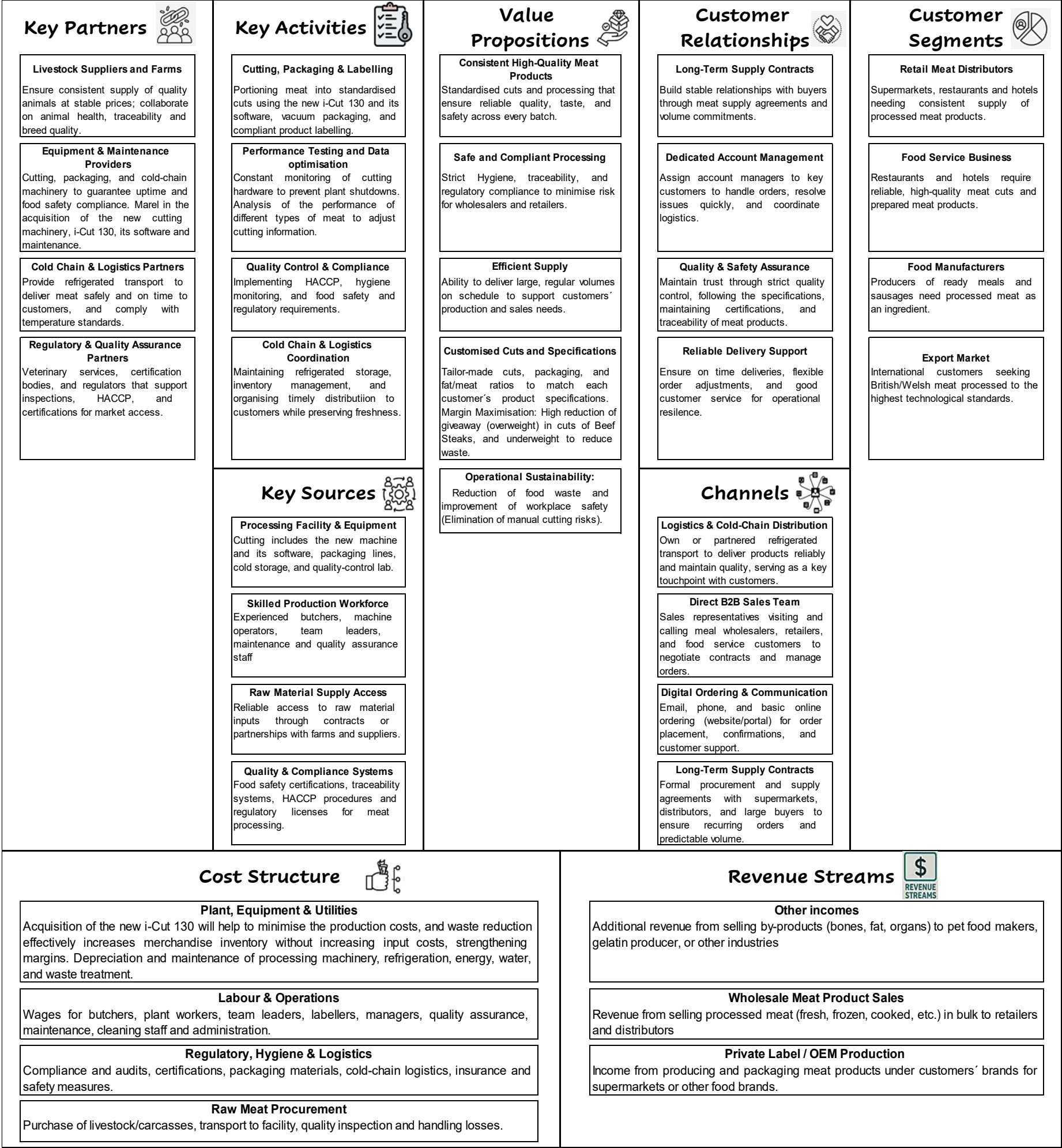


Figure 10: Business Model (CANVAS)

Figure 10 highlights how the model emphasises efficiency and waste elimination contributes to the long-term profit margins. The Marel i-Cut 130 adds real value to the current operation.

5. Viability, Finance and/or Resources

Viability

This plan for Dunbia Cross Hands is effective because it targets the actual root of the current problems. Issues such as waste, inaccurate cutting and losing staff too often have made it harder to compete in the retail market. Using Lean methods and the Marel i-Cut 130 allows the plant to fix quality issues during production, which is better than waiting for a final inspection. Even a small 1% increase in yield makes a big difference in a beef processing environment. It can generate substantial financial recovery, while improved Right First-Time rates help to reduce rework and retailer penalties, as M&S gives. Based on the plant's current structure, this strategy is achievable in two years, although it depends on effective culture change and consistent leadership (Holmemo et al, 2023).

Finance

Financial sustainability at Dunbia Cross Hands depends on controlling costs while maintaining consistency in revenue (Zhang and Yu, 2024). High raw material prices mean that even small amounts of meat waste result in substantial financial loss for the business.

Investment in Marel i-Cut 130 and training programmes requires an initial expenditure, and, according to the 5-year comparative cash flow, this project can be funded from own funds because Dunbia forms part of a large group structure, reducing financial risk. However, financial analysis indicates that these investments are likely to be recovered within 16 months through reduced waste, lower staff turnover, improved productivity, and fewer customer returns. They also include estimated yield recovery information common for high-volume beef processing facilities in the UK.

Financial Indicator	Value	Comments
Initial Investment	£380,000	The total upfront capital expenditure (CapEx). This includes installation and training.
Annual Savings	£249,600	Expected yearly cash inflow (savings/revenue).
Payback Period	1.52 Years	Time required to recover the initial disbursement (18 months).
ROI	65.68%	Annual
NPV (10% Discount Rate)	£566,180	The surplus value created.
IRR	59.30%	The project's annual yield.

