final report

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Using a Design Led, Innovation Push approach to evaluate rapid drying technology at low temperature for a new high-quality premium red meat snack offering

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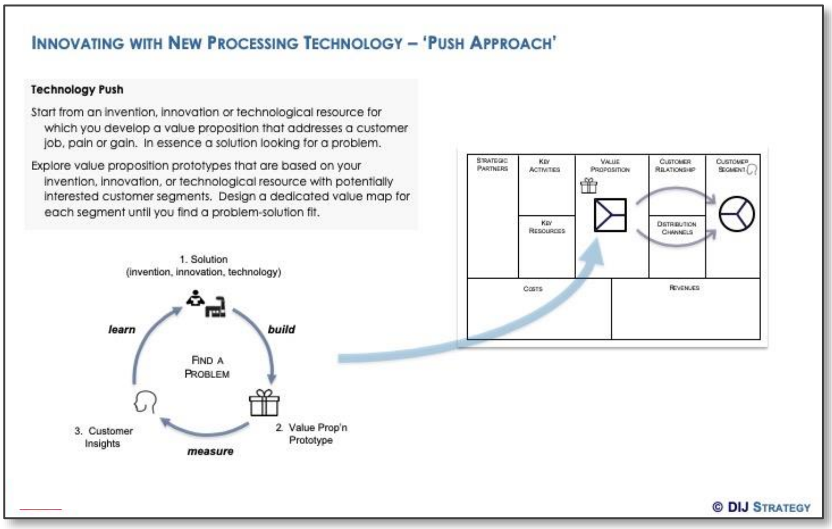
Executive summary

Why the work was done – problem ?

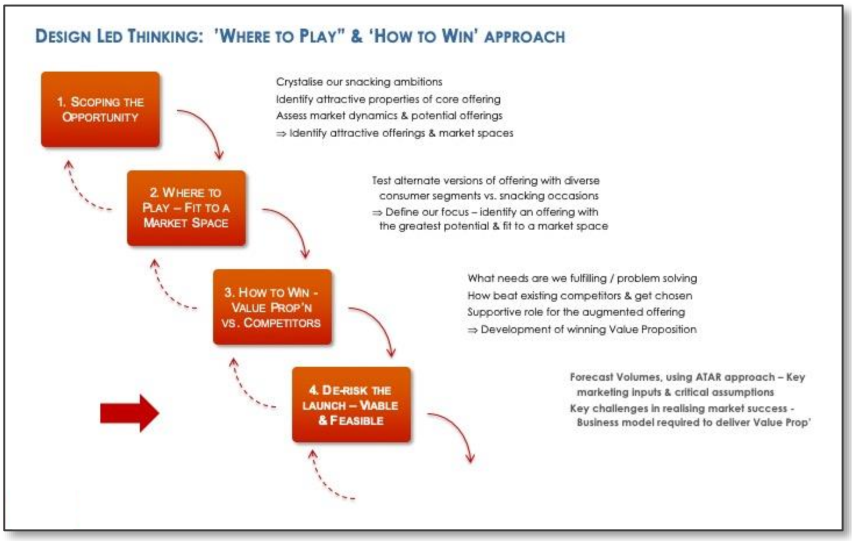
This project is characterised by two key criteria: Firstly, JBS Australia had access to an innovative processing technology (see: https://www.enwave.net/how-it-works) that enabled products to be dried that delivered unique and desirable features – Snack and Crunchy meat. Secondly, this provided the opportunity to develop an exciting and innovative offering within the snacking sector – playing in a market space that JBS Australia have little experience. Whilst this represents an exciting opportunity, it would be tempting to develop an offering internally, creating a product that delivered unique feature-benefits. But typically, when this happens without engaging the end customer in the process, the end result is more of a novelty than a useful new offering that will find sustained success.

How it was done ?

A design led approach was followed, with a New Technology, Push Approach. The innovation journey was undertaken by a cross-functional team within JBS Australia, to ensure all perspectives were assessed – R&D, operations, marketing and sales. Critical to the process was the iterative development of the offering, continuously testing it with customers, as part of their real-world snacking behaviour in conjunction with key learnings on the technology platform and product formulations.



Initially the process started with identifying the capabilities of the innovative processing technology, and as a team, exploring the market implications and hypothesising alternative Value Propositions. Secondly is determining 'where to play' in the market – identifying which segment of customers represents the best opportunity, addressing the greatest number of pain points and unrealised gains. Thirdly came identifying 'how to win' against competitors - the basis for developing a winning Value Proposition – the bundle of benefits that delivers against important pain points and unrealised gains for the target customer. This ensures that the developed solution is most relevant to customers' needs and gives it the greatest chance of success in the market place. The fourth and final stage was to develop a supporting business model to deliver sustained commercial success. However, this also recognises the challenges in building desirability amongst target customers and mitigates against significant investment until the offering is established in the market.



What was achieved ?

The project identified how a red meat-based snack, with unique product features, can be successful in the Australian snacking market. The process identified a target customer segment, of significant size, whom have an important enough bundle of pain points and unrealised gains in the snacking space that can be addressed through our offering. It determined what are the most important feature-benefits that customers sufficiently value that they are prepared to pay the premium price that our offering will need to command to be successful in the market place. In addition, technical know-how on different equipment settings, product formulations and flavour profiles, packaging materials for ambient storage and shelf life verifications were completed in developing several product concepts.

Industry benefits that will arise from the work ?

This project highlights the best path to follow when a business within the red meat supply chain has access to new technology platforms that can produce an offering with the potential for profoundly new (and disruptive) and appealing product features that can have an impact in the market place.

In this case, it is recommended a Design Led approach is followed, validating the usefulness of these benefits with consumers. In particular, addressing technical feasibility, product-market fit desirability and commercial cost and revenue viability are critical elements in the innovation process. Tools such as the Business Model Canvas developed in 2008 by Alexander Osterwalder (see: https://www.eship.ox.ac.uk/building-business-3-why-should-i-use-business-model-canvas) help frame these assumptions and glean insights and lessons learned during the research.

In this project, the team firstly identified the market space that should be targeted, in terms of the target customer segment whom finds these features most appealing, before then optimising the design of the offering to address the most important Pain Points and Unrealised Gains that the customer possesses. Finally, it is recommended to de-risk the launch, by building up the desired business model in manageable stages, recognising that building demand amongst target customers takes a while and not over-committing, with in particularly significant capital expenditure, until established in the market.

Table of contents

1 Background

The snacking heartland is easy enjoyment, which goes from mindless munching to a permissible and purposeful experience. With the evolutionary shift in lifestyle patterns, convenience and demand for healthier food choice, snacking has now become a global phenomenon. Datamonitor in 2011 reported that snacking was showing growth at 2% per annum, whilst the overall consumption of a main meal was on a long-term decline at 0.5% per annum. Moreover, IPSOS 2016 survey revealed that reducing portion size and healthier snacking options was amongst the top five food priorities for Australian consumers. JBS Australia have identified that there is a significant opportunity to add value in the snacking landscape, developing the next generation of high protein meat snacks. Prior to this JBS Australia co-funded project, MLA has undertaken a series of research on meat snacks (Refer to: https://www.mla.com.au/globalassets/mla-corporate/about-mla/mdc/documents/snacking-on-the-go-and-social-occasions.pdf).

In regards to the meat industry, the traditional meat cuts derived from pork, beef, lamb and poultry have long dominated the market, being the center piece on any breakfast, lunch and dinner plate. Over the years, through cultural diversity, evolving culinary knowledge and food technology, the popularity and acceptance towards processed and value-added meat products has grown in the Australia market. However, ready to eat meat snacks such as salami sticks and meat jerky has been slow to emerge, with only limited varieties available to consumers on the retail shelf front.

In the current project, JBS Australia investigated a novel dehydration technology (See EnWave REV in the Appendix, Section 9.1). Studies integrating microwave and vacuum technology have been studied since the 1970's. Research has shown its capabilities to rapidly dehydrate food products at low temperatures resulting in a texture with minimal impact on product quality. Enwave Corporation has optimized and patented its Radiated Energy Vacuum (REV) Technology, providing the gateway to commercially producing snacks in a range of categories from cheese, herbs, fruit, vegetables and meat-based products. To date, Enwave Corporation has successfully signed a number of exclusive agreements with large and medium sized food manufacturers such as Hormel foods and Ashgrove Cheese.

REV Technology is now emerging as a preferred method to dehydrate food products in comparison to freeze drying and air-drying technologies. This MDC project allows JBS Australia to work with the Enwave Corporation to develop and test ready to eat meat protein snack to penetrate the Australian snacking category.

Various drying platforms are used in the food industry today – from hot air, spray dryer and freeze drying to heat exchangers and extruder and microwaves to elementary air/dry ageing models – all with various yield, cost and quality features (i.e. Refer to recent MLA review of drying technologies that includes microwave amongst others: https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Scoping-emerging-drying-technology-and-opportunity-spaces-for-premium-Australian-red-meat-applications-Wileys/3807).

Despite emerging trends having identified new market opportunities in red meat snacks, there are limited beef or lamb snacks, if any, available in the market place. Snacks are typically conveniently smaller sized and shaped, ambient shelf stable with desirable moisture-controlled texture. There are limited efficient "dehydration" options available for red meat due to its high-water content and generally long dehydration batch times. Conventional drying at typically high temperatures and extended periods heavily impacts on the quality and nutrition of the product, particularly if the desirable attribute is crispness (with products such as Jerky often being chewy in texture). JBS Australia has recently identified major deficiencies in current processing options and capabilities, specifically for efficient rapid drying of meats to produce the required texture and functionality, which is desired for premium snack products. There are limited commercial rapid drying technologies available for Australian red meat processing. A series of equipment settings were investigated to refine the textural aspects of the product to produce a “less chewy” product as well as optimal colour. Hence, JBS is proposing to evaluate a new rapid drying at low temperature technology (i.e. Radiant Energy Vacuum or REV) that is available for the first time in Australian red meat processing through an exclusive licence agreement with EnWave Corporation.

REV dehydration technology uses a combination of pressure and microwave energy to deliver a high-speed. Low temperature, efficient drying process. REV technology homogeneously removes water (and therefore can be control water activity/moisture levels) from organic materials, providing superior flavour and texture while preserving the nutritive value of food products and is more economical and much faster and with a smaller operational footprint than freeze drying and produces superior products over air and spray drying. REV technology alters the atmospheric pressure in the machinery by creating a precise controlled vacuum thereby reducing the temperature at which water can be homogeneously and gently removed from organic materials being dried. It is envisaged that by reducing drying temperatures and the levels of oxidation will increase yield and deliver different characteristics for a range of meat snacks.

The technology is highly versatile and allows dehydration to be applied to a wide range of market opportunities. While yet to be used and commercially proven in Australian red meat processing, international red meat processing options exist in dried sausages, meat snacks, ingredients and collagen applications. Hormel Foods Corporation, a multinational manufacturer and marketer of consumer-branded food and meat products, is currently using rapid drying technology to produce meat snack products, the first being SPAM Snacks in the USA (Refer to: https://www.bizjournals.com/twincities/news/2015/06/22/hormel-dried-spam-snacks-jerky.html).

This project will evaluate current commercial meat snacks including Hormel, as well as, design and develop new meat snack solutions and business case derived during the course of the project.

2 Project objectives

The EnWave project was divided into a number of components, requiring technology scanning, training and evaluation of the EnWave Technology and setting up of a pilot plant, besides undertaking a Design Led assessment of market potential. Our involvement and thus this report only focused on the Design Led component, covering the following objectives:

1. ‘Where to play’ market evaluation – identify needs, attractive segments, size and barriers to entry for concept meat snack products that EnWave’s system could deliver.
2. Value Proposition development – detailed business case for meat snacks and the EnWave system.
3. Development of a Commercialization plan to deliver on the prescribed product-process-market fit.

3 Methodology

3.1 Scoping the Opportunity

This project being highly innovative and using novel technology, scoping the technology was conducted first. This required a three-phase process:

- **Phase 1 Trials:** Introduction to REV Technology & Initial Trials.
- **Phase 2 Trials:** Commissioning 10kW Unit, Identifying Protein Snacks & Feasibility.
- **Phase 3 Trials:** Developing Protein Snacks for External Market Research.

Once JBS Australia R&D team felt that they had a range of beef snack products with market potential, they were ready to test with consumers, in real world snacking situations.

A great deal of development work was undertaken, testing over 30 different products. Finally, a selection of products was assessed using an internal sensory panel. This provided an assessment of overall product rating as well as some indication as to who this product would appeal to and the time of day it would likely be consumed.

Beef snack product concepts were assessed based on a number of attribute criteria, such as taste and texture.

3.1.1 Workshop 1

Participants: DIJ Strategy, MLA, JBS Australia: R&D, Marketing, Operations & Sales, with representation at the most senior level across all areas.

It was important to have this degree of comprehensive coverage, to ensure the opportunities identified from the workshop were embraced by the whole organisation.

Key Agenda items:

- Familiarise the team with the dynamics of the snacking market
- Crystalise our ambition is seeking to enter the Snacking Sector
- Share a technical understanding of the EnWave technology
- Sample the products that had been in development – share opinions
- Explore what we believe the opportunity is for an EnWave based meat snack

3.1.2 Review of the Snacking Market

JBS Australia's business is focused on meal behaviour and the Grocery channel. Thus, it was important to define the different dynamics required to effectively compete in the snacking sector. Leading FMGC organisations have chosen to split their businesses to reflect this fundamental difference (i.e. Kraft vs. Modelez). The key dimensions of the market were reviewed and discussed:

- A consumer definition of snacking – crystalising the role snacks play in consumers lives verses food behaviour
- The margin opportunity and growth in snacking, in contrast to food
- JBS Australia's snacking ambitions – characterising their five-year vision

- Trends driving change within the snacking sector – the dynamics creating opportunity for businesses like JBS Australia
- The range of offerings in the snacking sector – how the lines have become blurred between food and snacks and the diversity of offerings
- What does it take to be successful in the snacking market (Refer to Figure 1) – criteria against which we will assess our offering, based upon consumer feedback

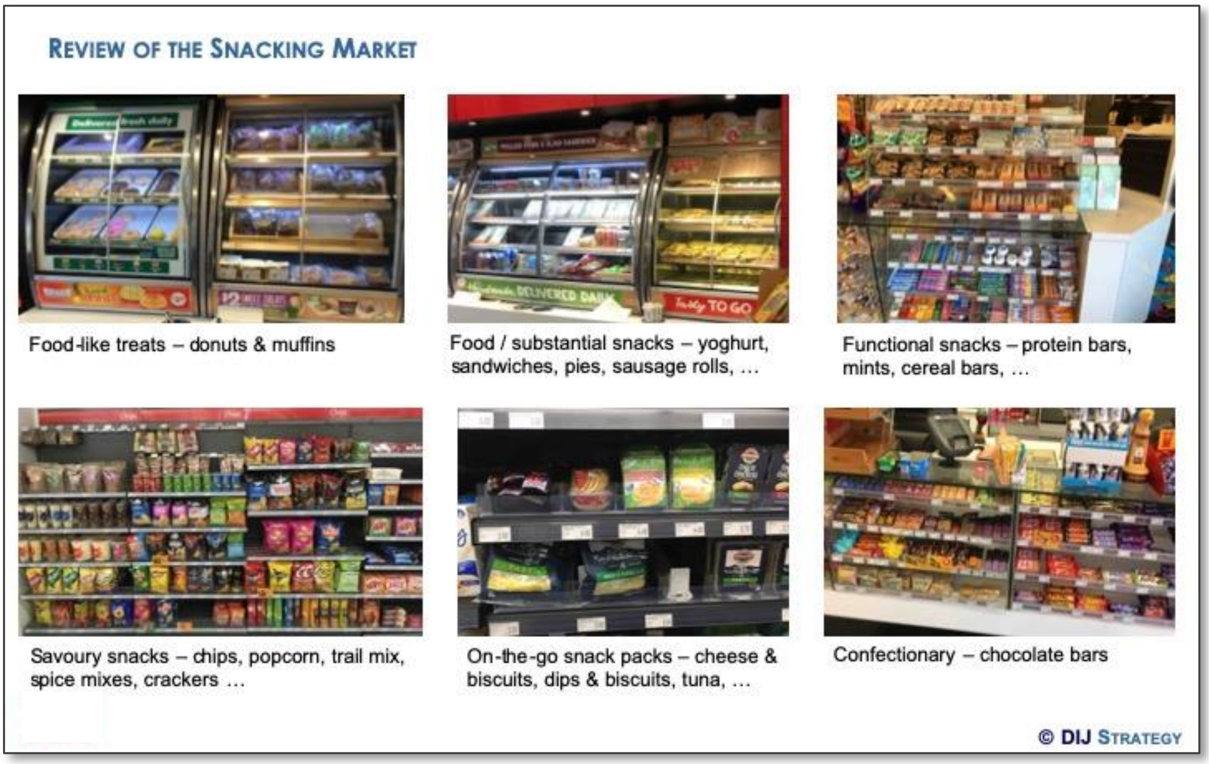


Figure 1: Review of the snacking market across various categories.

3.1.3 The Opportunity EnWave Offers

New capabilities drive new possibilities in the snacking market. EnWave REV technology is able to efficiently dry a range of different products preserving flavour, colour and nutrients, making it potentially ideal for the development of premium snacks.

JBS Australia secured a 'small sized' version of the EnWave technology, setting up the drum like machine, in their own R&D facility. This enabled small batch processing to be undertaken, so not only test samples, but small-scale production. A full-scale production version would be approximately 10 times the capacity.

A number of FMCG organisations have signed agreements to explore the potential use of the EnWave technology, with the opportunity to get first-mover advantage in their categories (Refer to Figure 2).