Figure 11: Financial Indicators Summary

Annual Savings

1. Production		
Hourly Throughput:	3,000	steaks
Weekly Volume:	40,000	Based on a standard processing schedule. Based on conservative data (2,080,000 steaks per year), since in reality there would be $3000 \times 7 \times 5 \times 52 = 5,460,000 / 52$ weeks = 105,000
Annual Scope:	52	Weeks of operation per year, no including bank holidays and maintenance
2. Giveaway		
Actual	10 g. per steak	Unpaid excess or underweight meat
With the Marel i-Cut 300	2 g. per steak	Because the machine has a laser scanner
New recovery	8 g. per steak	
3. Financial Impact		
Weekly recovery	320	40,000 steaks x 8 g. (320 kilos)
Market Value	£ 4,800.00	15 pounds per kg (Sirloin/Ribeye)
Annual Saving	£ 249,600.00	

Figure 12: Annual Savings

Payback Period

Initial Investment	£ 380,000	Marel i-cut 130 and software 350,000.00 + training
Annual Saving	£ 249,600	
Payback Period	1.52	1 year and 6 months

Discounted Payback Period (10%)

Year 1	£ 226,909	Annual Saving/1.10
Remaining after year 1	£ 153,091	Initial investment - year 1
Year 2 discounted savings	£ 206,281	Annual saving/(1.10)^2
Discounted Payback Period	1.7 Year	The remaining £153,091.00 is recovered during year 2

Year	Annual Savings (£)	Cumulative Cash Flow (£)
Year 0	£ -	-£380,000
Year 1	£ 249,600	-£130,400
Year 1.5	£ 124,800	-£5,600
Year 1.52	£ 5,600	£0
Year 2	£ 249,600	£249,600

Figure 13: Payback Period and Discounted Payback Period

Return on Investment (ROI)

Initial Investment	£ 380,000	
Annual Saving	£ 249,600	
Annual ROI	65.68%	
ROI x 5 years	228.42%	Assuming that the use life of the machine is 5 years

Figure 14: Return on Investment ROI

Net Present Value (NPV)

Initial Investment	£ 380,000	
Annual Saving	£ 249,600	
Discount Rate	10.00%	
Annual Factor	3.791	Assuming that the use life of the machine is 5 years
Present Value	£ 946,180	
NPV (5 Years)	£ 566,180	

Year	Nominal Saving	Discount Factor	Present Value
Year 1	£ 249,600	0.909	£ 226,909.09
Year 2	£ 249,600	0.826	£ 206,280.99
Year 3	£ 249,600	0.751	£ 187,528.17
Year 4	£ 249,600	0.683	£ 170,480.16
Year 5	£ 249,600	0.621	£ 154,981.96
Total NPV	£ 249,600		£ 946,180.38

Figure 15: Net Present Value NPV

Internal Rate of Return (IRR)		
Initial Investment	£ 380,000	
Annual Saving	£ 249,600	
Annuity Factor	2	
	1.522	

Year 0 (Today):	-£ 380,000	Initial Investment
Year 1:	£ 249,600	Savings
Year 2:	£ 249,600	Savings
Year 3:	£ 249,600	Savings
Year 4:	£ 249,600	Savings
Year 5:	£ 249,600	Savings
0% Rate	£ 1,248,000	Higher than initial investment
50% Rate	1.737	It is too high
60% Rate	1.508	It is slightly too low
59.3% Rate	1.522	The IRR is significantly higher than the 10% cost of capital.

Figure 16: Internal Rate of Return IRR

This financial analysis presents the investment opportunity for the Marel i-Cut 130, a precise meat portioning machine. This helps reduce wasted product, known as giveaway. The initial cost for the machine is £380,000, but it can save £249,600 each year. These savings come from recovering 8 grams of meat per steak, with a weekly production of 40,000 steaks (it is only 38% of real capacity). This creates a financial buffer if the meat density or machinery setting varies during production.

The project's financial outlook is very positive, although it remains sensitive to production levels. With a 1.52-year payback period and an IRR of 59.3%, the project demonstrates strong financial viability (See Figure 13). The key financial indicators in Figure 11 demonstrate the project's viability. Over five years, and applying a 10% discount rate, the investment yields a Net Present Value (NPV) of £566,180, suggesting a solid return on capital. Figures 13 to 16 show that the investment can recover its cost quickly and generate strong returns over time. This financial scenario was made with conservative data, so if the yield recovery is lower, the payback period would extend but remain in an acceptable timeframe. A slight improvement in yield significantly drives profits. This investment secures margins and provides financial stability over the next two years.

Sensitivity Scenarios				
Scenario	Annual Savings	NPV (10% Disc.)	Payback Period	Variable Change
Base Case	£ 249,600	£ 566,180	1.52	8g recovery / 40k units
Pessimistic	£ 156,000	£ 211,363	2.44	5g recovery (Lower precision)
Market Downturn	£ 199,680	£ 376,944	1.90	20% Drop in Production Vol.
High Efficiency	£ 312,000	£ 802,725	1.22	10g recovery (Trained Staff)

Figure 17: Sensitivity Scenarios

The risk sensitivity analysis for the Marel i-Cut 130 investment indicates strong financial health, with a 59.3% IRR. The key factor is weekly volume, as a 20% drop in steak production results in a 20% reduction in savings. With a payback period of 1.52 years, the risk of losing the initial £380,000 investment is low. The break-even volume is below the conservative estimate of 40,000 steaks. Even if market prices or discount rates fluctuate, the substantial gap between the 10% cost of capital and nearly 60% return provides a solid safety margin, keeping the project positive in Net Present Value (NPV) during the most stress-test scenarios. As shown in Figure 17, the results depend on production volume, which means there is some risk if output decreases. Even if the market changes, the project will still be profitable, but it will require stricter cost control. The £30,000 training investment is not just a cost, but a critical safeguard against technical error and downtime, ensuring these financial gains are resilient to market shifts.