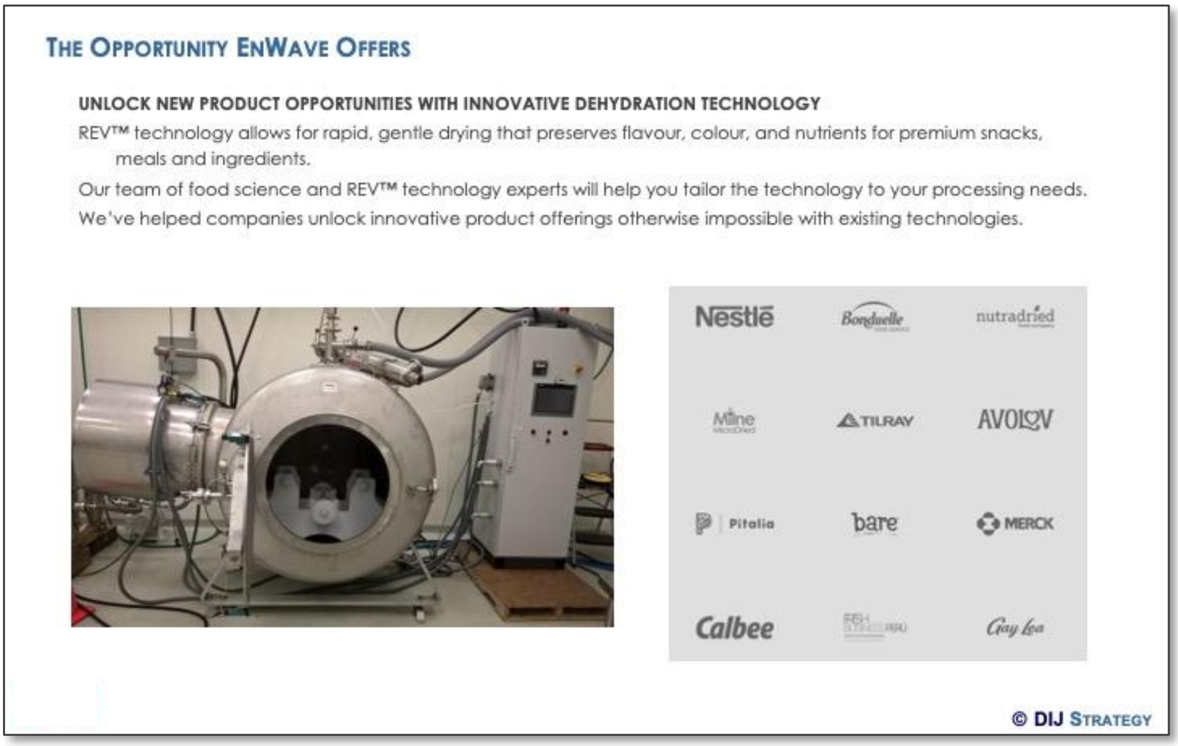


Figure 2: EnWave technology and the opportunity it offers.

3.1.4 Other Companies have used EnWave to develop Snacks

JBS Australia is not the first organisation to embrace the EnWave technology and utilise it in the snacking sector. Noteworthy of other global companies that have embraced the technology is Hormel, USA owners of the Spam brand. They faced a similar dilemma to that experienced in the current project, they seek new avenues of profitable growth beyond their core grocery focused business.

The approach applied would be more thorough in identifying potential market spaces and exploring and testing the fit of our offering, to assess its market potential.

The Cheese offerings were having greater success in the market, with a Value Proposition based around Crisp & Crunchy cheese. This is the basis for defining our own offering – A Meat Snack. This technology platform has been used in other industries and some typical products are included in Figure 3.

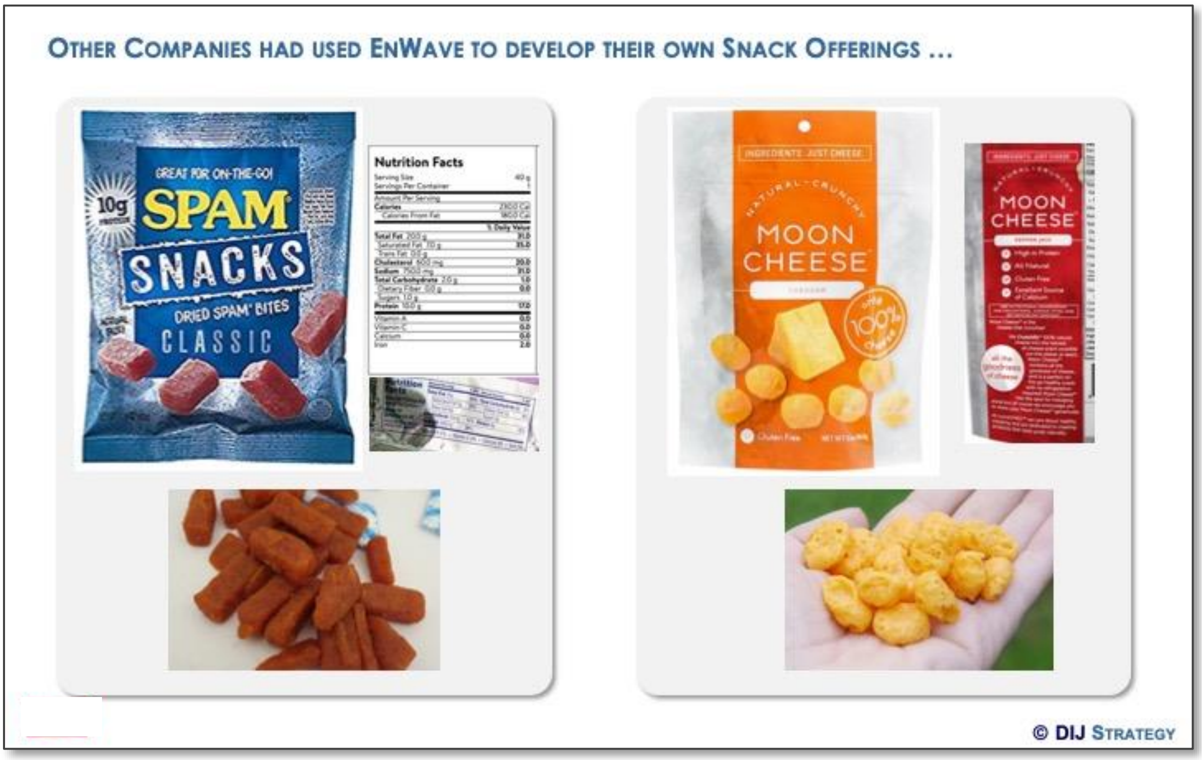


Figure 3: Other food snack product offerings using EnWave drying technology.

3.1.5 Dehydration Technology Comparison

There was strong belief within JBS Australia that Jerky had limited consumer appeal and a Snacky Meat offering would be popular. A number of potential processing technologies were explored, before EnWave was identified as having the greatest potential. Having secured the opportunity to be the first to test this technology, in the red meat space, the project came into existence.

Thus, we have at our disposal new capabilities that can produce a product with unique and desirable attributes. The key challenge is ensuring that we identify one or more market spaces where these attributes are valued by the end customer – addressing existing pain points or solving un-met aspirations that other snack offerings are unable to deliver on.

R&D had already been working with the EnWave technology for a significant period of time, to assess its capabilities. In essence, it provides an alternative approach to dehydrating a product, with contrasting product quality implications, as well as cost and speed differences. Understanding these fundamental properties and advantages over other processing technologies forms the foundation for assessing its market potential – “what can it usefully do that is not currently possible”.

This perspective was presented to the workshop participants, along with product samples from the other processing technologies, as well as their own EnWave based product samples. The relative merits of the EnWave samples were discussed at great length.

The key advantages that the EnWave processing provided in producing a meat snack, was the ability to produce a product with a crispy texture, which delivered an authentic taste experience (Refer to Figure 4).

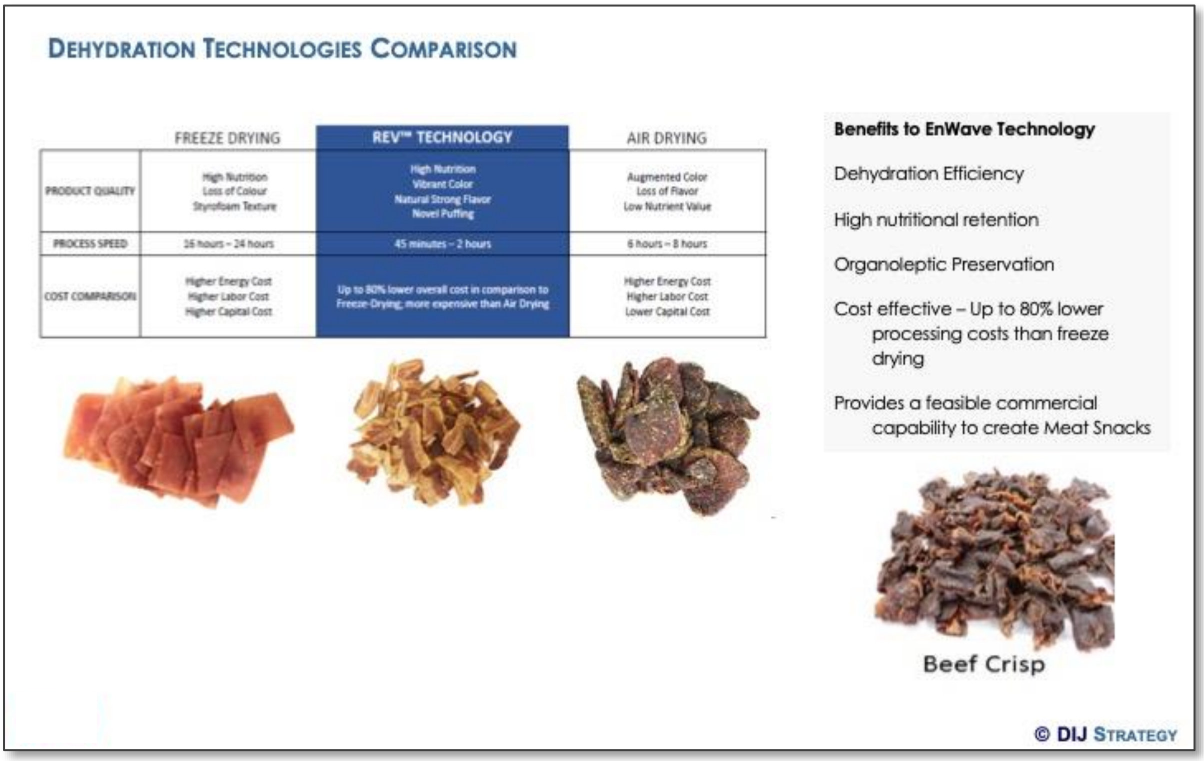


Figure 4: Comparison of various dehydration technologies including the benefits of EnWave.

3.1.6 Developing the Value Map for Meat Snacks

In the workshop environment, the group assessed the benefits an EnWave based snack offering delivers. This was assessed both in terms of:

- Functional Benefits - what the product delivers, such as a less chewy snack
- Emotional Benefits – how it will make consumers feel, such as a premium, indulgent experience
- Critically assessing these benefit areas provides the platform for envisaging just what these novel snacks products could be – the space they could own in the market (Refer to Figure 5).

3.1.7 Alternative Customer Targets

Critical to the process was identifying potential market spaces where our EnWave based offering could have an impact in the market place. Inherently, we felt that the product had a great deal of scope to be interpreted in different ways. For example, it could be considered a taste-based indulgent product, or protein-based sustenance product. Thus, we felt our offering could appeal to different consumers for different reasons.

Workshop participants were divided up into smaller groups and given a particular target customer segment to focus on. Each group were provided with a deeper understanding of alternative snacking segments needs and their typical repertoire of products. They were thus able to hypothesise why this segment would find this offering appealing and what unique features would be most desirable (Refer to Figure 6).

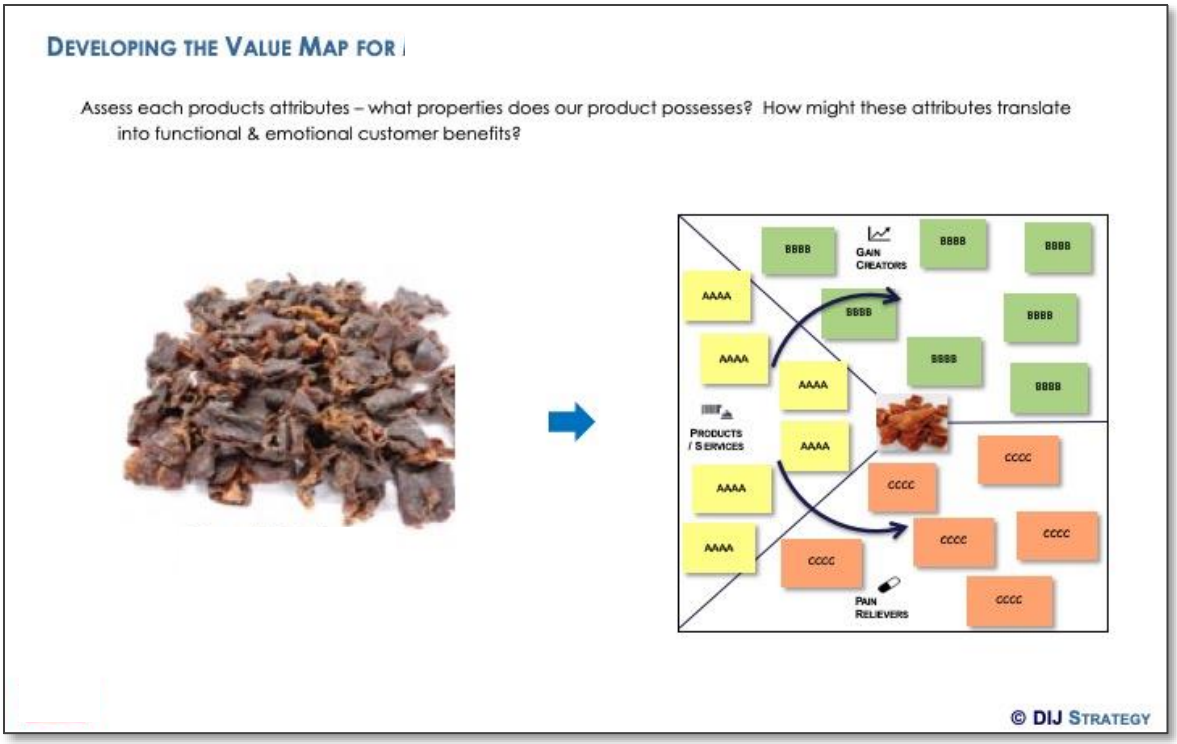


Figure 5: Developing the value Map for meat snacks.

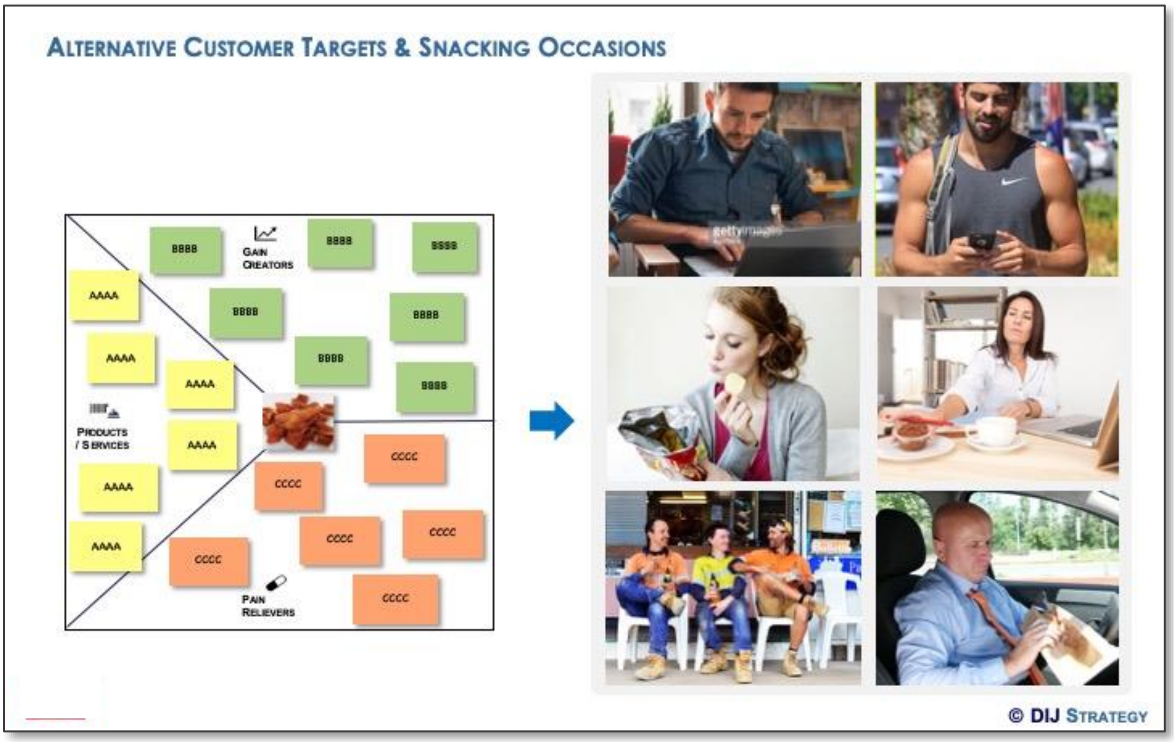


Figure 6: Alternative customer targets and snacking opportunities.