CONCEPT	2020	2021	2022	2023	2024	2025 (Projected)
(+) Turnover (Revenue)	£888,168,950	£1,271,275,899	£1,367,464,321	£1,530,725,528	£1,681,323,940	£1,765,390,137
(-) Operating Expenses	-£881,151,578	-£1,260,585,892	-£1,354,667,089	-£1,517,378,446	-£1,667,421,136	-£1,750,536,472
(=) Net Operating Cash Flow	£7,017,372	£10,690,007	£12,797,232	£13,347,082	£13,902,804	£14,853,665
(+/-) Investing Activities	-£420,413	£253,730	£161,952	£60,971	£14,966	-£380,000
(+/-) Financing Activities	-£5,042,143	-£4,254,221	-£3,820,581	-£5,500,939	-£7,287,363	-£7,287,363
(-) Taxation	-£935,958	-£2,094,654	-£3,122,283	-£1,227,053	-£2,306,803	-£2,450,000
NET ANNUAL CASH FLOW	£618,858	£4,594,862	£6,016,320	£6,680,061	£4,323,604	£4,736,302

1 5% growth over 2024 (£1,681,323,940).

2 Includes 5% volume increase minus £249,600 in savings.

3 Improvement over 2024 (£13,902,804).

4 One-time capital expenditure (CapEx).

Figure 18: 5 Years Comparative Cash Flow (Own Funds)

Company

Dunbia

YEAR	2020	2021	2022	2023	2024
Fixed Assets					
Fixed Assets	£121,807,938	£133,570,021	£147,813,189	£167,123,123	£178,013,362
Accumulated depreciation	£0	£0	£0	£0	£0
TOTAL NET FIXED ASSETS	£121,807,938	£133,570,021	£147,813,189	£167,123,123	£178,013,362
Current Assets					
Cash and Banks	£130,941	£2,075,426	£1,854,257	£3,987,268	£1,845,626
Debtors	£151,859,230	£165,355,455	£181,742,391	£191,489,013	£234,234,874
Stock	£91,522,832	£76,863,640	£103,725,986	£124,376,123	£139,957,308
Other assets					
TOTAL CURRENT ASSETS	£243,513,003	£244,294,521	£287,322,634	£319,852,404	£376,037,808
TOTAL ASSETS	£365,320,941	£377,864,542	£435,135,823	£486,975,527	£554,051,170
Current Liabilities					
Bank Loans	£0	£0	£0	£0	£0
Suppliers	£211,191,581	£218,006,775	£259,378,145	£286,806,176	£343,957,504
TOTAL CURRENT LIABILITIES	£211,191,581	£218,006,775	£259,378,145	£286,806,176	£343,957,504
CURRENT ASSETS - CURRENT LIABILITIES	£154,129,360	£159,857,767	£175,757,678	£200,169,351	£210,093,666
Long-term Liabilities					
Long-term Liabilities	£43,321,418	£39,323,075	£39,971,088	£61,576,857	£65,568,010
TOTAL LONG-TERM LIABILITIES	£43,321,418	£39,323,075	£39,971,088	£61,576,857	£65,568,010
TOTAL LIABILITIES	£254,512,999	£257,329,850	£299,349,233	£348,383,033	£409,525,514
NET ASSETS	£110,807,942	£120,534,692	£135,786,590	£138,592,494	£144,525,656
Called up share capital	£10,133,169	£10,133,169	£10,133,169	£10,133,169	£10,133,169
Profit and loss account	£100,674,773	£110,401,523	£125,653,421	£128,459,325	£134,392,487
SHAREHOLDER'S FUND	£110,807,942	£120,534,692	£135,786,590	£138,592,494	£144,525,656
Sales	£888,168,950	£1,271,275,899	£1,367,464,321	£1,530,725,528	£1,681,323,940
Cost of Sales	£793,618,474	£1,147,125,505	£1,224,943,810	£1,372,455,932	£1,514,526,456
Gross Profit	£94,550,476	£124,150,394	£142,520,511	£158,269,596	£166,797,484
Operating Expenses	£87,533,104	£113,460,387	£129,723,279	£144,922,514	£152,894,680
Depreciation	£0	£0	£0	£0	£0
Operating Profit	£7,017,372	£10,690,007	£12,797,232	£13,347,082	£13,902,804
Financial Expenses	£14,761,385	£4,254,221	£3,820,581	£8,891,346	£7,287,363
Other income	£57,382,074	£4,237,128	£6,468,030	£60,971	£1,183,524
Profit before taxes	£49,638,061	£10,672,914	£15,444,681	£4,516,707	£7,798,965
Taxes	£935,958	£2,094,654	£3,122,283	£1,227,053	£2,306,803
Net Income	£48,702,103	£8,578,260	£12,322,398	£3,289,654	£5,492,162

(Companies House, no date)

Figure 19: 5 Years Comparative Financial Statements

Financial Analysis of Ratios	2020	2021	2022	2023	2024
Primary Liquidity Ratios					
Current Ratio CA/CL	1.15	1.12	1.11	1.12	1.09
Acid Test Ratio (CA-Inventory-Prepaid expenses)/Current Liabilities	0.72	0.77	0.71	0.68	0.69
Cash Ratio (Cash+cash equivalents/CL)	0.00	0.01	0.01	0.01	0.01
Net Working Capital (CA-CL)	£32,321,422.00	£26,287,746.00	£27,944,489.00	£33,046,228.00	£32,080,304.00
Solvency Ratios					
Debt Ratio TL/TA	69.7%	68.1%	68.8%	71.5%	73.9%
Debt Structure Ratio CL/LTL	487.5%	554.4%	648.9%	465.8%	524.6%
Debt to Equity Ratio TL/T shareholders Equity	229.7%	213.5%	220.5%	251.4%	283.4%
Operational Ratios					
(Accounts Receivable/Net credit sales)*365	61.6	46.8	47.8	45.0	50.2
(Creditors/Cost of sales)*365	115.5	80.8	88.0	91.4	97.3
DIO (INV/C Sales)*365	41.5	24.1	30.5	32.6	33.3
Asset Turnover Ratio Net Sales/TCA	3.6	5.2	4.8	4.8	4.5
Total Asset Turnover Ratio Net Sales/TA	2.4	3.4	3.1	3.1	3.0
Return Ratios					
MG Utilidad neta UN/VTa	5.5%	0.7%	0.9%	0.2%	0.3%
ROA (Net income/Total Assets)*100	13.3%	2.3%	2.8%	0.7%	1.0%
ROE (Net income/Shareholders equity)*100	44.0%	7.1%	9.1%	2.4%	3.8%
DuPont (Net income/Sales)*(Sales/TA)	13.3%	2.3%	2.8%	0.7%	1.0%
Core Growth Ratios					
Sales (Sales _t - Salest _{t-1})/Salest _{t-1}		43.1%	7.6%	11.9%	9.8%
Assets (TA _T -TA _{T-1})/TA _{T-1}		3.4%	15.2%	11.9%	13.8%
Current Assets (CA _T - CA _{T-1})/CA _{T-1}		0.3%	17.6%	11.3%	17.6%

Figure 20: Financial Ratios Comparative

Dunbia is a strong, high-volume business with a stable but heavily borrowed financial structure. It maintains a current ratio of around 1.10, indicating it has sufficient short-term assets to cover immediate debts, which is normal in the low-margin meat processing industry. The debt-to-equity ratio has risen to 283.4% in 2024, indicating a heavy reliance on external financing for its £1.68 billion turnover. A high asset turnover of 3.0 shows good efficiency, but the 0.33% profit margin leaves almost no room for error. Achieving a 1.52-year payback depends entirely on cutting steak waste by 8 grams. Figure 22 shows that even though sales growth and inventory look stable, the margins are so fragile that even a small drop in performance could produce a cash

flow problem. Still, the company achieves stable sales growth of 9.8% and maintains a stable inventory turnover of 33.3 days. The fragility of such tight margins means that any drop in efficiency, however small, gives a direct risk to maintaining a stable cash flow. This makes waste reduction a strategy for survival, not just as an improvement. Figures 18 to 20 show how the project improves financial performance over time, even under different conditions. These savings depend on steady production; any output disruptions could affect the project's financial results. So, this plan is financially viable under current assumptions.

Liquidity	Efficiency	Solvency	Profability
Stable but tight; operates with little extra cash.	Excellent; quickly turns inventory into sales (33 days).	Highly leveraged; growth funded mainly by loans.	Very slim; typical for the industry, leaving little room for issues.

Figure 21: Financial Health Summary



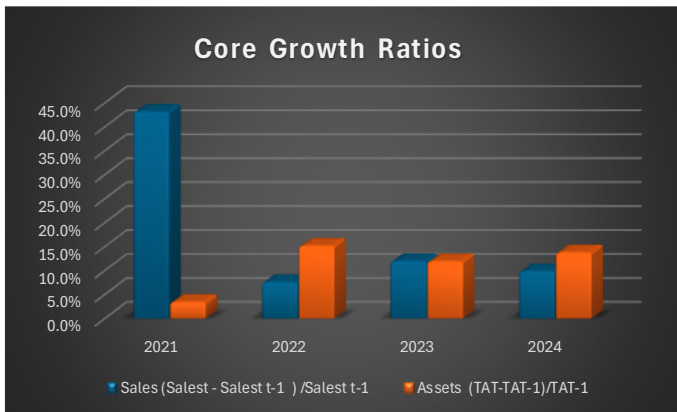


Figure 22: Graphics

Resources

The success of the project depends less on physical assets and more on the effective alignment of human, technological and organisational resources (Yu et al, 2023). Installing the Marel i-Cut 130 is important for improving cut accuracy; its performance relies on trained and motivated operators. Long-term progress is only possible through professional growth; therefore, the facility should make induction and leadership training its top priority. According to Human Capital Theory, improving staff proficiency significantly reduces costs associated with operational errors and rework (Schwarz et al., 2025). Two factors are critical in this project: leadership capacity and employee engagement; without either, the investment in technology will fail to deliver full value (Yu et al, 2023). The resource strategy focuses on building staff skills and aligning culture with operational standards to ensure that improvements are sustainable.

6. Implementation and Learning Loop

Dunbia Cross Hands is undergoing a strategic transformation over the next 24 months. This plan is divided into four phases, each led by a team made up of members from different departments. In Phase 1 (Months 1-4), the maintenance and engineering teams will focus on installation. The quality assurance (QA) Manager will conduct

waste audits to check if everything is ready. The Earned Value Management EVM will be used to monitor the installation of the machine. Phase 2 (Months 5-10) focuses on Human Capital and Cultural change. The HR manager and plant manager will introduce new induction programmes and train supervisors in leadership skills to support the workforce. Phase 3 (Months 11-18), the continuous improvement lead and floor supervisors will work on Lean Optimisation and waste reduction (Kazancoglu et al., 2021). They will hold Kaizen events and use dashboards to track progress toward an 8g reduction in giveaway. The finance department will check if this change provides a return on investment by month 16. Phase 4 (Months 19-24), the commercial manager and senior leadership will focus on sustainability and adaptability. They will use quality data to secure long-term retail contracts and apply the balanced scorecard (see section 3, page 12) to keep the plant competitive (Yu et al, 2023).

As shown in Figure 23, the critical path identifies the key activities that must be completed on time.