3.1.8 Opportunity Framework example

Each group completed a table that structured their thinking to support their argument, as to why they had identified their most likely target customer:

- Who is the Target Customer, giving details as to what are their primary motivations when it comes to snacking?
- What Snacking Occasions do they participate in, with a particular day-time focus, for where we believe our snack offering will play a role
- What snacking Pain Points do they currently experience? What frustrations do they currently experience with snacks?
- Their Snacking Aspirations? What would they ideally like a snack to do for them?
- The Key Trends that are reshaping their choices, which we believe our offering is playing to?

In reality, the depth of insight was far greater than the illustrative example shown. This assessment provided the basis from which the consumer research would then be designed (Refer to Figure 7).

Opportunity #1. White Collar Millennials

Criteria	Insight
Target Customer	Millennials 26 to 35, white collar, both males and females – see themselves as a little more sophisticated in their tastes and confident in their own choices
Snacking Occasions	With no fixed ties (family), food and particularly snacks are often a spontaneous choice. Thus 'make it up as they go along' depending on how they feel and the circumstance they find themselves in
Snacking Pain Points	Wholesome ingredients – an aversion to processed foods and hidden sugar that leaves one feeling 'wiped out' after the initial euphoria …
Snacking Aspirations	Provide sustenance and sustained energy to see them through until their next meal …
Key Trends	Premiumisation – seek better quality and superior offerings for everyday consumption …

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Figure 7: Opportunities for red meat snacking across Millennials demographics.

3.2 Where to Play

3.2.1 Key Challenges

- Development of a Concept Statement to express the Meat Snacks Value Map
- Assess the overall appeal of the Meat Snacks concept
- Identifying the most important Pain Points and Unrealised Gains amongst the target customer segment
- Assessing which segment of customers had the most significant pain points and unrealized gains that Meat Snacks could address
- Identifying how Meat Snacks could be further enhanced – feedback to product development

3.2.2 Workshop – Where to Play

Participants: DIJ Strategy, JBS Australia: Marketing & Product Development

Key Agenda items:

- Review of refined product offering – net of feedback and further product development work
- Design of 'Where to Play' research
- Development of Concept Statement for research
- Determine the customer segments that seeking for research
- Determine research logistics – how distribute meat snacks to participants
- Identify key product attribute dimensions that seek to evaluate Meat Snacks on

3.2.3 Researching in the Real World

Fundamental to identifying 'Where to Play' is determining our customer focus. Identifying the market space that we have the greatest potential to play in. At its most basic level, this requires identifying a group of consumers whom find our offering most desirable, that are sufficiently large and have a big enough problem that we are able to solve.

There were a number of elements that were important in assessing 'where to play'

- Is the idea of crunchy meat appealing?
- Which groups of consumers are most likely to embrace this offering – having a big enough problem to solve?
- How broadly appealing is this offering – what level of market penetration is possible?
- How well do the prototype products deliver on the promise?

The project team decided that a robust sample was required to assess the desirability of Meat Snacks. Meat Snacks is such a novel product offering that it was important to assess the desirability of the idea. This required the development of a Concept Statement, derived from the initial Value Proposition, to express what was appealing about the idea.

The research was designed across three stages (Refer to Figure 8).

The initial stage was to robustly assess whether the idea of Meat Snacks was appealing. Red Meat has strong associations and is not obviously associated with snack foods. Many people are 'turned off' by the idea of meat snacks, whether it is because of the polarizing image of jerky, the pet treats association, or because it is so dominant as a main meal offering, it is hard to see it playing a different role. Conversely, many people love the taste of red meat and see its functional properties as highly desirable in the context of snacking (such as high protein).

The second stage of the research was designed to understand respondents existing experiences with snacks and the pros and cons of different types of snacks.

For the third stage of the research, respondents were provided with Meat Snacks, in a somewhat rudimentary form (initial snack product concepts) and instructed to use them as part of the normal snacking lives. Their experiences with Meat Snacks would then be recorded.

Figure 8: Identifying "where to play" for meat snacks via research pathways.

3.2.4 Expressing the Meat Snacks Value Proposition as a Concept Statement

The Value Proposition was expressed as a concept statement, with supporting pack visual, the design of which, used cues from premium chips (such as Red Rock Deli), to convey key qualities (Refer to Figure 9). This initial phase of research was conducted online, with 200 respondents, to provide a statistically robust sample. Respondents were initially questioned across a number of areas:

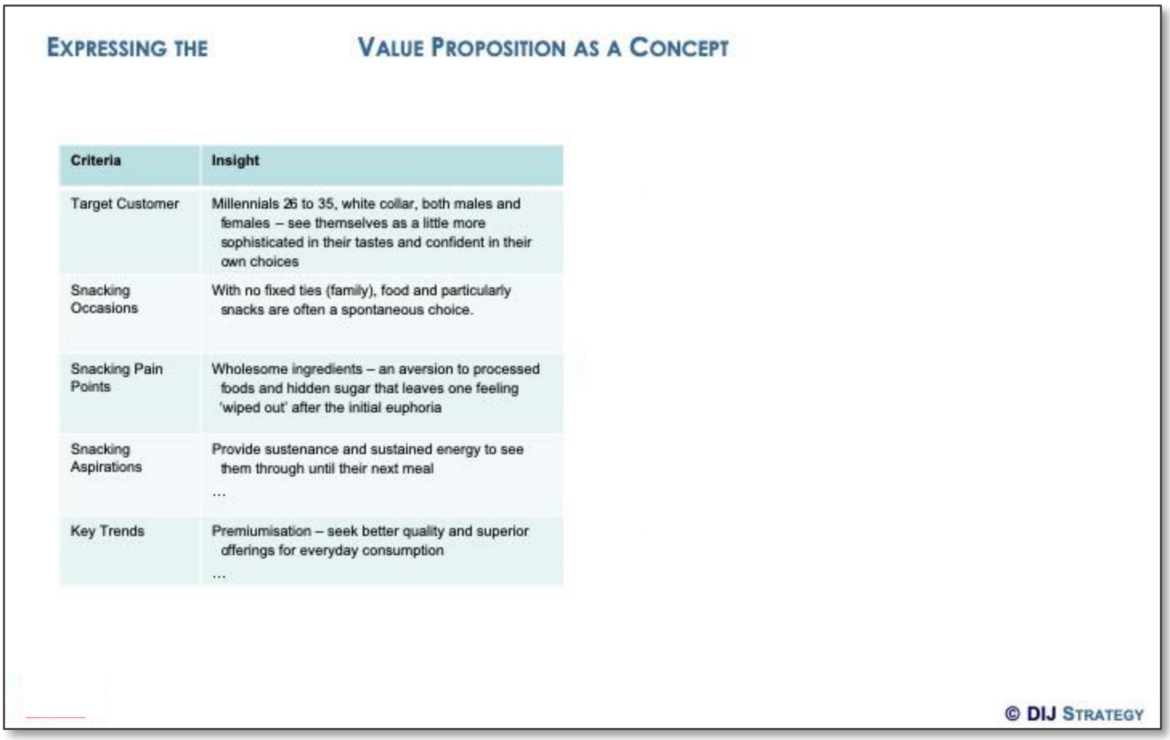
- Their broad snacking attitudes (i.e. snacks are an important part of daily nutrition)
- Snacking behaviours (i.e. often skip meals, in favour of grazing through the day)
- Category usage (i.e. frequency of consumption of nuts, crackers, chips, …)

3.2.5 Are Meat Snacks a winning

The main focus of this initial stage of research was to test the appeal of Meat Snacks (Liking). There are few sectors with as wide a selection and range of interesting new offerings as snacking. Do Meat Snacks stand out (Differentiation) from existing offerings, in a meaningful way (Relevance). An indicative price point and quantity was also provided, to gauge perceptions of Value (a snack product made from meat is always going to be more expensive than one made from potatoes!).

Ultimately, would consumers likely trial Meat Snacks (Purchase Intent) was assessed. This was the first critical test for Meat Snacks – was it a worthwhile idea. This also provided a base of respondents for the second stage of research, people who would likely give Meat Snacks a go (Trial), if they came across them in the real world (Refer to Figure 10).

It was important to get the product offering into the hands of consumers to get their assessment of how it performed. Of the 200 respondents from stage 1, 60 were selected, who indicated that they would likely trial the product (which was the majority of them).



Criteria	Insight
Target Customer	Millennials 26 to 35, white collar, both males and females – see themselves as a little more sophisticated in their tastes and confident in their own choices
Snacking Occasions	With no fixed ties (family), food and particularly snacks are often a spontaneous choice.
Snacking Pain Points	Wholesome ingredients – an aversion to processed foods and hidden sugar that leaves one feeling 'wiped out' after the initial euphoria
Snacking Aspirations	Provide sustenance and sustained energy to see them through until their next meal …
Key Trends	Premiumisation – seek better quality and superior offerings for everyday consumption …

Figure 9: The value proposition for meat snacks concepts.

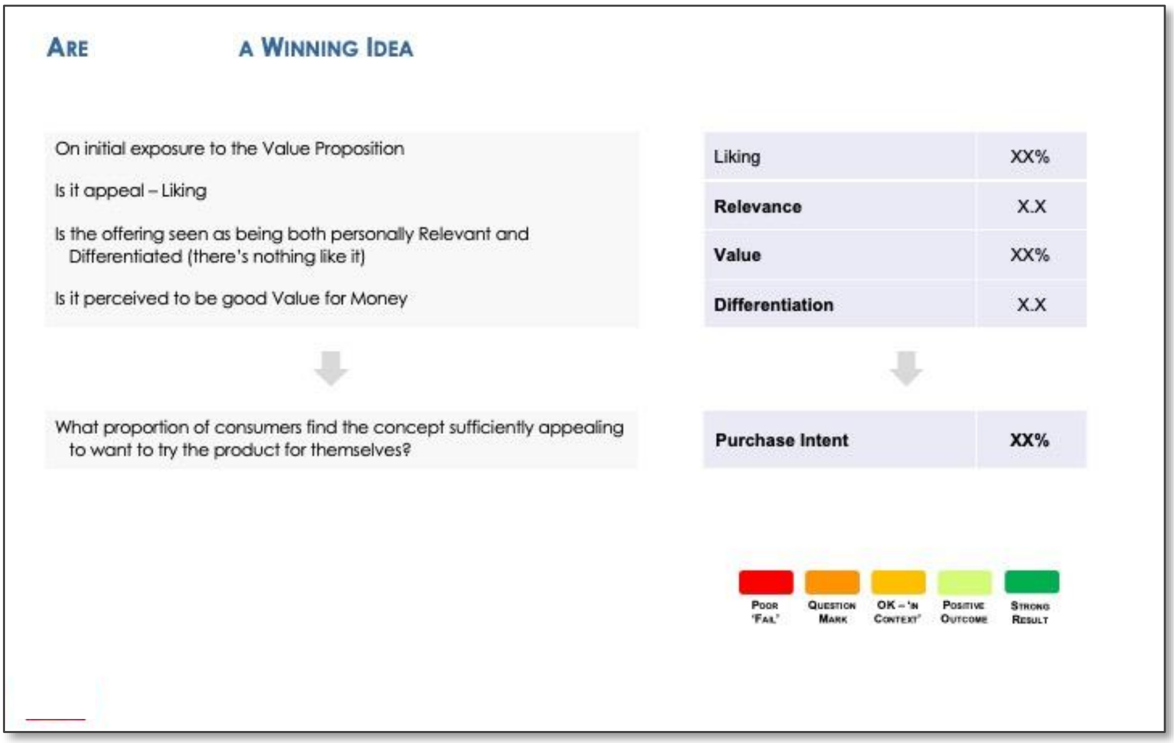


Figure 10: Determining the opportunity for meat snack.

3.2.6 Customer Targets

The structure of the sample was designed to cover off a number of key dimensions (Refer to Figure 11), to assess:

- Gender – we know that Males and Females typically have different tastes and expectations when it comes to snack foods. Whilst the stereotype is that only blokes eat jerky, the reality is less polarizing.
- Age groups – Snacking is more prevalent amongst younger age groups, making up a higher proportion of calories consumed (source ABS), compared to older consumers, who tend to more rigidly base their food consumption around 'three proper meals per day'. However, a number of more premium snack offerings, such as dark chocolate, have been disproportionately adopted by older consumers.

Figure 11: Determining alternative customer targets and snacking occasions for meat snacks.

- White vs. Grey vs. Blue Collar – on a number of levels, snacking choices differ across these consumer segments. Blue collar workers undertake more physically arduous tasks, so look for different snacking properties. Snacking choices are also greatly influenced by social expectations

Whilst it was not possible to construct a cell for each distinct combination (i.e. 2 x gender x 3 age groups x 3 Collars), the sample was structured to ensure each dimension could be independently assessed in terms of consumer desirability.

3.2.7 Developing the Customer Profile – Jobs, Pains & Gains

Respondents recorded their existing snacking behaviours, on an occasion by occasion basis. Over a period of a week they recorded key snacking occasions, in particular noting down how they were feeling at the time and the reasons for why they were snacking and why they were having a snack at the time (Customer Jobs). There were a range of reasons:

- Functional – 'feeling hungry'
- Social - 'offered by a friend / colleague'
- Emotive – 'feeling bored / needed a break'

For each target customer segment, key 'Jobs to be done' were identified. It was also important to record the snacks they had chosen on this occasion, with all consumers having a repertoire of snacks they choose to consume on different occasions (Refer to Figure 12).

Existing Pain Points were identified, as were Unrealised Gains. This provided a picture of what this customer segment were looking for in a snack – their unmet needs.

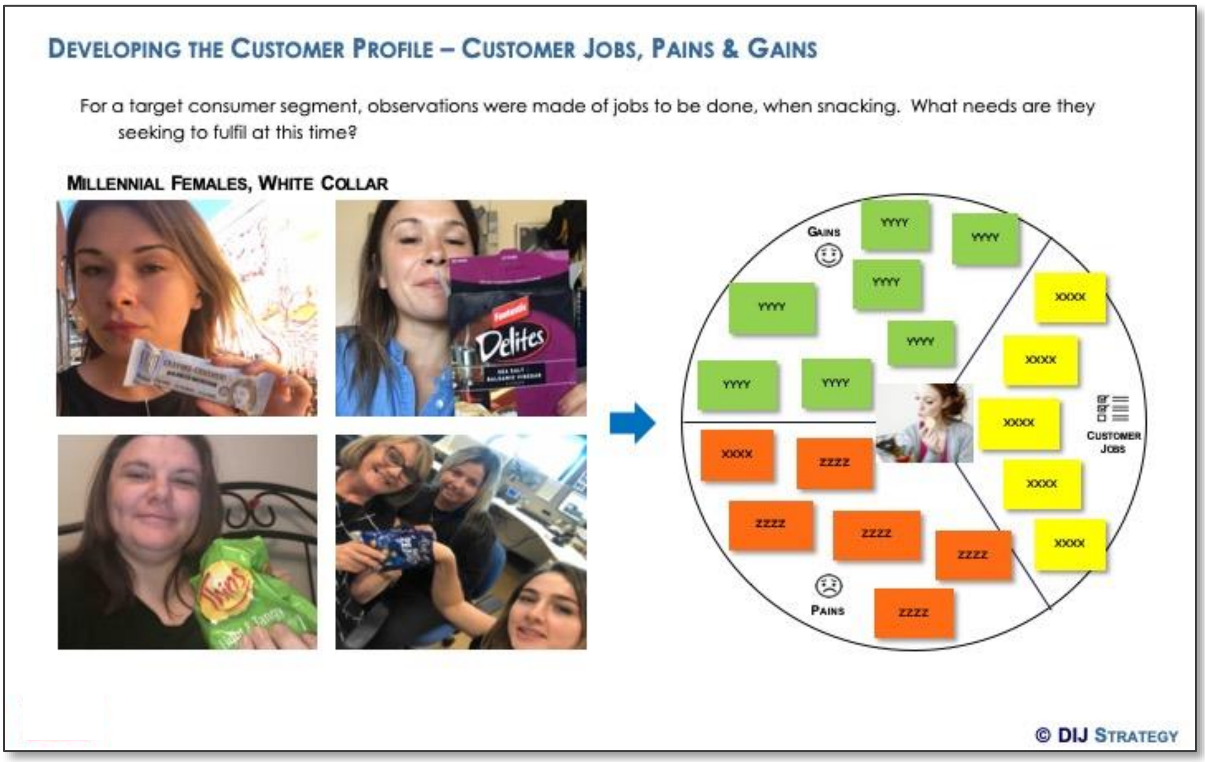


Figure 12: Developing customer profiles for meat snacks.

3.2.8 Developing the Value Map

These same consumers were provided with some Meat Snacks. At this stage, the product was only a prototype product, and was not presented as part of full offering (branding, suitable packaging etc.). These consumers were instructed to use the product samples as part of their normal snacking lives – thus not eating them in a 'laboratory type' environment (as is the case with taste panels). Rather they got to experience them as part of their normal snacking life. Thus, they were consumed at different times of the day, as well as sometimes for personal use and other times shared.

Consumers assessed whether the Meat Snacks delivered against their required Pain Points and Desired Gains. In short, did Meat Snacks work to satisfy their snacking needs. Thus, consumers rated Meat Snacks across all key attribute dimensions – taste, texture etc (Refer to Figure 13).