Task	Activity	On Critical Path?
A	Purchase Order and Deposit	Yes
B	Site Prep (Electrical/Space)	No (it can happen during shipping)
C	Machine Shipping and Delivery	Yes
D	Installation and Commissioning	Yes
E	Staff Training (Butchers)	Yes
F	Software Calibration (Yield Testing)	No (training at the same time)
G	Start-up / Full Production	Yes

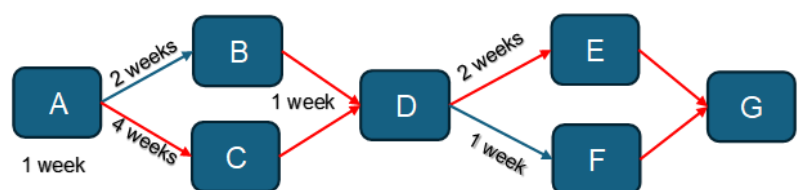


Figure 23: Critical Path Method

Over the next two years, the meat processing industry is expected to face labour shortages, regulatory pressure, and unstable raw material prices. When the cutting precision is increased and the waste is reduced, Dunbia improves its ability to absorb

the fluctuations in prices without decreasing margins. By developing a multi-skilled workforce, Dunbia can better manage the financial and operational risks of staff shortages (Yu et al, 2023). By delivering better quality, the firm can build stronger trust with retailers and effectively safeguard its existing contracts (Lepistö et al, 2024). The goal of these measures is to focus on making operational improvements, and efficiency continues beyond the initial implementation phase.

Executing the proposed plan in distinct stages allows for adjustments and could ensure structural alignment at each level. The project's success depends on tracking specific metrics, such as waste per unit and staff retention, alongside customer feedback and overall productivity levels, and responding to performance gaps. To minimise risks like staff resistance, the facility will focus on early communication and a gradual implementation, ensuring the transition does not disrupt daily work (Yu et al, 2023).

Figure 24 outlines a structured communication plan designed to keep all departments informed during the implementation of the Marel i-Cut 130 to ensure organisational alignment.

Personnel/Team	Frequency	Method	Owner	Key Content
Site Manager (Carlos Silva)	Weekly	Formal Meeting	Production Manager	ROI progress and budget tracking of the £380,000 CAPEX.
Ops and Production Managers	Daily	Stand-up morning meeting	Production Manager	Tracking of the 3,000 portions/hour target.
Retailers	Monthly	Progress Report	Commercial manager	Evidence of 99% weight accuracy and quality specs.
Plant Operators and Butchers	Weekly	Toolbox talk	HR / Lead operators	Training updates and feedback on the new Technical Operator roles.
Quality and HSE Managers	Monthly	Audit review	Quality manager	Results of KPI monitoring and safety compliance checks.
Marel Engineers	When it is needed	Technical calibration	Engineering team	Software calibration and preventive maintenance schedules.

Figure 24: Communication Plan

The plan has a double-loop learning model to ensure long-term agility (Daniel et al, 2020). This is not just tracking numbers because if we miss the 8g. By month 10, managers must stop and ask whether the £30,000 training is failing or if the staff is still rushing for speed. This honesty ensures the 1.52 ROI stays on track despite real-world setbacks.

The double-loop learning is where we stop focusing on the symptoms and start looking at the root causes. By reevaluating our goals and policies, we can shift from doing things right to doing the right things (Auqui-Caceres and Furlan, 2023).

Activity / Task	Week 1	Week 2	Week 3	Week 4	Responsible
Infrastructure and Marel i-Cut 130					
Site prep and utility connections	■ ■				Maintenance
Machinery installation		■ ■			Marel Technicians
Initial calibration and test cuts			■ ■		Quality / Marel
Training and Leadership					
Manager workshop (leadership shift)	■				HR
Operator training			■ ■	■ ■	Plant Manager
Drafting new Quality Standard Operating Procedures		■	■		Quality Team
Data and lean management					
Waste audit (in old line)	■				Lean Lead
				■	IT / Production

■ Continuous Monitoring

■ ■ ■ The number of dots in a row represents the duration and intensity of a workstream and resource allocation.

Figure 25: First Month GANTT Chart

As shown in Figure 26, the implementation is planned in stages over two years to reduce disruption. It also outlines the two-year plan to make sure the transition is smooth for all the staff. The traceability matrix, Figure 27, shows how the new machine and the staff work together to solve the efficiency problems identified earlier.

Task Months	Q1 1-3	Q2 4-6	Q3 7-9	Q4 10-12	Year 2 13-24
1. Technology (Marel i-Cut 130)					
Site prep and installation	■ ■ ■ ■				
Testing and calibration		■ ■			
Maintenance schedule rollout		■	■	■	Continuous
Performance audits (Quarterly)			■	■	■ ■ ■ ■
2. People and Culture					
Induction training	■ ■ ■ ■	■ ■ ■ ■			
Leadership development workshops		■ ■	■ ■		
Incentive realignment (Quality-Led)			■ ■	■	
Employee engagement surveys				■	Semiannual
3. Process (Lean and TQM)					
Waste audit	■				
Standard Operation Procedures drafting and standardisation		■ ■			
Kaizen events (for waste reduction)			■ ■	■ ■	Quarterly
KPI dashboard implementation				■ ■	Continuous
4. Customers and Quality					
Retailer quality data sharing			■	■	■ ■ ■ ■
Return/penalty cost tracking	■	■	■	■	■ ■ ■ ■
Market adaptability (PEST)					Semiannual
Full ROI achievement (1.52 yrs)					Milestone

Figure 26: Two Years GANTT Chart

TRACEABILITY MATRIX

Requirement Information					Relationship Traceability		
ID	Category	Requirement	Priority	Source	Business Objective	Deliverable	Verification
1	Mandatory	Installation of Marel i-Cut with 3D laser scanning	High	Site Manager (Carlos Silva)	Protect £1.8B Sales Inflow by reducing giveaway	Operational automated cutting line	99% portion weight accuracy
2	Strategic	Achieve a consistent speed of 3,000 portions per hour	High	Operations Manager (Thomas Murianski)	Maintain throughput for the £1.8B sales growth	High-speed production data loggings	Real-time performance monitoring
3	Financial	Execute purchase using £380,000 in Own Funds	Medium	Site Manager (Carlos Silva)	Achieve a 16-month payback without external debt	Finalised 2025 CAPEX payment	Audit of Ending Cash Balance
4	Operational	Transition manual butchers to Technical Operators	Medium	HR Manager (Amanda Williams)	Lower OPEX by reducing recruitment and safety costs	Staff training and certification program	Reduction in labour turnover rates
5	Compliance	Meet all HSE and UK food hygiene standards.	High	Quality Manager (Pasqua Filindeu)	Prevent production halts, ensure production specification and KPI targets are met and protect brand reputation	Safety and hygiene certification	Successful external HSE audit

Figure 27: Traceability Matrix

There is a risk that the employees will see the new machinery as a threat to their jobs instead of a tool to help them (Hagl et al., 2024). If this happens, performance may be reduced due to the resistance. So, clear communication, training and involvement are critical for success. Figure 28 shows the main risks and how they will be managed during the project. Cultural, technological, and financial risks and solutions are included to ensure that every aspect of the project has been considered. If the implementation of the technology fails, Dunbia's low profit will be affected, which is why any risk is anticipated, so the leadership are able to act and not react.