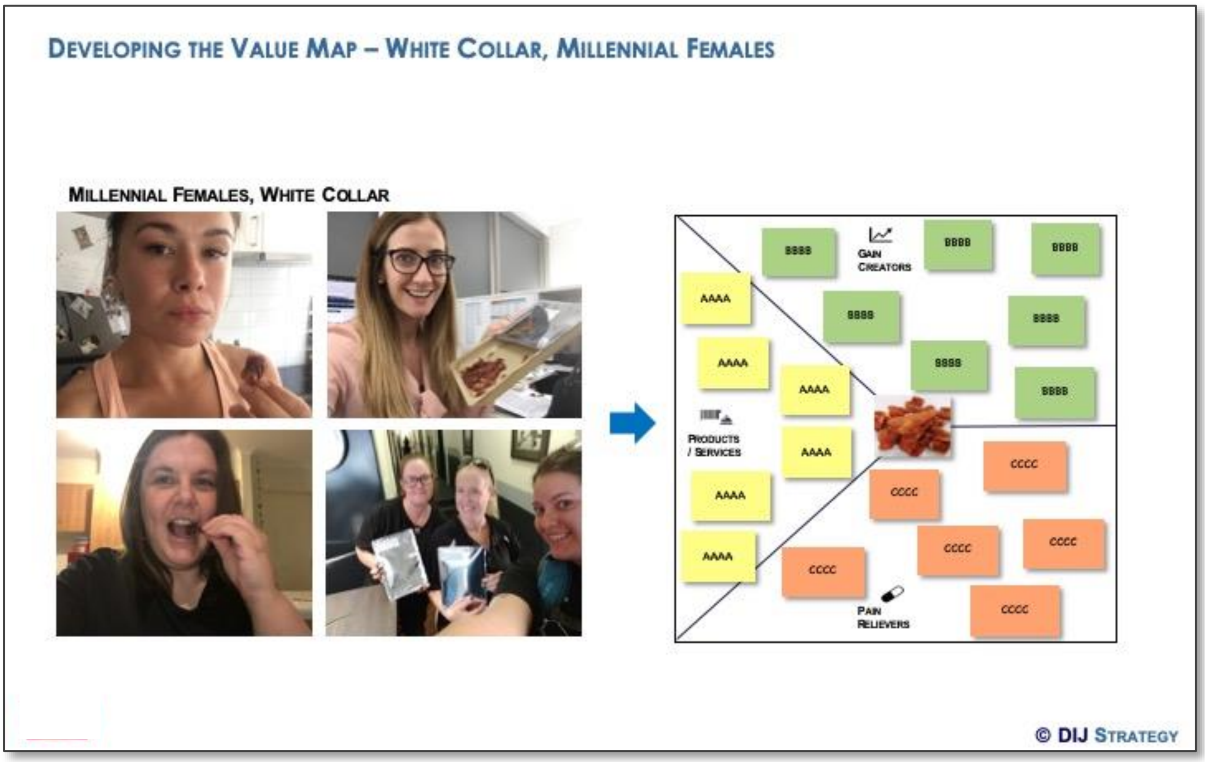


Figure 13: Developing the value map for meat snacks specifically for female Millennials.

3.2.9 Assessing the Fit – Enhancing Meat Snacks

Through the research it was possible to assess amongst which segments of consumers Meat Snacks were a good fit for – address their Pain Points and Realise their Desired Gains.

Through consumers real world experience with Meat Snacks it was possible to confirm whether Meat Snacks delivered the envisaged Pain Relievers and Gain Creators. Were the intended benefits realised, in the eyes of consumers. These benefits can be as simple and generic as "tastes great", or as pointed and specific as "Sophisticated Flavour". This assessment of the benefits Meat Snacks delivers were fairly consistent across target consumer segments. The degree to which Meat Snacks delivered the desired Gain Creators and Pain Relievers was assessed in the eyes of target customers (Refer to Figure 14).

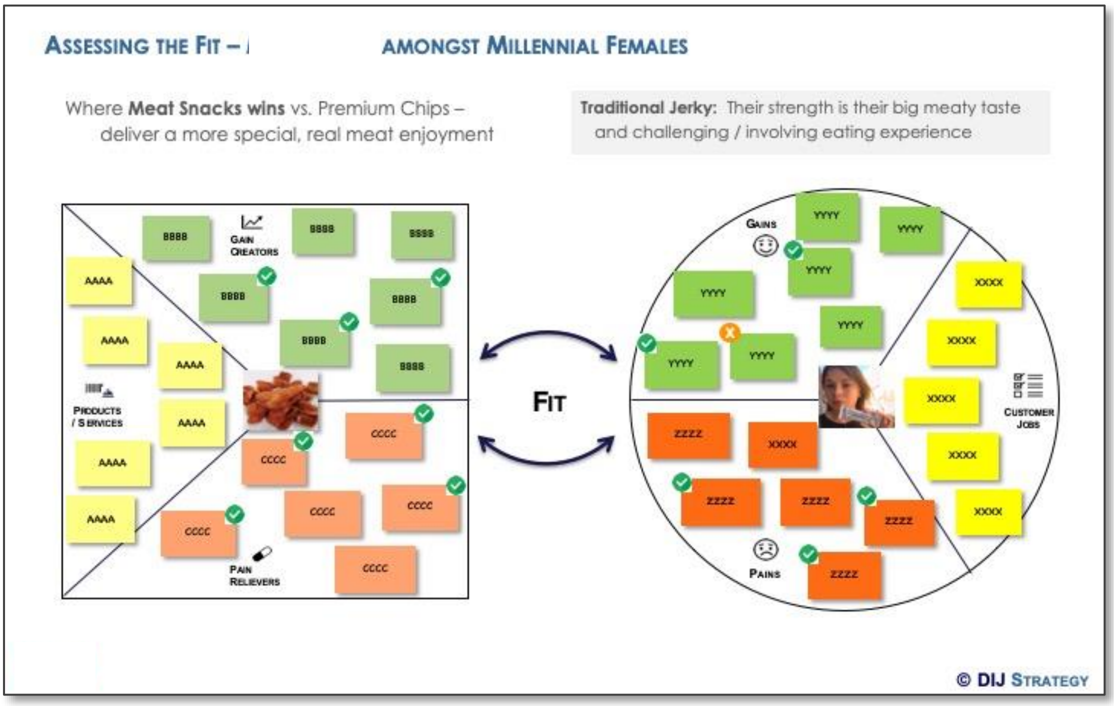


Figure 14: Assessing meat snacks as a good fit with female Millennials.

3.2.10 Assessing which Target Customer is the Best Fit

The degree to which Meat Snacks was able to address Pain Relievers and Gain Creators was assessed – did respondents feel the product performed in a way to delivered important benefits. For example, did they feel, as a high protein snack (attribute) that the Meat Snacks are Healthy (Pain Reliever – Snacks are Unhealthy). Refer to Figure 15.

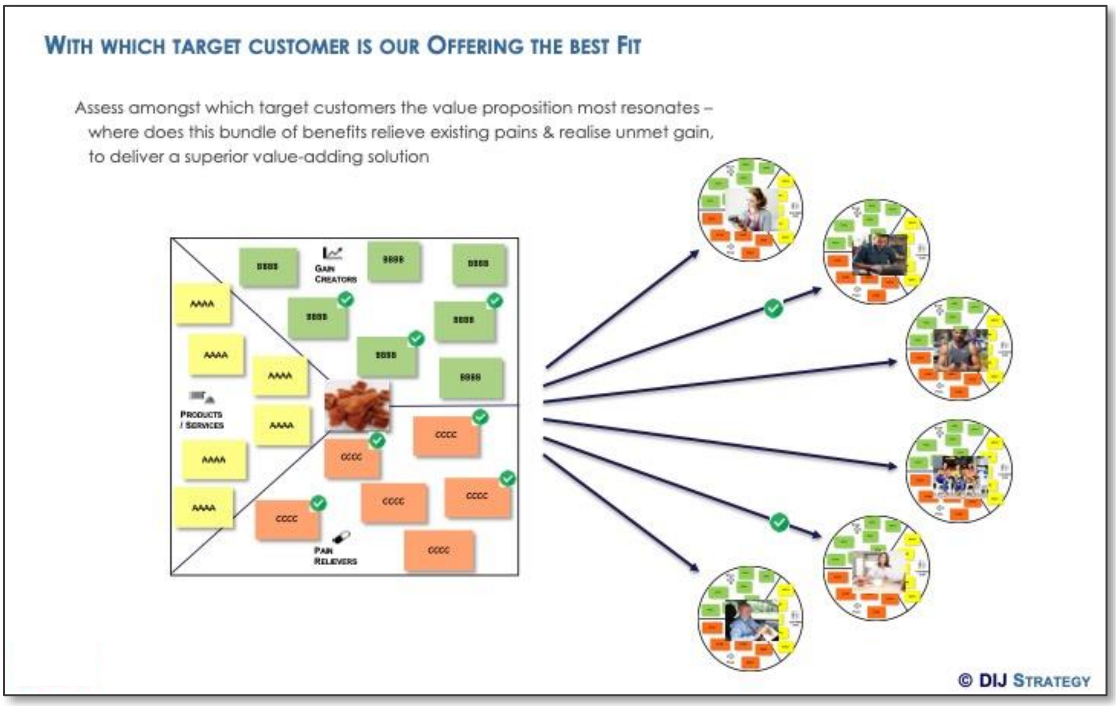


Figure 15: Determining the best target customer(s) for meat snacks.

3.2.11 Enhancing Meat Snacks

A more detailed assessment was made as to how each version of meat snacks had performed against key criteria. For this initial prototype offering, there were a number of dimensions on which it was felt it was not quite delivering. In most instances, the product was felt to deliver 'too much' of a particular attribute and required 'toning down' to deliver to expectations (Refer to Figure 16).

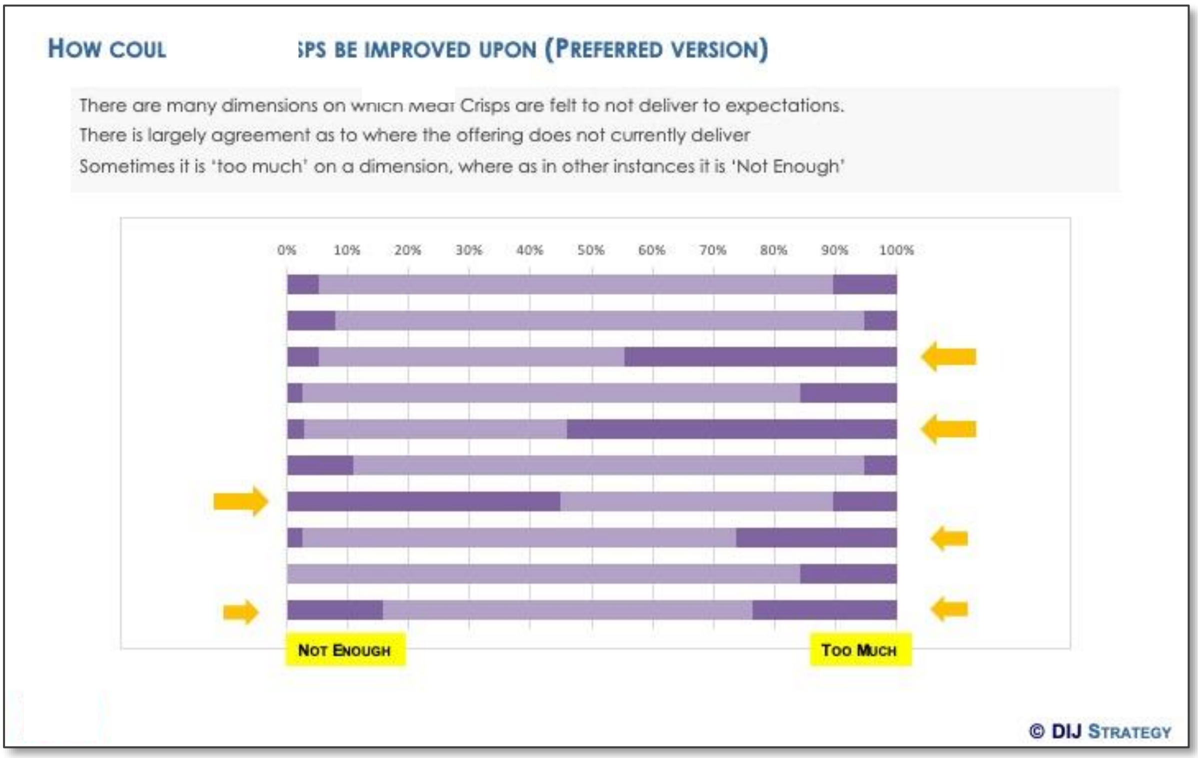


Figure 16: Determining how meat snacks can be improved.

3.3 How to Win

3.3.1 Key Challenges

- Further develop the Meat Snacks offering to realise the intended Pain Relievers and Gain Creators
- Identifying the most important Pain Points and Unrealised Gains amongst the target customer segment
- Optimising the Value Proposition against these criteria
- Developing a holistic offering to support the Value Proposition

3.3.2 Workshop – Determining How to Win

Participants: DIJ Strategy, JBS Australia: Marketing & Product Development

Key Agenda items:

- Review of Stage 2 research & development of agreed conclusions
- Agreement as to 'Where to Play' – identification of target customer segment

- Shared brief to Product Development team, to further enhance Meat Snacks offering
- Refinement of Concept Statement – expression of the Value Proposition
- Development of the Augmented Offering – i.e. packaging format
- Design of the Stage 3 research – 'How to Win'
- Identify key challenges in launching & Implications for de-risking the launch

3.3.3 Feedback from Research to Enhance the Offering

Important to the process was further developing the product offering based upon feedback from consumer testing. There were multiple dimensions on which the product required enhancement, to deliver the desired benefits – Pain Points and Gain Creators. Thus, many further iterations of the product were undertaken to arrive at an offering that the team felt delivered across the desired benefit areas (Refer to Figure 17).

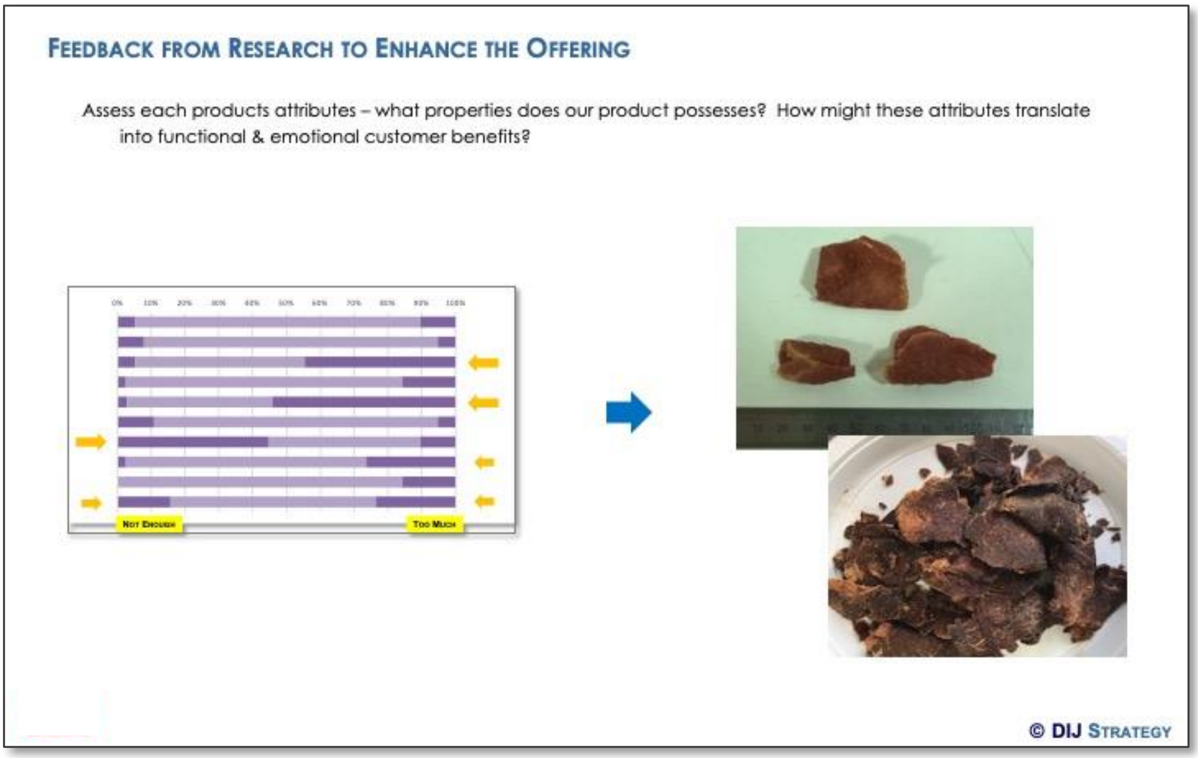


Figure 17: Customer feedback from research to enhance the meat snack offering.

3.3.4 Value Proposition – Our 'How to Win'

A new Value Proposition was developed to better express the advantages that it was felt our Meat Snacks offering delivered. This was expressed as:

- A clear definition of our target customer and what they are seeking to realise
- The key bundle of benefits that we believe our offering delivers to address key customer pain points and desired gains
- Plus, secondary benefits that further advance our cause
- Unlike key competitors that are deficient in this area

This was expressed as a Value Proposition (confidential), with supporting pack visual (See Figure 18).

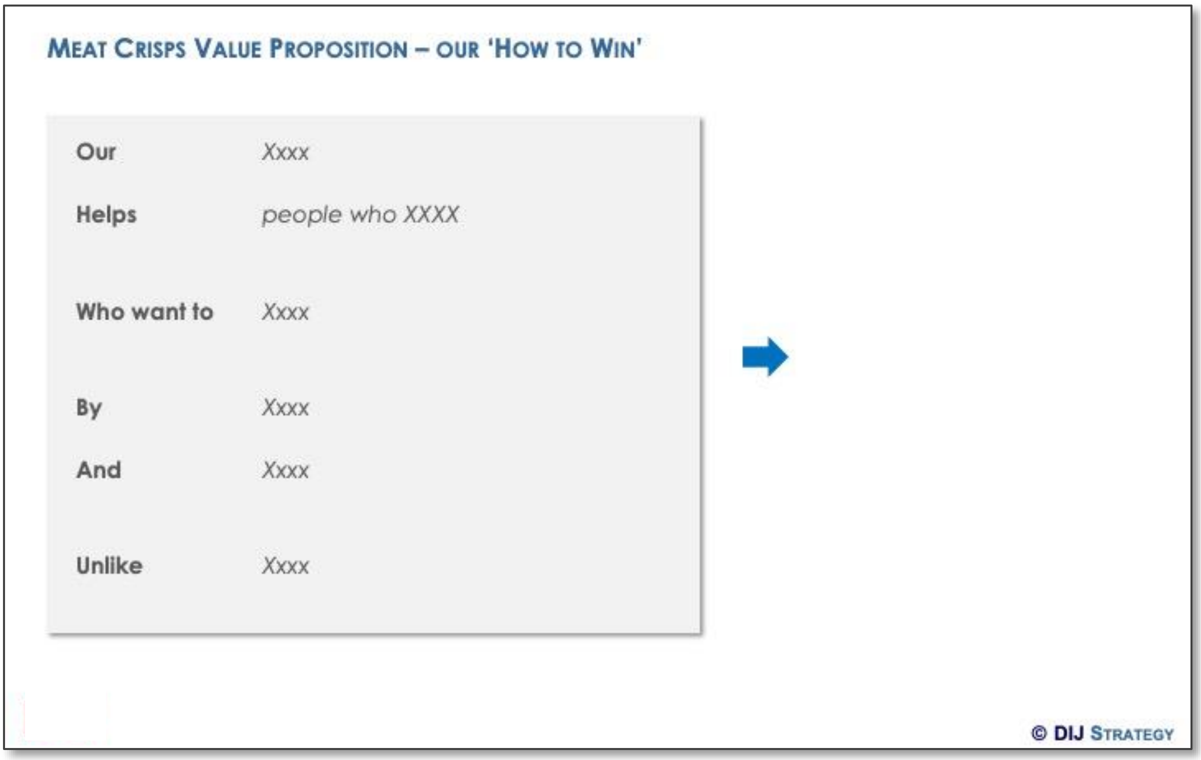


Figure 18: Value proposition for meat snacks – How to win.

3.3.5 Developing a Full Marketing Mix Offering

To support the product offering, a full marketing mix was developed (refer to Figure 19):

- A premium packaging format
- A visual identity to convey the desired product qualities
- A definitive portion size
- A price point that it would retail at in the market place
- An illustrative channel that it would be prominently displayed within
- A typical competitive context

3.3.6 How to Win Research Approach - Process

The research was designed across three phases, to realise the desired consumer assessment of the Meat Snacks offering.

- The initial phase to assess the overall appeal of the Value Proposition – would consumers likely trial the product in the real world
- A focused assessment of the Meat Snacks through real world usage experience
- A broader assessment of the augmented offering – the packaging, pricing etc.

Consumers were recruited using an online research panel. It was decided to broaden the base of consumers out beyond our target customer segment, to also include secondary target customers. This was done on the basis that it was felt important to satisfy broad appeal, in order to be viable in the market. Thus, a skewed sample was recruited to reflect these needs (Refer to Figure 20).

Figure 19: Developing a full marketing mix offering for meat snacks.

Figure 20: Identifying how to win using the Real World Holistic Offering approach.

3.3.7 Assessing if Meat Snacks are a Winning Concept

The Meat Snacks Value Proposition, in the form of a full concept expression, was shared with 200 consumers, to gauge their reaction. Respondents assessed Meat Snacks across a number of key dimensions:

- Their overall appeal – Liking
- Are they relevant to your snacking needs?
- Are they different to existing offerings in the market?
- Are they good value, at the indicated price point?
- Finally, they were assessed on Purchase Intent – would they likely buy them?

Subsequently, amongst the same respondents, once they had had the opportunity to experience Meat Snacks for themselves, they were further asked:

- Would you likely purchase Meat Snacks on an ongoing basis?
- How often do you think you would purchase it – frequency?

This line of questioning provides an important, contrasting perspective on future market success for Meat Snacks – using evaluative dimensions, as against assessing fit to pain points and desired gains (Refer to Figure 21).

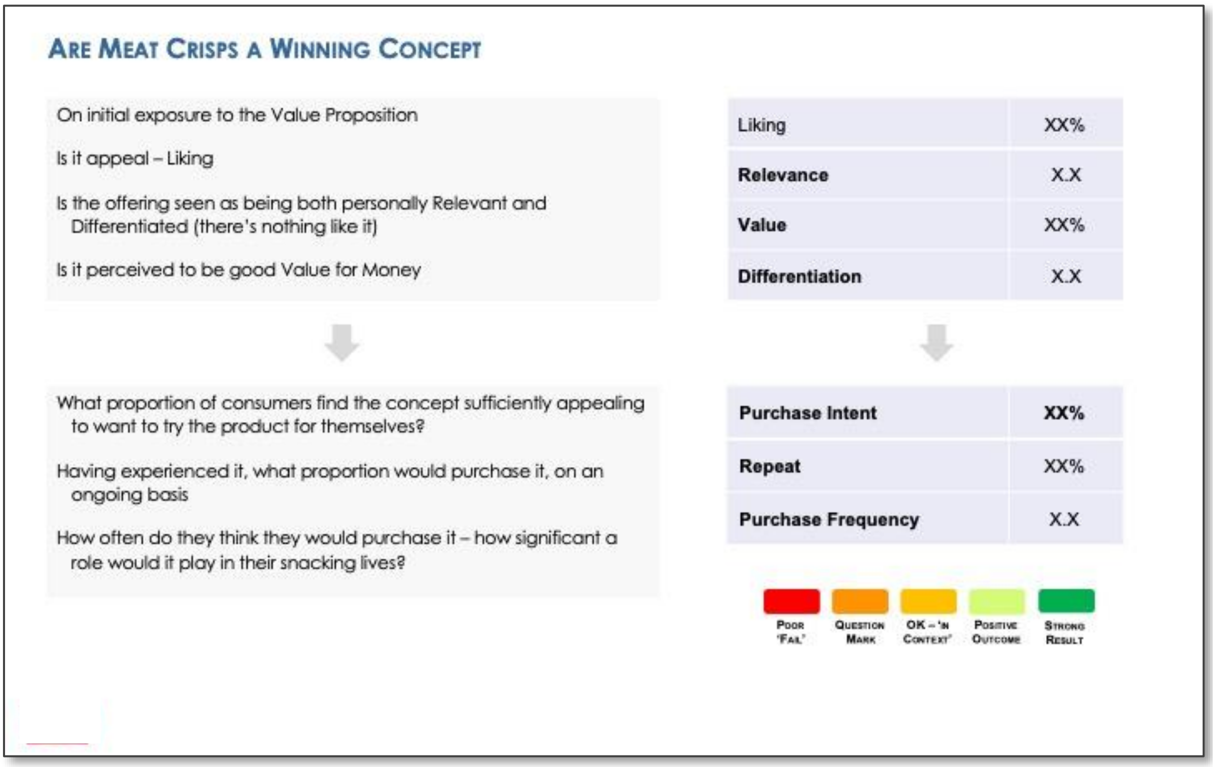


Figure 21: Early value proposition snapshot for meat snacks.

3.3.8 Customer Profile

A deeper understanding of target consumers snacking drivers was sought. What are their broader snacking behaviours (i.e. is snacking a planned activity, or more of a spontaneous choice? What do they generally look for in snacks – i.e. is Natural important? Do they assess the calorific content of snacks? This enabled a rich 'Snacking Persona' to be developed, bringing to life their snacking drivers.

It was also important to understand their key snacking occasions. With snacking occurring throughout the day, and often replacing meals, it is important to understand when snacking occurs most frequently and how important it is for them to have a snack, at this time / what are they prepared to spend.

Finally, understanding existing snacking choices – what snacks are most often consumed on these occasions through the day.

The basis for building this understanding was recording their snacking occasions, in situ, as part of their daily lives. What were their 'Jobs to be done' at this time. What were the 'Gains' they were seeking to fulfil and what were their 'Pains' that were limiting their enjoyment / satisfaction? This understanding enabled their Customer Profile to be developed – a complete and categorical picture of our target customer and their snacking needs 9Refer to Figure 22).

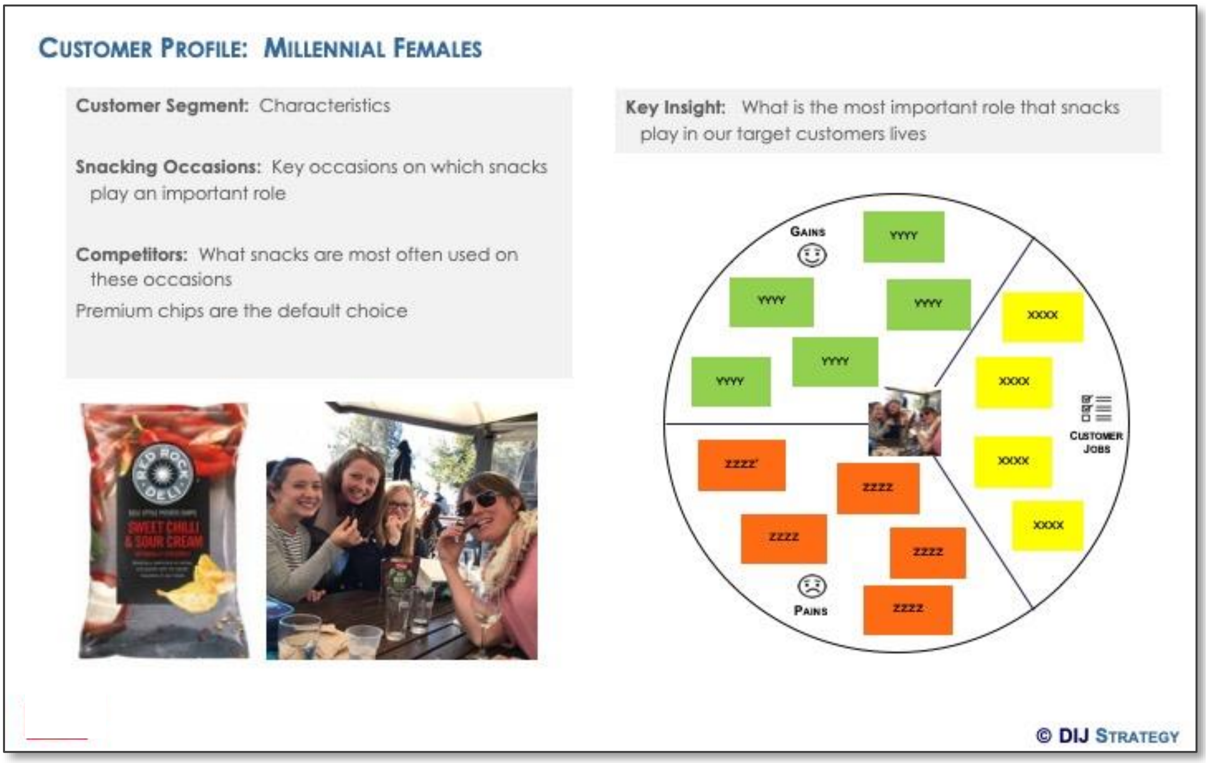


Figure 22: Customer profile for meat snacks.

3.3.9 Ranking the Importance of Customer Pains & Gains

Net of these snacking occasions, it was possible to rank 'Jobs to be Done', 'Pains' and 'Gains' – what is most important to target consumers in their choice of snacks (Refer to Figure 23).

Of the identified 'Jobs to be done' – ranking their relative importance. This is not just a ranking, but contains degrees of difference

Of the 'Pain Points' that our Target Customer is experiencing on these snacking occasions, what is their relative importance?

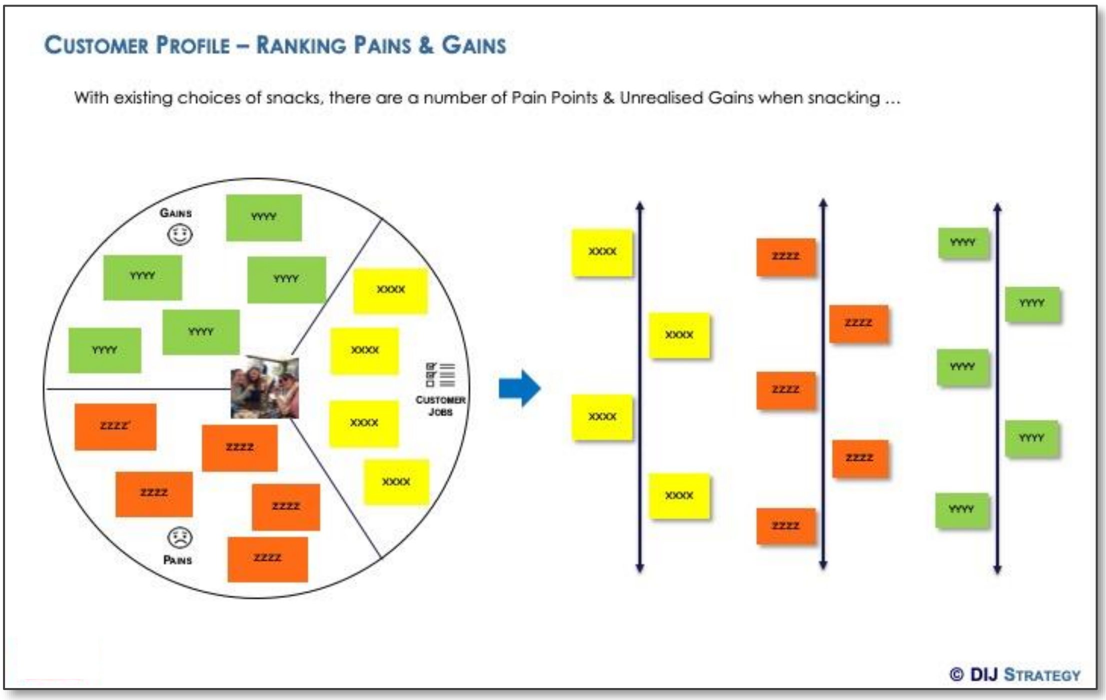


Figure 23: Customer profile (Ranking pain and gain points) for meat snacks.

Similarly, of the 'Desired Gains' that our Target Customer is seeking, what are their relative importance? Thus, when it comes to assessing Meat Snacks, it will be possible to determine, what is most important, in the eyes of the target customer.

3.3.10 Assessment of existing customer choices vs. Pains & Gains

Not only were we able to assess Target Customers Jobs to be Done, Pain Points and Desired Gains, as part of their snacking behaviours, but we could establish how existing snacking choices performed against these expectations. As a repertoire category, with a diversity of snacks being consumed, each has relative merits and conversely areas where they do not perform as strongly.

Thus, Potato Snacks are the most popular snack, as they have a number of key properties that address key Gains and Pains that Target Customers possess. In contrast, Nuts and Nut Mixes possess a number of different properties that mean they address a different set of Gains and Pains (Refer to Figure 24).

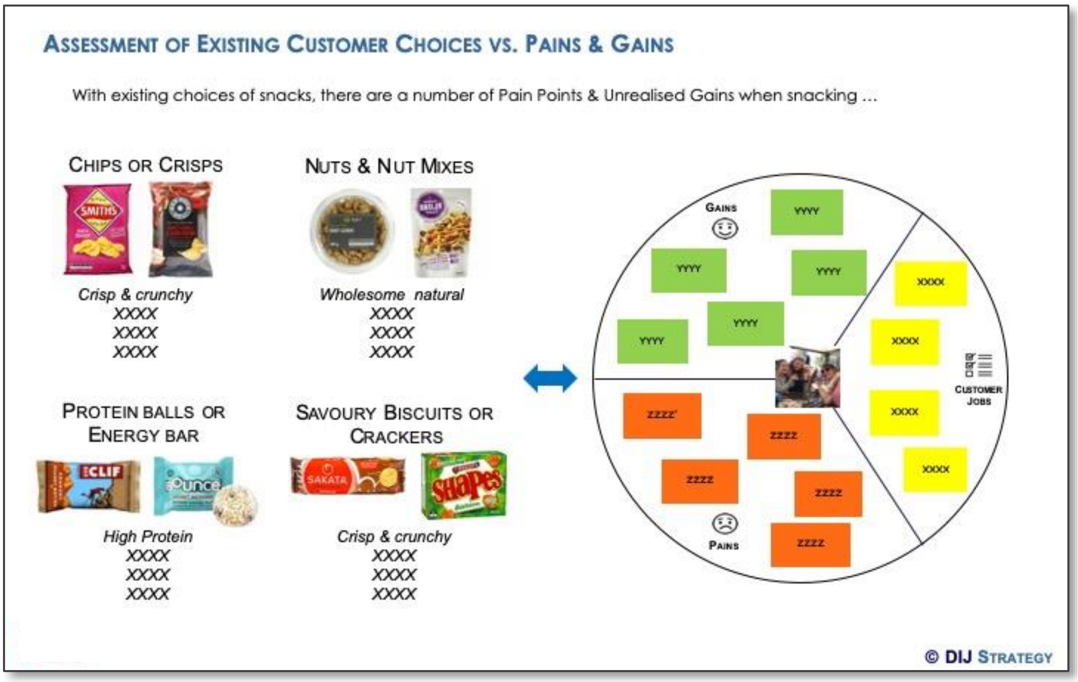


Figure 24: Assessment of existing customers for meat snacks.