Risk Assessment and Mitigation Plan

Risk	Impact on Project	Probability	Solutions / Mitigation
Resistance to change from employees	Low engagement, reduced productivity, slow implementation	Medium–High	Early communication of benefits, involving employees in decision-making, provides training and leadership support.
Poor integration of new machinery	Continued waste, underperformance of investment	Medium	Structured operator training, clear SOPs, performance monitoring, regular technical audits, preventive maintenance schedule.
Short-term productivity decline during transition	Failure to meet retailer demand, financial pressure	Medium	Phased implementation, reserve stock planning, gradual KPI adjustments, and temporal performance support.
High staff turnover continues	Loss of skills, increased recruitment costs	Medium	Improve working conditions, introduce recognition schemes, career progression pathways, retention incentives.
Financial underperformance (ROI delayed)	Cash flow pressure	Low–Medium	Conservative budget, allocate internal funding, continuous financial monitoring, and cost control.
Failure to reduce waste to projected levels	Reduced financial benefit	Medium	Continuous waste audits, KPI tracking, accountability at the team level, and Lean improvement workshops.
Leadership misalignment	Cultural change fails	Medium	Leadership development programmes, clear strategic communication, Balanced Scorecard implementation.
Customer dissatisfaction during transition	Contract risk, reputational damage	Low–Medium	Transparent communication with customers, enhanced quality checks during the transition phase.
Marel i-Cut 130 Mechanical Breakdown	Immediate halt in precision cutting, increase in meat waste (giveaway), and delay in orders.	Low	Implement a Preventive Maintenance Schedule. Maintain a stock of critical spare parts and have a service agreement with Marel for rapid technical support.
Software or Sensor Malfunction	Inaccurate steak weights leading to retailer penalties or product rejection.	Medium	Perform regular machinery performance audits. Use the Double-loop learning model to reassess settings if KPIs fall short.
Data Integration/Dashboard Failure	Management loses visibility on real-time yield and waste KPIs.	Low	Establish manual data recording protocols as a temporary backup. Ensure IT redundancy for the digital tracking systems.
Operator Errors with New Tech	Intentional bypassing of the machine to hit speed targets, causing long-term instability.	High	Provide induction and refresher training courses. Align incentives through a Balanced Scorecard that rewards quality over speed.

Figure 28: Risk Mitigation Strategy

7. Alternative Solution.

Alternative solutions were considered before recommending this approach. Increasing end-of-line inspections and hiring more experienced butchers could reduce customer complaints but would raise labour costs and address symptoms rather than treat root causes (Garcia-Garcia et al, 2022). If Dunbia focuses only on training without technological investment, it would improve skills and competence, but not eliminate mechanical issues (Yu et al, 2023). Addressing technology, people, and processes together makes the strategy much more effective. It could ensure that improvements actually last, rather than just solving the problem for the moment. This solution also carries a higher initial risk due to the investment required. Hiring more people was rejected (see Figure 30) because manual labour is too inconsistent, leading to high giveaway, and it is difficult to find skilled butchers in the UK. While sticking to manual cutting avoids technical risks, it is not a viable long-term solution because the high cost of meat waste and human error would eventually make Dunbia less competitive and less profitable.

	Proposed: Marel i-Cut 130	Alternative: Manual Inspection
Initial Investment (CAPEX)	-£380,000	£0
Annual Waste Savings	+£249,600 (8g saved per steak)	£0 (Waste continues at source)
Additional Labour Cost	£0 (Automation)	-£60,000+ (Cost of 2-3 extra staff)
Net Present Value (NPV)	+£566,180	Negative (Only adds cost)
Internal Rate of Return (IRR)	0.593	0
Payback Period	1.52 Years	N/A

Figure 29: Cost-Benefit

Alternative Solution 1: Manual Labour expansion			Alternative Solution 2: Marel i-Cut 130		Decision
	Pros	Contra	Pros	Contra	
Precision and yield	Highly experienced butchers can sometimes handle extremely irregular cuts that sensors might struggle with	Due to human fatigue, results in significant giveaway (15-20g loss per unit)	Guaranteed 8g reduction in giveaway, leading to massive raw material savings	Requires precise calibration to maintain that accuracy; settings might need adjustments for different meat densities	Solution 2 wins on raw material savings.
Long-term Cost	Low initial entry cost (no massive check to write upfront)	High ongoing costs (salaries, NI, pensions, training)	Minimal ongoing operational cost; high ROI (Return on Investment) as the machine pays for itself through yield savings	High initial CAPEX; requires a budget for specialised technical maintenance and spare parts	Solution 2 wins on ROI and long-term viability.
Future Grow	Easy to add one or two people if the increase in volume is very small	Hard to scale due to UK butcher labour shortages	Can handle massive volume increases without needing to hire more capacity or worrying about performance drops	Fixed capacity; once the machine reaches its maximum speed, you must buy a second unit to grow further	Solution 2 wins on operational reliability.
Waste Reduction	Humans can often use leftover materials right away to make other products	Significant Muda (waste) from inconsistent cuts	Optimised yield through laser vision and software	If the software is misconfigured, it could consistently produce the wrong cut across an entire batch before a human notices.	Solution 2 wins on sustainability goals.
Health and Safety	Does not require high-voltage electrical safety protocols or procedures	Using manual blades increases the risk of strain injuries and serious accidents	Reduces human contact with blades, safer environment	Requires strict safety training for cleaning and maintenance to prevent industrial-scale accidents.	Solution 2 wins on risk mitigation.

Figure 30: Critical Limitation of Alternatives

No plan is perfect, and many risks are known. High debt is a risk, and staff might resist the new way of working (Jefferson et al, 2025). To fix this, everything has been changed at once. Variations in raw materials can undermine standardisation, but the phased implementation, leadership development, and realigning KPI's can mitigate these threats. Competitors like ABP or Kepak have higher revenues and can easily buy the same technology, but this plan does not focus just on the new machinery itself; it focuses on social and technical alignment to build strong capabilities that are hard for others to copy (see Figure 31).

Training Schedule

Phase	Timeline	Target Group	Training	Goal
Phase 1	Months 1-4	Engineers	Technical Setup: Marel i-Cut 130 installation, software calibration, and emergency repair procedures.	Make sure the system works reliably and has no downtime.
Phase 2	Months 4-6	Floor operators	Technical Operation: Hands-on machine handling, blade assembly, safety protocols, and cleaning procedures.	Master machine operation and ensure safety.
Phase 3	Months 7-10	Leadership and managers	Change Management: Working with people and technology, leading with Lean principles, and helping staff during the technology transition.	Align company culture with the new technology.
Phase 4	Months 11-18	Operators and butchers	Precision Mastery: Achieving precision involves cutting based on data, monitoring waste in real time, and reducing giveaways by 8 grams.	Direct impact on ROI and waste efficiency.
Phase 5	Months 19-24	All staff	Continuous Improvement: Double-loop learning workshops and KPI optimisation sessions.	Long-term sustainability and Learning loop success.

Figure 31: Training Schedule

Conclusion and Recommendation

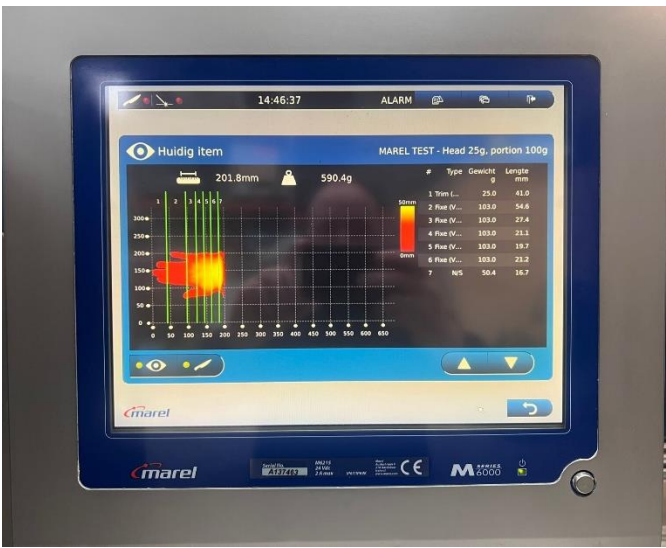
The Marel i-Cut 130 transforms waste into long-term sustainability, achieving a solid 65.68% ROI and 1.52 payback period. Beyond the £380,000 investment, success relies on the £30,000 training to ensure operational longevity. It is recommended to proceed with ongoing monitoring during implementation, providing leadership monitors the learning loop to balance high-tech precision with workforce engagement and market shift.

Appendices



Accurate portioning of meat made easy

I-Cut 130



Lean Principles applied to Dunbia's Venture Plan

Lean Principle	Description	Integration with Dunbia's Venture Plan
1. Value 	Define value from the customer's perspective.	Figure 10 (BMC) shows value is created by consistently providing quality portions and reducing product giveaway, which meets strict retail standards.
2. Value Stream 	Identify all steps and eliminate waste.	Figure 2 (Process Diagram) shows that manual cutting slows down the process and does not add value. The i-Cut 130 improves this process by digitizing the portioning stage.
3. Flow 	Ensure the process runs without interruptions.	Fixing the methods and machine issues shown in Figure 4 (Fishbone Diagram) will help maintain a steady production pace and minimise delays caused by people.
4. Pull 	Produce only what is required.	Using high-speed precision to quickly fulfil supermarket orders. This way, they match production to real demand instead of creating extra stock.
5. Perfection 	Continuous improvement (Kaizen).	The Learning Loop and Balanced Scorecard (Figure 6) provide the data needed for ongoing optimisation and long-term operational excellence.

Reference List

Abbas, J. and Kumari, K. (2023) "Examining the relationship between total quality management and knowledge management and their impact on organisational performance: a dimensional analysis," *Journal of Economic and Administrative Sciences*, 39(2), pp. 426–451. Available at: <https://doi.org/10.1108/JEAS-03-2021-0046>.

ABP Food Group (2026) *About us*. Available at: <https://abpfoodgroup.com/about-us/>. (Accessed: 15 February 2026).

Adeyemi, O.A. *et al.* (2024) "Adapting lean manufacturing principles to the footwear industry: Kaizen, Kanban or a Mix?", *MATEC web of conferences*, 401, p. 10004. Available at: <https://doi.org/10.1051/matecconf/202440110004>.

Agarwal, A. (2021) "Investigating design targets for effective performance management system: an application of balance scorecard using QFD," *Journal of Advances in Management Research*, 18(3), pp. 353–367. Available at: <https://doi.org/10.1108/JAMR-05-2020-0075>.

Auqui-Caceres, M. and Furlan, A. (2023) "Revitalising double-loop learning in organisational contexts: A systematic review and research agenda," *European management review*, 20(4), pp. 741–761. Available at: <https://doi.org/10.1111/emre.12615>.

Bortolotti, T., Boscari, S. and Danese, P. (2015) "Successful lean implementation: Organisational culture and soft lean practices," *International Journal of Production Economics*, 160, pp. 182–201. Available at: <https://doi.org/10.1016/j.ijpe.2014.10.013>.