3.3.11 Target Customer – Experience with Meat Snacks

As a key part of the research, respondents were provided with a prototype version of Meat Snacks. They were instructed to use them as part of their regular snaking lives. Their experiences were then recorded, in situ, to gain a realistic assessment of how well they performed. In particular, besides their overall 'liking' of Meat Snacks, how well they performed against their previously identified Pain Points and Desired Gains was assessed (Refer to Figure 25).

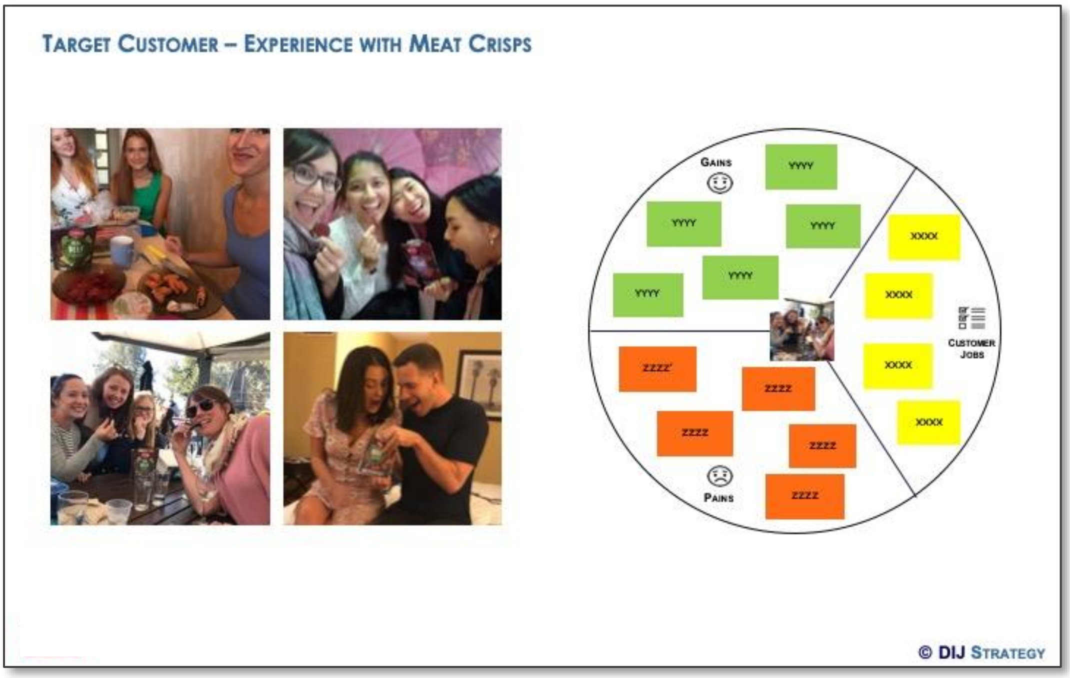


Figure 25: Target customers and their experiences for meat snacks.

3.3.12 How Meat Snacks performed in the eyes of the Target Customer

Each Pain Point and Desired Gain was assessed as a distinctive attribute as part of the research. In order 'to win', it was important to assess how Meat Snacks performed relative to the snacks that our target customers were currently consuming. Thus, they were rated as being 'the best', as good as' or 'not as good as' existing choices (Refer to Figure 26).

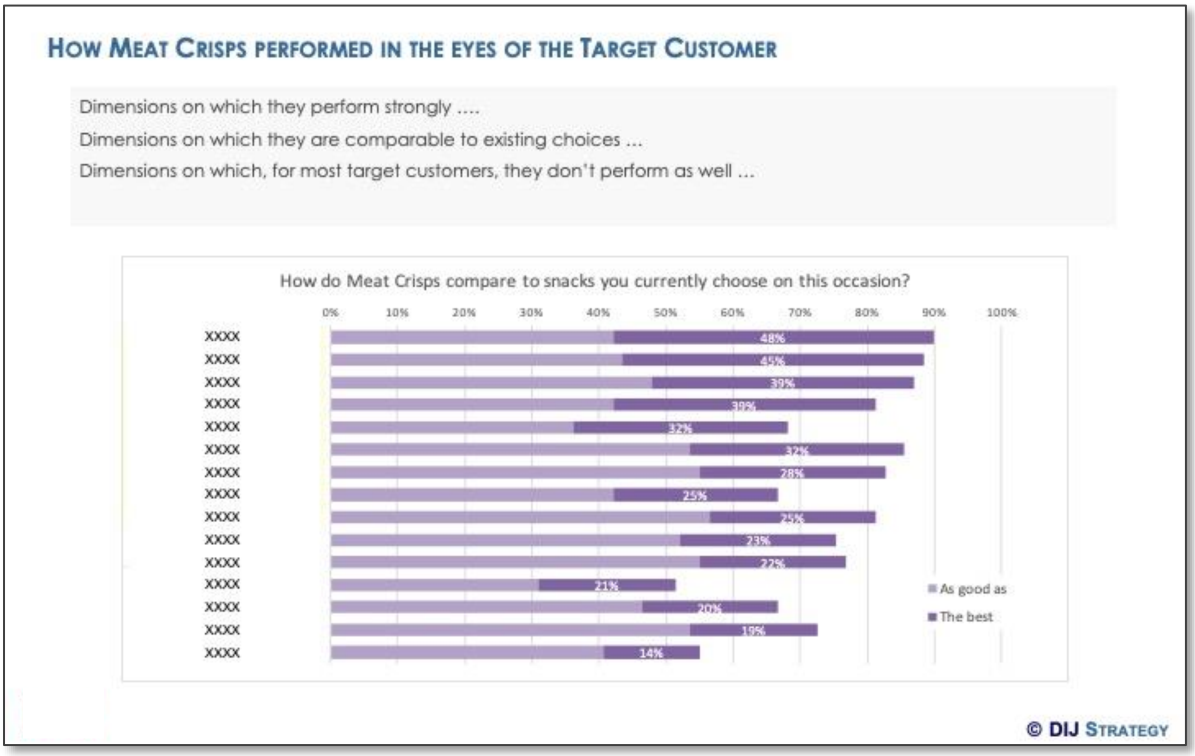


Figure 26: Determining how meat snacks performed with target customers.

3.3.13 Identifying where Meat Snacks Wins

Combining Target Customers' assessment of how Meat Snacks performs, relative to existing snack choices, against how important each of these Pains and Gains are to them in a four-quadrant matrix, provides clarity as to how Meat Snacks are able to win in the market (Refer to Figure 27).

Where Meat Snacks Wins: Dimensions where Meat Snacks excels, with superior delivery against Pain Point and Desired Gains that are important to target customers.

Where Meat snacks Delivers Beyond Requirements: Dimensions where Meat Snacks performs strongly, but are less important to Target Customers – Features and benefits that realise little value.

Where Meat Snacks Don't Deliver: Dimensions where Meat Snacks does not perform well, but are important to target customers – Whilst potentially limiting, it also sets us apart from competitors.

Dimensions of little interest: Meat Snacks does not perform well, but they are not important anyway.

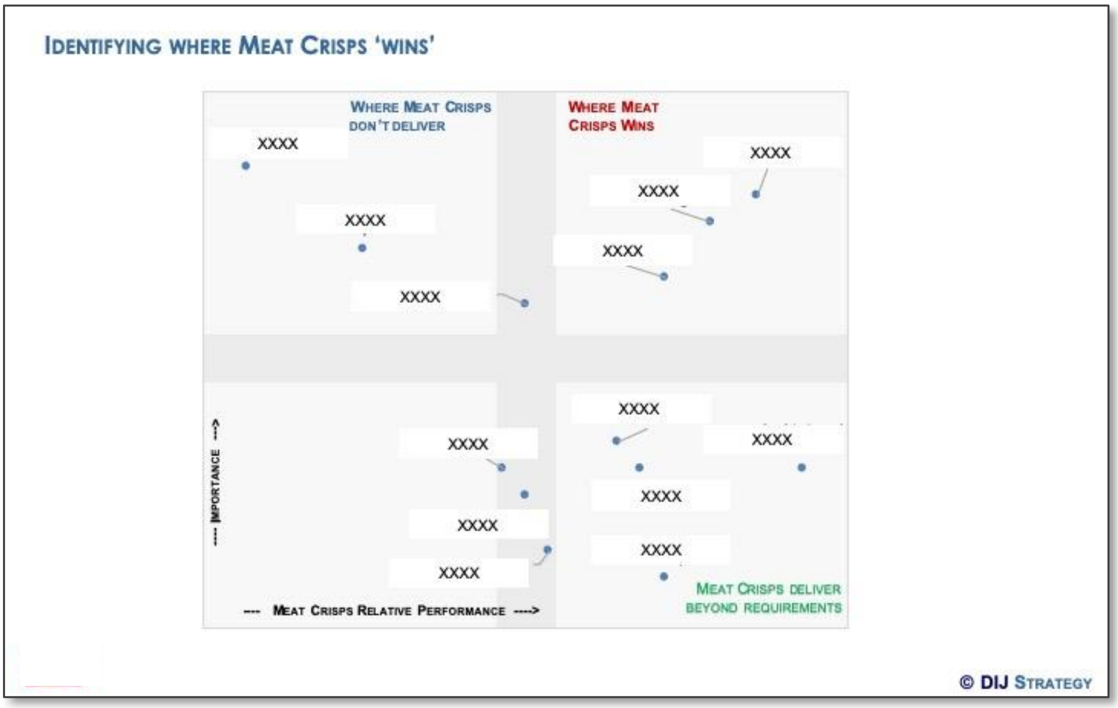


Figure 27: Identifying opportunities and where meat snacks "wins".

3.3.14 Assessing the Fit – Value Map to Customer Profile

Translating these insights, mapping the Fit between the Value Map and the Customer Profile, highlights in what areas Meat Snacks are able to Win amongst Target Customers and the areas within the makeup of the Product / Service that are the source of this advantage (refer to Figure 28).

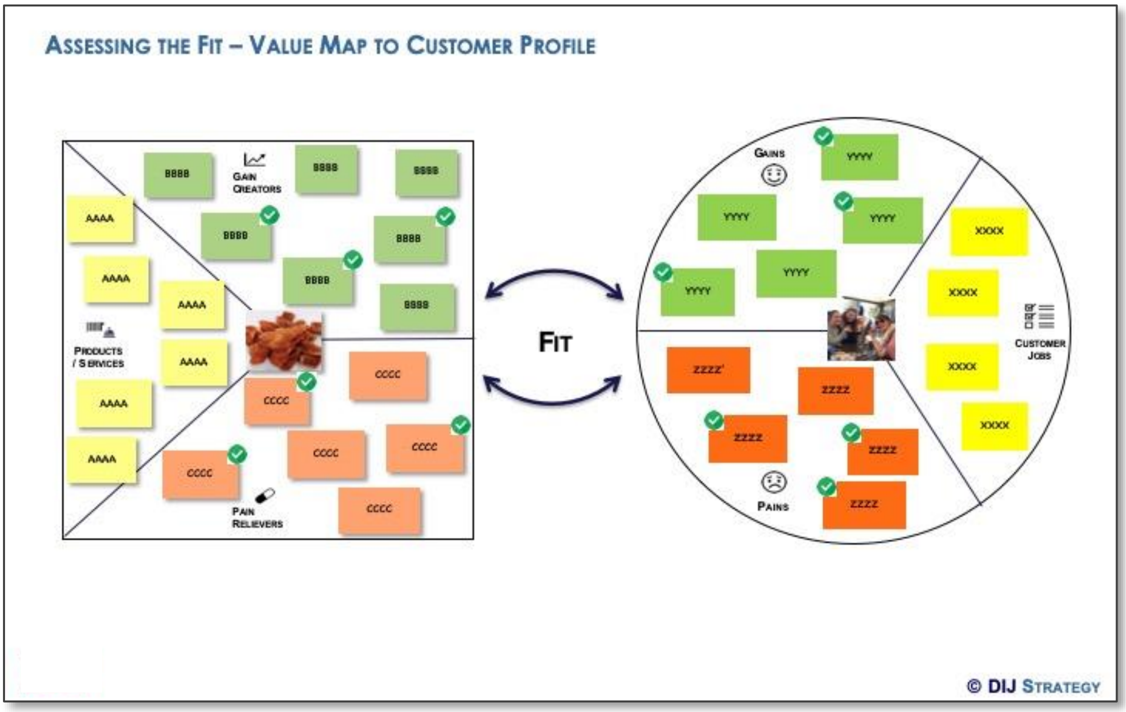


Figure 28: Assessing the fit for meat snack using value maps and customer profiles.

3.3.15 Assessment of Meat Snacks Key Attributes -> Pain Relievers & Gain Creators

Meat Snacks was further rated by respondents on the key product and service attributes and their ability to deliver the intended Pain Relievers and Gain Creators. Given the broad make-up of our research sample this was able to be undertaken across a number of potential target customer groups (Refer to Figure 29).

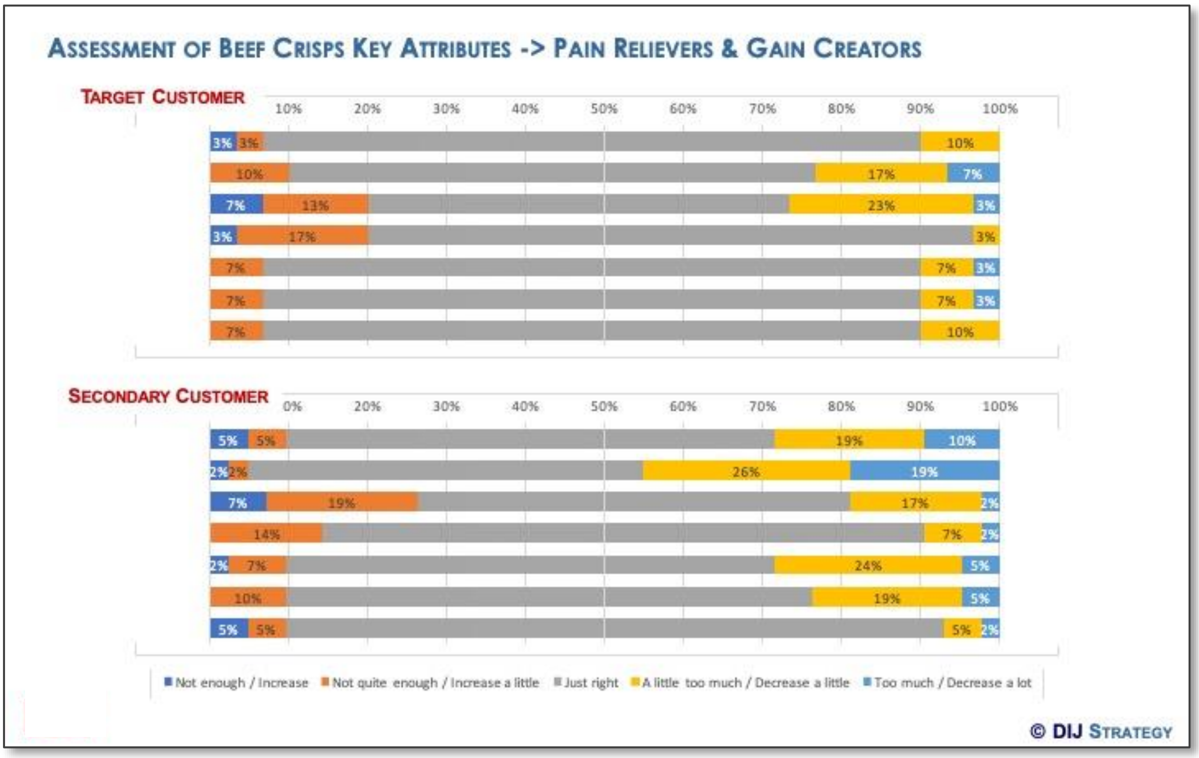


Figure 29: Assessment of the key attributes of meat snacks (Pain relievers & Gain creators).

Through the iterative development of prototype offerings, the performance of Meat Snacks was getting closer to delivering the desired Pain Relievers and Gain Creators. As with any product development, matching the market to product needs refining of the recipe to meet the customers' expectation.

When focusing on a broader Secondary Customer group, Meat Snacks were not felt to as successfully deliver the desired attributes that address Pain Relievers and Gain Creators. However, encouragingly, the conclusions as to the areas where Meat Snacks required further improvement were consistent across the core and secondary target customer groups. However, one needs to remember that many of these dimensions are 'a matter of taste'. Thus, individual and subjective interpretations of attribute dimensions.

3.4 De-Risking Market Entry

3.4.1 Key Challenges

- Translate the Value Proposition into an overall Business Model to support Meat Snacks
- Assess the risks in launching in to the market- identify challenges to be overcome
- Develop a launch strategy, with associated Business Model, to de-risk the launch

3.4.2 Workshop – De-Risking Market Entry

Participants: DIJ Strategy, MLA, JBS Australia: Marketing, Product Development, Sales, Operations

Key Agenda items:

- Review of Stage 3 research & development of agreed conclusions
- Shared brief to Product Development team, to further enhance Meat Snacks
- Refinement of Value Proposition
- Development of Full Marketing Mix – the augmented offering
- Refinement of the supporting Business Model
- Identify key challenges in launching & Implications for de-risking the launch

The initial focus for the workshop was to review the research conclusions. All attendees were already familiar with the results, as they had been provided with a copy of the research prior to the workshop session.

The first and most significant challenge to address was optimizing the value proposition. Any meat-based snack is going to be more expensive than chips and other similar snack offerings. Thus, it is essential for Meat Snacks to deliver important value-adding benefits – delivering to the target customers Pain Points and Desired Gains.