Cherrafi, A. et al. (2019) "Green and lean: a Gemba-Kaizen model for sustainability enhancement," *Production planning & control*, 30(5–6), pp. 385–399. Available at: <https://doi.org/10.1080/09537287.2018.1501808>.

Chuang, Y.-T., Chiang, H.-L. and Lin, A.-P. (2025) "Insights from the Job Demands–Resources Model: AI's dual impact on employees' work and life well-being," *International Journal of Information Management*, 83. Available at: <https://doi.org/10.1016/j.ijinfomgt.2025.102887>.

Company House (no date) *Filing History for Company 03382084*. Available at: <https://find-and-update.company-information.service.gov.uk/company/03382084/filing-history>. (Accessed: 16 February 2026).

Daniel, S. et al. (2020) "Single- and Double-Loop Learning: Linking Free/Libre Open Source Software (FLOSS) Developer Motivation, Contribution, and Turnover Intentions," *ACM SIGMIS Database: the DATABASE for Advances in Information Systems*, 51(4), pp. 68–92. Available at: <https://doi.org/10.1145/3433148.3433153>.

Dunbia (2026) *About us*. Available at: <https://dunbia.com/about-us/>. (Accessed: 15 February 2026) 2

Garcia-Garcia, G., Singh, Y. and Jagtap, S. (2022) "Optimising Changeover through Lean-Manufacturing Principles: A Case Study in a Food Factory," *Sustainability*, 14(14), p. 8279. Available at: <https://doi.org/10.3390/su14148279>.

Hagl, C. *et al.* (2024) “Change management interventions: Taking stock and moving forward,” *Human Resource Management Review*, 34(1). Available at: <https://doi.org/10.1016/j.hrmr.2023.101000>.

Holmemo, M.D.-Q., Ingvaldsen, J.A. and Powell, D. (2023) “Beyond the lean manager,” *Total quality management & business excellence*, 34(1–2), pp. 19–31. Available at: <https://doi.org/10.1080/14783363.2021.2022468>.

Jefferson, D.P., Andiola, L.M. and Hurley, P.J. (2025) “Surviving busy season: Using the job demands-resources model to investigate coping mechanisms,” *Contemporary accounting research*, 42(1), pp. 187–216. Available at: <https://doi.org/10.1111/1911-3846.12999>.

Kazancoglu, Y. *et al.* (2021) “Reducing food waste through lean and sustainable operations: A case study from the poultry industry/REDUCAO DO DESPERDICIO DE ALIMENTOS POR MEIO DE OPERACOES SUSTENTAVEIS E ENXUTAS: ESTUDO DE CASO DO SETOR AVICOLA/Reducción del desperdicio de alimentos mediante operaciones lean y sostenibles: Estudio de caso de la industria avicola,” *Revista de administração de empresas*, 61(5). Available at: <https://doi.org/10.1590/S0034-759020210503x>.

Kepak (2026) *Expertise*. Available at: <https://www.kepak.com/expertise/>. (Accessed: 15 February 2026).

Lee, J. and Song, C.H. (2025) “From Unstructured Feedback to Structured Insight: An LLM-Driven Approach to Value Proposition Modelling,” *Electronics (Basel)*, 14(22), p. 4407. Available at: <https://doi.org/10.3390/electronics14224407>.

Lepistö, K., Saunila, M. and Ukko, J. (2024) “Enhancing customer satisfaction, personnel satisfaction and company reputation with total quality management:

combining traditional and new views,” *Benchmarking: an international journal*, 31(1), pp. 75–97. Available at: <https://doi.org/10.1108/BIJ-12-2021-0749>.

Martínez, I.A.M. *et al.* (2025) “Hygiene and Motivation As Predictors of Satisfaction and Interest in Staying in the Company,” *RGSA : Revista de Gestão Social e Ambiental*, 19(3), pp. e011723-17. Available at: <https://doi.org/10.24857/rgsa.v19n3-115>.

Mussayeva, D., Savina, N. and Panzabekova, A. (2025) “The global digital economy market development through the prism of Porter’s Five Forces model,” *Problems and perspectives in management*, 23(4), pp. 384–397. Available at: [https://doi.org/10.21511/ppm.23\(4\).2025.28](https://doi.org/10.21511/ppm.23(4).2025.28).

Remeňová, K., Kintler, J. and Jankelová, N. (2020) “The General Concept of the Revenue Model for Sustainability Growth,” *Sustainability*, 12(16), p. 6635. Available at: <https://doi.org/10.3390/su12166635>.

Sasso, R.A., Filho, M.G. and Ganga, G.M.D. (2025) “Synergizing lean management and circular economy: Pathways to sustainable manufacturing,” *Corporate social-responsibility and environmental management*, 32(1), pp. 543–562. Available at: <https://doi.org/10.1002/csr.2962>.

Schwarz, S. *et al.* (2025) “The Impact of Staff and Manager Training on Firm Productivity: Differential and Interaction Effects,” *British journal of industrial relations* [Preprint]. Available at: <https://doi.org/10.1111/bjir.70020>.

Thomas, A. (2024) “Digitally transforming the organisation through knowledge management: a socio-technical system (STS) perspective,” *European Journal of Innovation Management*, 27(9), pp. 437–460. Available at: <https://doi.org/10.1108/EJIM-02-2024-0114>.

Yu, X., Xu, S. and Ashton, M. (2023) "Antecedents and outcomes of artificial intelligence adoption and application in the workplace: the socio-technical system theory perspective," *Information technology & people (West Linn, Or.)*, 36(1), pp. 454–474. Available at: <https://doi.org/10.1108/ITP-04-2021-0254>.

Zhang, H. and Yu, G. (2024) "Reducing costs or increasing efficiency? Unveiling the effects and mechanisms of the digital economy on sustained green innovation," *International Review of Economics & Finance*, 96. Available at: <https://doi.org/10.1016/j.iref.2024.103605>.