It was widely recognised that there was more that could be done in the development of the Meat Snacks product offering and this was not the end of the journey. However, it was felt that the key characteristics of what constitutes a meat snack had been identified and thus it was a question of delivering an offering that fulfilled this promise. This was informed by consumer feedback, addressing the key attributes that had been highlighted as part of the research. Thus, an agreed product development brief was arrived at:

- What we all felt were the important advantages of Meat Snacks
- What was believed the EnWave technology could further deliver – this being addressed by the Product development and Operations team (Delivered at scale).

From this discussion, and with a shared belief as to how further versions of Meat Snacks would be able to perform, we moved to refining the Value Proposition. A number of key areas were addressed, including refinement of the target customer, what they are seeking to achieve, as well as the benefits our solution would deliver.

3.4.3 Meat Snacks – Marketing Mix

Having refined the Value Proposition, this became the basis for developing the full Marketing Mix. A fuller description of the target consumer segment was developed, to bring to life aspects of the snacking purchasing behaviour. The range of different versions of Meat Snacks was discussed, initially taking a 'Desirability' perspective. Thus, given we need to appeal to varied tastes, what are the different versions and range of flavours required to satisfy all target customers. Subsequently, this list was rationalized, based upon (See Figure 30):

- What was a sensible range to establish ourselves in the market place?
- What range could be maintained in the market – with each able to sustain a realistic turnover

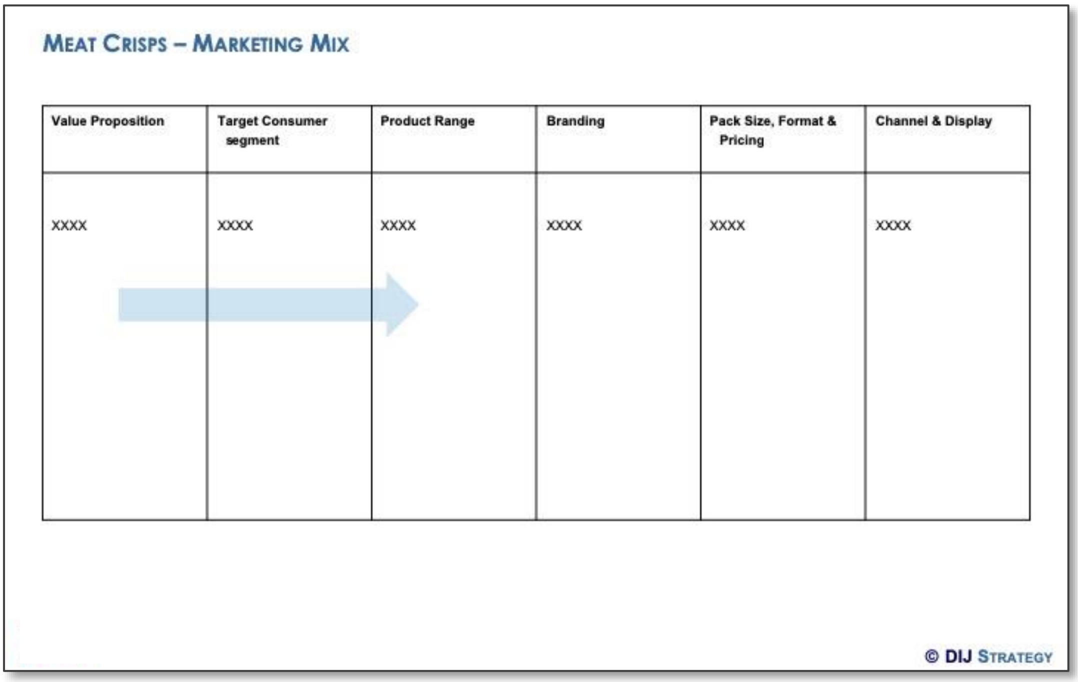


Figure 30: Determining the marketing mix of meat snacks.

3.4.4 Competitive Set – Pack Sizes and Price Points

Another critical decision was in developing the augmented offering. To assist in this discussion, the existing products that target consumers currently chose as part of their snacking behaviour, provided a point of comparison. As a premium offering, we weren't anywhere near able to provide the type of 'generous' quantity one gets with even premium chips or corn chips. From the research we felt being able to hit a certain price point was crucial, as was providing the required quantity to satisfy the target customers snacking needs.

This also led to considering alternative packaging formats. There was the shelf life and protecting the integrity of the product, to be considered, particularly, as any type of chip tends to break easily. But also conveying the desired premium associations and being a suitable format for the target customer to snack with, in the way they desired to snack.

Finally, determining the channel(s) which we sought to have Meat Snacks made available in. This was primarily informed by the research – where and how target consumers would typically source snack products from. This recognised, that in many instances, consumers choice of snacks is driven by what is available to them, when their need arises (when they feel like a snack).

A critical part of this discussion is how we sought for Meat Snacks to be displayed in store (Refer to Figure 31). Again, there was no easy answers with a balance needing to be made between:

- Display it with the chips, where its overall impression of value (quantity vs. price) was poor.
- Display it with the spicy and existing meat products, which undermined its credential as a 'Snack'.

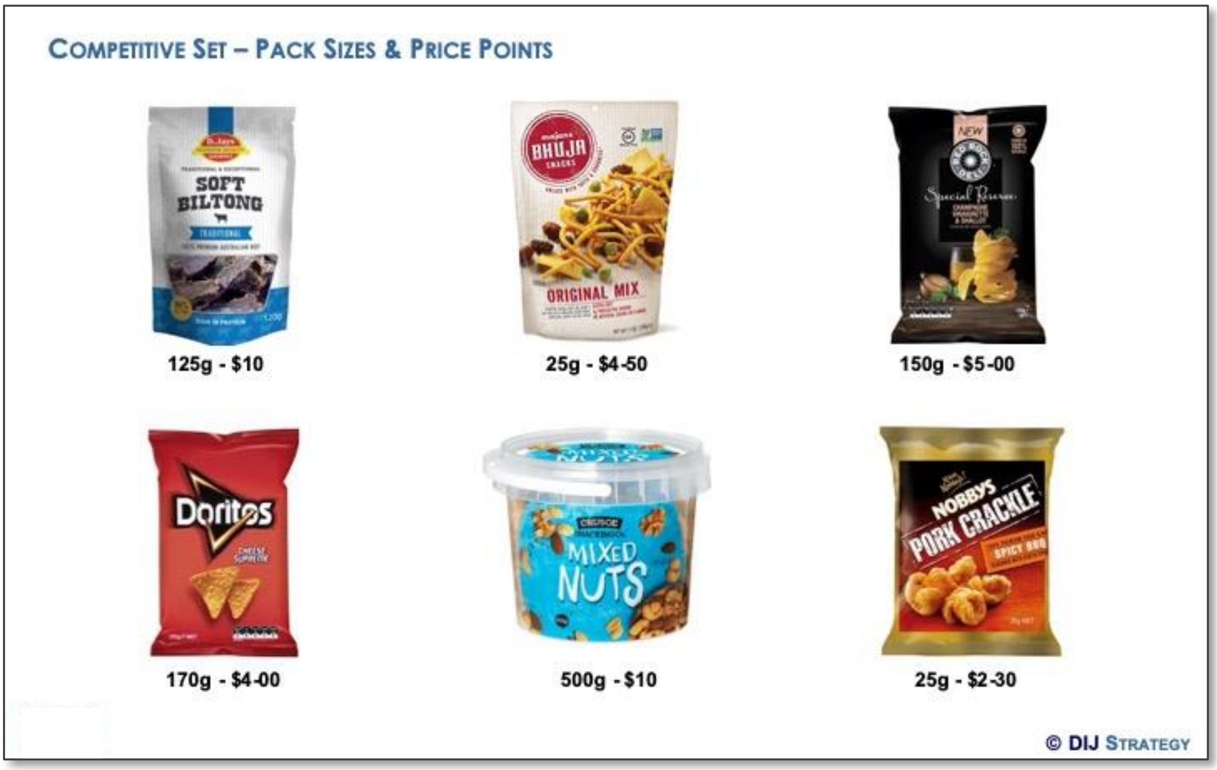


Figure 31: Identifying the customer set including pack sizes and price points.

3.4.5 The Consumer Universe

Our Consumer Universe definition removed some segments of the population, on the basis that:

- As a premium offering, it was only relevant to adults (thus not teenagers)
- Consumers had to 'like the taste of red meat' – although this only filtered out a very small proportion of consumers
- Snack at least three times per week – to ensure we are focusing on consumers who are at least moderate snackers

Our Secondary Customer Group was focused on a broader group of consumers, who were characterised in a number of ways, including being frequent snackers. For them, snacking was more than just an occasional treat, but fulfilled a greater range of needs.

Our Primary Target Customer was focused on a specific group of consumers, for whom the benefits we offer are a good fit to their Pain Points and Desired Gains. Their expectations of how a snack would perform, meant there was a significant gap in their repertoire in terms of what existing snacks offered them (Refer to Figure 32).

Note: Through this design led process, the focus was never to 'make a better jerky' – thus, we were never focused on existing jerky users.

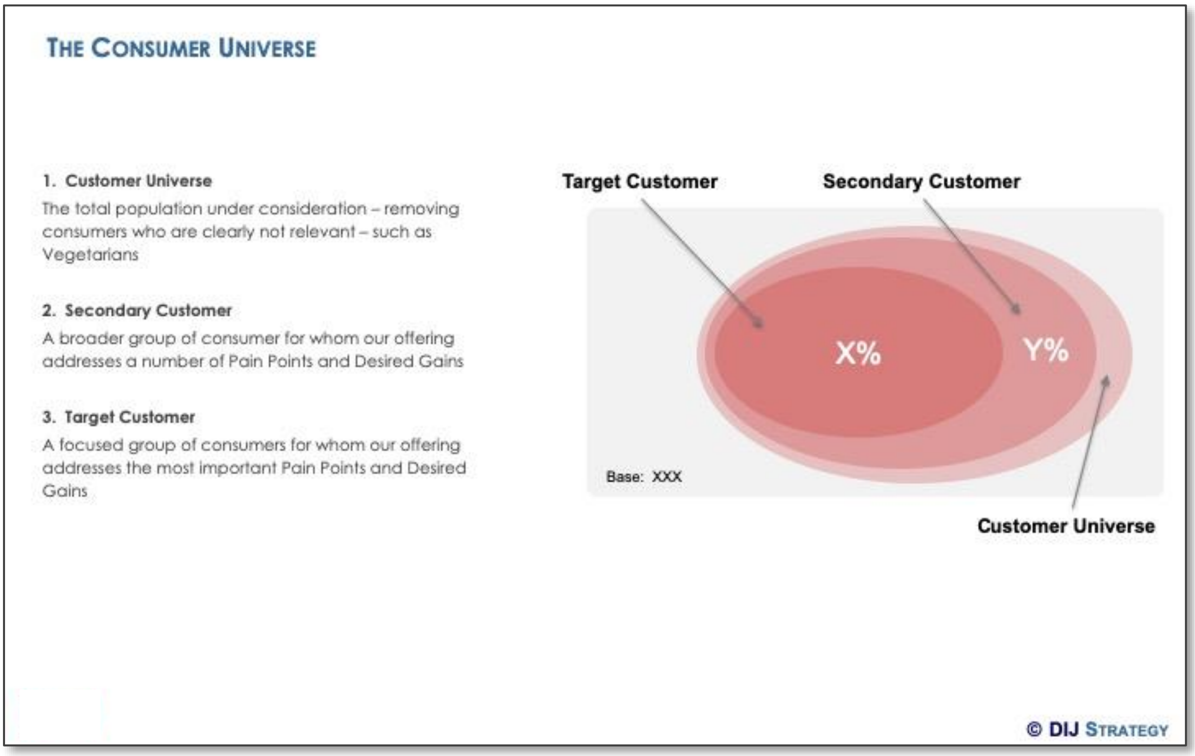


Figure 32: Determining the target and secondary customers .

3.4.6 Development of the Business Model - Desirability

Initially the focus is on developing **Desirability** - Is there a customer segment that value our proposition? Are we able to reach & engage them – channel, & can we build a relationship – acquire & retain? The Value Map is the basis for the development of the Value Proposition. Whereas the Customer Map is the basis for defining the Customer Segment. The Value Proposition and the Customer Segment Definition are the basis for then completing the other aspects of Desirability (Refer to Figure 33).

Channels – How a Value Proposition is communicated & delivered to a customer segment, through communications, distribution and sales channels ?

Customer Relationships – What type of relationship is built with the customer segment and explains how customers are acquired and retained ?

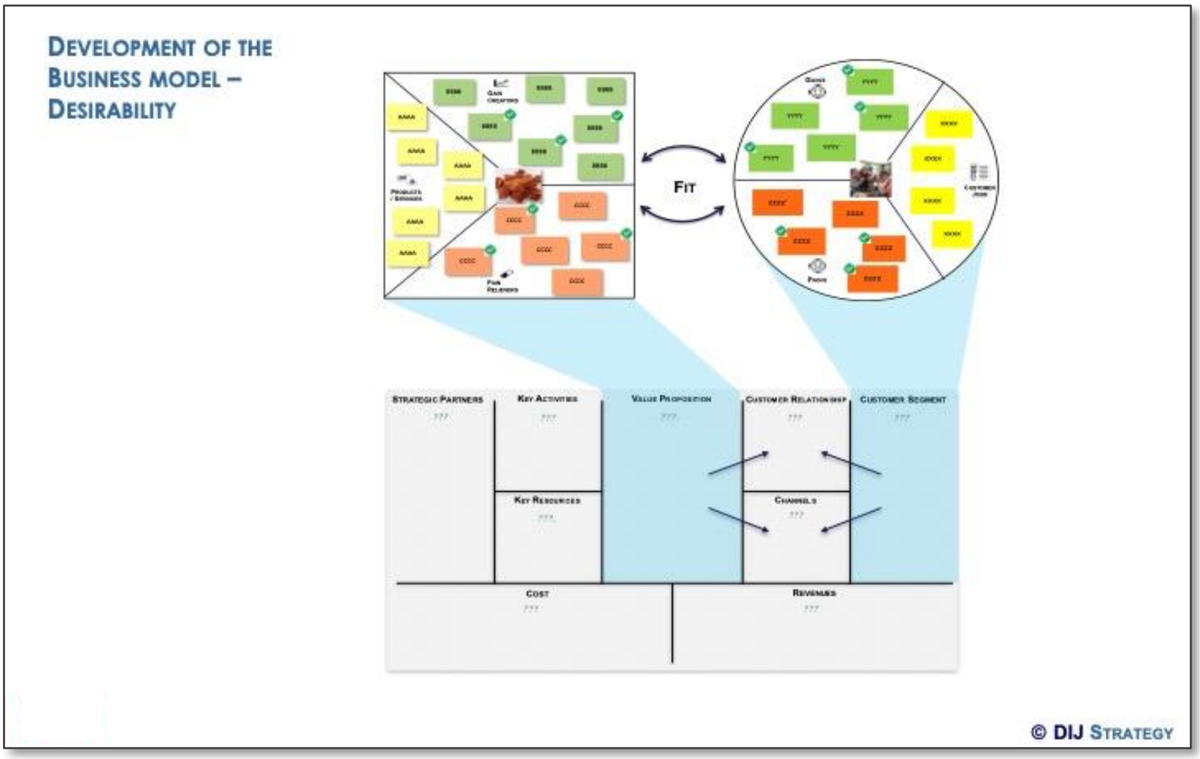


Figure 33: Review of the snacking market across various categories.

3.4.7 Further development of the Business Model – Feasibility & Viability

Having developed Desirability, our attention was turned to developing **Feasibility** – Do we have the required resources & possess the key capabilities (or can we forge external partnerships) required to deliver the value proposition?

Key Resources – What important assets are required to offer and deliver the described elements

Key Activities – The most important activities an organisation needs to perform well

Key Partnerships – Network of suppliers and partners that bring in external resources and activities

Finally, Viability needs to be considered - Are we able to achieve desired revenue levels with associated cost structures that make it a commercially viable business?

Revenue Streams – Results from a value proposition successfully offered to a customer segment, capturing value with a price that customers are prepared to pay

Cost Structure – Describes all costs incurred to operate the business model

A key part of this process was identifying the key challenges in making Meat Snacks a success in the market. At every level, there were key challenges, addressing them being critical to realising market success (Refer to Figure 34):

- Desirability – what are the most relevant channels to make Meat Snacks available, to fit our target customers snacking lives
- Feasibility – key resources required to support a snack offering, being sold through channels that are outside of JBS Australia's regular supply chain.
- Viability – address poor perceived value / you don't get a lot (quantity wise) for your money.

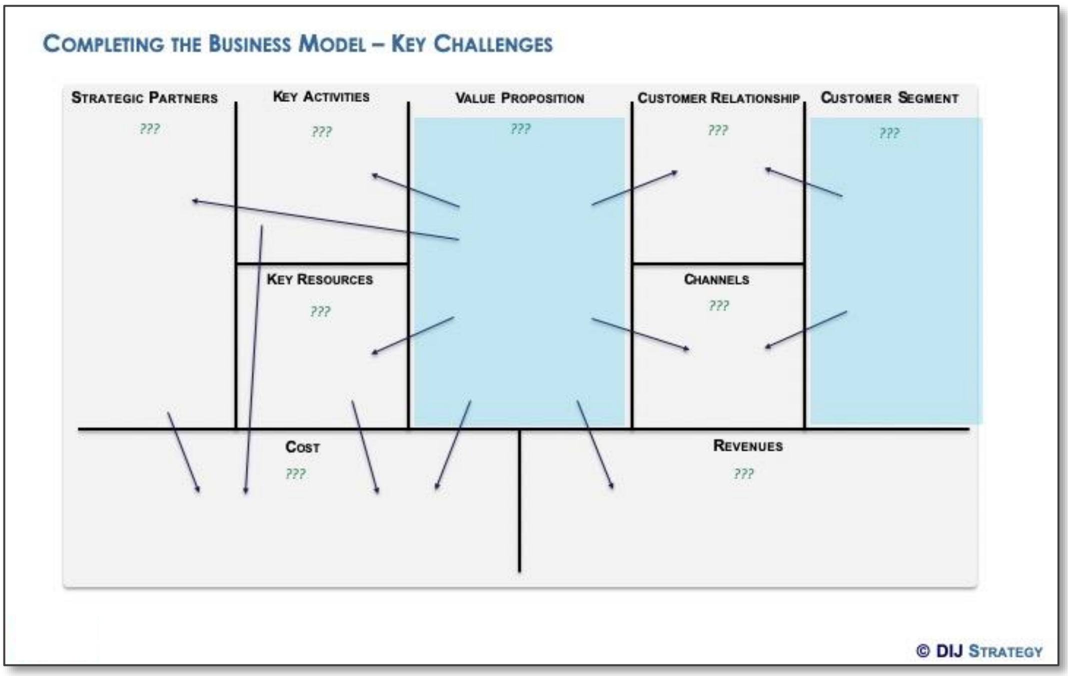


Figure 34: Key challenges for completing the business model for meat snacks.

3.4.8 De-Risking the Launch

Having developed the overall Business Model, this represents the business we want to build to support an established and successful market offering. However, to arrive at this point requires careful consideration.

Many new offerings fail when launched to market. Often, they are a good idea, but practical considerations have not been addressed, and the offering fails before it gets the opportunity to be successful. Typically, it takes a while to build desire amongst target consumers, with Consumer Awareness needing to first be built, as well as Availability. Often the Channel that the offering is distributed in lose faith, before the offering has had the opportunity to establish itself with the target customer.

Conversely, if a new product is not ultimately going to prove to be successful in the market, a company does not want to over invest, particularly undertaking Capital Expenditure, and be left with a host of expensive machines 'out the back'.

Thus, in an initial launch phase, the objective is two-fold: Firstly, to recognise that the build of Desirability amongst Target Customers happens over a period of time, and secondly to limit investment, to a manageable level of risk.

By interrogating each of the cells of the Business Model Canvas, risks were identified at each cell level. These were prioritized and the more significant ones made the focus for action (refer to Figure 35).

Some of the key areas that required modification to the Business Model, at the launch phase, were as follows:

- Key Resources: Like any R&D initiative, with economies of scale on new machinery and labour allocation, tipping points need to be considered as part of the risk mitigation and capacity modelling
- Channels: Whilst it is intended to make Meat Snacks available in all leading channels where the target customer sources snacks from, this is impractical in the early stages. We need to be cognizant of which channels consumers first experience new snacks and ensure we have a strong presence in these channels. We also have to recognise that we cannot fulfil the volume requirements of all channels, whilst consumer desirability is building. Therefore, a decision was required as to which channels would be focused on the following characteristics:
    - Strategic Partnerships: Confidential …
    - Key Activities: Confidential …
    - Customer Relationships: Confidential …

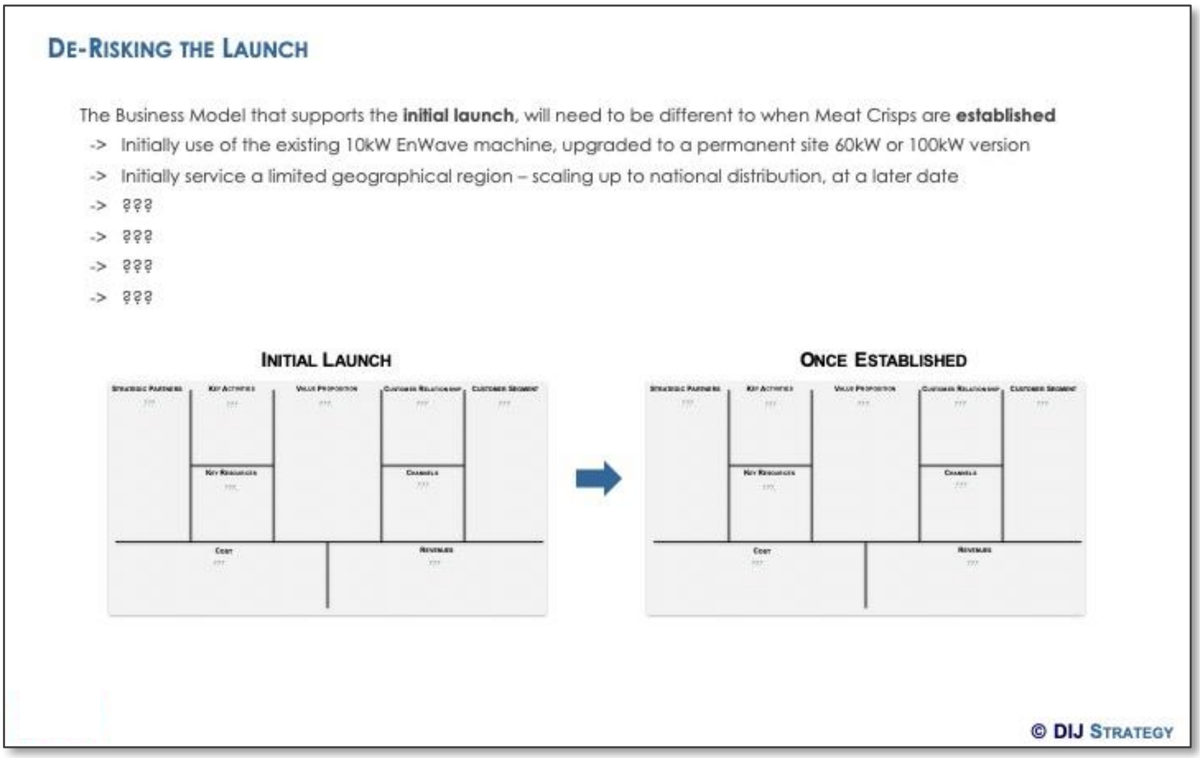


Figure 35: De-risking the launch of meat snacks.

4 Results

The results as they relate to the market success of Meat Snacks are confidential to JBS Australia. The main focus of 'the results', for the purposes of this report, are in relation to the project and the design led process that was followed.

The success of the project was down to a number of factors, which don't necessarily relate to whether a successful market entry is realised:

- Design Led 'Push Innovation' approach: Rather than developing the Meat Snacks offering internally and using taste panels to validate its appeal, Meat Snacks were tested with target customers, in real world snacking situations

- Iterative development: Many businesses only test their offering with consumers, as a final step before launching into the market. They believe they know better. Meat Snacks were tested with target customers iteratively, to focus in on delivering to their needs

- Workshops with cross-functional representation: Many businesses tend to treat innovation, as a game of 'pass the parcel' – doing their bit, before passing it on to the next organisational silo (i.e. product development hand it over to marketing, who then hand it over to sales, …). At each stage of the innovation journey, having a workshop where all functions are represented, ensures challenges are discussed as they arise, from every angle.

- A strategy to de-risk the launch: For all the development work involved, moving into a sector that the client has no prior experience in (Snacking) would require significant investment on many levels, to deliver the required business model to be successful. Identifying a path to realise this, without taking on as much risk, makes the decision to move forward, easier to make

5 Discussion

The development of red meat-based snack products has significant potential, though also associated risk, for existing players in the red meat space. Consumers are seeking 'better for you' snacks and are looking for tasty snacks made from real ingredients that better fit this ideal. In light of this, the following discussion points are relevant:

- The idea of Meat Snacks is highly appealing – a large proportion of Australian adults who have dismissed jerky, love the concept.
- Delivering on the Value Proposition is challenging. Realising the desired attributes and associated benefits requires overcoming significant barriers
- A red meat-based snack offering will always face significant challenges in terms of offering perceived value – even compared to premium potato snacks, the customer is never going to get a lot of meat snacks for the same money

In terms of the overall approach taken, the following discussion points are relevant:

- Adopting a Design Led methodology requires organisations, like JBS Australia, from working in a very different way. The majority of innovation projects undertaken at JBS Australia are 'extensions from the core' – such as new packaging formats of existing offerings. In this case, development can be undertaken sequentially, from department to department. But, in the case of Meat Snacks, where JBS Australia are entering a new sector, following an design led approach ensures a more united and thorough investigation of the opportunity
- Independent Quantitative Assessment – JBS Australia's management have dictated that an external assessment of 'likely market success' is required, to ensure they are backing a winner. Thus, IPSOS was utilised, as they have one of the most widely recognised approaches for forecasting market success. Their approach does not attempt to utilise a design led methodology, but benchmarks results against a base of previous studies, normalizing the results, to give a predicted market success. This independent assessment of Meat Snacks provided JBS Australia with greater confidence in informing their future development of Meat Snacks.

Addressing the projects stated objectives:

1. *'Where to play' market evaluation – identify needs, attractive segments, size and barriers to entry for concept meat snack products that EnWave's system could deliver.*

The second stage of the project focused on identifying 'where to play'. Recruiting a breadth of potential target customers and understanding their snacking behaviours, pain points and unrealized gains, enabled a comprehensive picture of their potential fit to Meat Snacks to be assessed. They were also provided with Meat Snacks to consume as part of their normal snacking lives. Thus, there was a great deal of confidence that we had been able to identify 'where to play' – the most promising target customer segment

2. *Value Proposition development – detailed business case for meat snacks and the EnWave system.*

The third stage of the project focused on developing the Value Proposition. Providing a robust sample of target customers with a more fully developed version of Meat Snacks, to consume as part of their regular snacking lives. Their experiences were evaluated, in real time, to accurately assess the fit of Meat Snacks to their snacking pain points and unrealized gains. Thus, an accurate assessment of optimizing the Value Proposition was able to be determined

3. *Development of a Commercialization plan to deliver on the prescribed product-process-market fit.*

A fourth stage workshop was undertaken, which brought together MLA's expertise and each functional area within JBS Australia (R&D, Operations, Marketing, Sales). Armed with a clear understanding of the power of the Value Proposition and a clear picture of the Target Customer, the group worked through identifying the critical challenges in building a Business Model to support the successful establishment of Meat Snacks in the market. This picture was further refined, as a launch phase business model was developed, that focused on de-risking the launch, to allow a softer entry into the market and did not commit JBS Australia to significant upfront investment, until its market success had been proven.

6 Feasibility and business case

JBS Australia continue to evaluate new products for the Australian snack food market and this project evaluating the EnWave's REV™ dehydration technology provided some key insights. The Meat Snacks product concept (See Figure 36) was tested through a range of processing, sensory and consumer trials, and a small-scale product launch in being considered.

Figure 36: Meat Snacks product concept.

This report presents a review of the product concept considering the work completed so far, planned launch, and snack market opportunities and trends. The analysis suggests that the Meat Snacks product concept does fit with the growing Australian market preference for healthier snacks, that are portable, minimally processed and Australian made. Furthermore, on the back of strong growth in the US and UK meat snack markets, there is expected growth in the Australian meat snacks market in which Meat Snacks would be a new and innovative product offering. When compared with recent new product releases of 'snacks' and protein balls, Meat Snacks has the advantage of greater protein content and lower fat content. The indicative price point of $5.99 per pack was partially validated. This infers that a minimum value multiplier of 10 on the input raw beef mince is achievable (i.e. greater than $100 per kg final product, which aligns well to other snacks such as nuts). Planned scale-up and sales forecast are commercial in confidence with the commercial partner.

An appraisal of the business case for JBS Australia's Meat Snacks product concept demonstrates the meat snacks concept aligns with key snack market trends and opportunities. Compared with recent new product releases of 'snacks' and 'protein balls', Meat Snacks has the advantage of greater protein content and lower fat content. Preliminary results show that Meat Snacks could realise a net benefit for the planned small-scale launch, when marketing spend is excluded provided raw input price was well managed. However, more work is required to explore either cheaper meat costs or to increase sell price based on entry level production volumes and contribution to overheads in this case.

7 Conclusions/recommendations

The development of red meat-based snack products has significant potential, though also associated risk, for existing players in the red meat space. Consumers are seeking 'better for you' snacks and are looking for tasty snacks made from real ingredients that better fit this ideal. In light of this, the following discussion points are relevant:

- The idea of Meat Snacks is highly appealing – a large proportion of Australian adults who have dismissed jerky, love the concept.
- Delivering on the Value Proposition is challenging. Realising the desired attributes and associated benefits requires overcoming significant barriers
- A red meat-based snack offering will always face significant challenges in terms of offering perceived value – even compared to premium potato snacks, the customer is never going to get a lot of meat snacks for the same money

In terms of the overall approach taken, the following discussion points are relevant:

- Adopting a Design Led methodology requires organisations, like JBS Australia, from working in a very different way. The majority of innovation projects undertaken at JBS Australia are 'extensions from the core' – such as new packaging formats of existing offerings. In this case, development can be undertaken sequentially, from department to department. But, in the case of Meat Snacks, where JBS Australia are entering a new sector, following an design led approach ensures a more united and thorough investigation of the opportunity

- Independent Quantitative Assessment – JBS Australia's management have dictated that an external assessment of 'likely market success' is required, to ensure they are backing a winner. Thus, IPSOS was utilised, as they have one of the most widely recognised approaches for forecasting market success. Their approach does not attempt to utilise a design led methodology, but benchmarks results against a base of previous studies, normalizing the results, to give a predicted market success. This independent assessment of Meat Snacks provided JBS Australia with greater confidence in informing their future development of Meat Snacks.

Addressing the projects stated objectives:

1. '*Where to play' market evaluation – identify needs, attractive segments, size and barriers to entry for concept meat snack products that EnWave's system could deliver.*

The second stage of the project focused on identifying 'where to play'. Recruiting a breadth of potential target customers and understanding their snacking behaviours, pain points and unrealized gains, enabled a comprehensive picture of their potential fit to Meat Snacks to be assessed. They were also provided with Meat Snacks to consume as part of their normal snacking lives. Thus, there was a great deal of confidence that we had been able to identify 'where to play' – the most promising target customer segment.

2. *Value Proposition development – detailed business case for meat snacks and the EnWave system.*

The third stage of the project focused on developing the Value Proposition. Providing a robust sample of target customers with a more fully developed version of Meat Snacks, to consume as part of their regular snacking lives. Their experiences were evaluated, in real time, to accurately assess the fit of

Meat Snacks to their snacking pain points and unrealized gains. Thus, an accurate assessment of optimizing the Value Proposition was able to be determined

3. *Development of a Commercialization plan to deliver on the prescribed product-process-market fit.*

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8 Key messages

The following are the key messages that is recommended to convey to Red Meat Producers or Processors who are considering embarking on a similar type of project. In particular, where they have a novel processing technology that can deliver unique attribute-based benefits and / or are considering entering a new sector with a profoundly new offering.

- Red Meat has significant potential beyond a 'centre of plate' meal solution (dinner), as a snack offering.

- To realise the opportunity of a new processing technology that delivers unique attribute-based benefits, it is advised to follow a 'push-based' design led process. The key 'where to play / how to win' framework however should always remain … Should you make it because it's clear a sales opportunity is desired, not can you only (technically) make it.
- It is hard to nail the offering up front – one needs to be prepared to undertake an iterative approach, with prototype offerings, in developing the product.

9 Appendix

9.1 EnWave Dehydration Technology

9.1.1 Meat snacks opportunity

Despite emerging trends having identified new market opportunities in red meat snacks, there are limited beef or lamb snacks if any available in the marketplace. Snacks are typically conveniently smaller shaped sizes and ambient shelf-stable with desirable moisture controlled texture. There are limited efficient “dehydration” options available for red meat due to its high water content and generally long dehydration batch times. Conventional drying at typically high temperatures and extended periods heavily impacts on the quality and nutrition of the product, particularly if the desirable attribute is snackness.

9.1.2 Background: EnWave Technology

Various drying platforms are used in the food industry today – from hot air, spray dryers and freeze drying to heat exchangers and extruders and microwaves to elementary air / dry ageing models - all with various yield, cost and quality features. REV™ dehydration technology uses a combination of pressure and microwave energy to deliver a high-speed, low-temperature, efficient drying process (See Figures 35 & 36). REV™ technology homogeneously removes water (and therefore can control water activity/moisture levels) from organic materials, providing superior flavour and texture while preserving the nutritive value of food products and is more economical and much faster and with a smaller operational footprint than freeze drying and produces superior products over air and spray drying. REV™ technology alters the atmospheric pressure in the machinery by creating a precise controlled vacuum thereby reducing the temperature at which water can be homogeneously and gently removed from organic material being dried. It is envisaged that by reducing drying temperatures and the levels of oxidation will increase yield and deliver different characteristics for range of meat snacks. The technology is highly versatile and allows dehydration to be applied to a wide range of market opportunities. While yet to be used and commercially proven in Australian red meat processing, international red meat processing options exist in dried sausages, meat snacks, ingredients and collagen applications. Hormel Foods Corporation, a multinational manufacturer and marketer of consumer-branded food and meat products, is currently using rapid drying technology to produce meat snack products, the first being SPAM Snacks in the USA.

9.1.3 Project & Purpose

JBS has identified major deficiencies in current processing options and capabilities, specifically for efficient rapid drying of meats to produce the required texture and functionality that is desired for premium products. There are limited commercial rapid drying processing options available for Australian red meat processing. New innovative processes are required in order to produce premium high-quality meat snacks where high nutritive value, concentrated natural flavour, bright colours, attractive texture, and in some cases, novel physical attributes such as ‘crunchy’ are valued. Hence, JBS is proposing to evaluate a new rapid drying at low temperature technology (i.e. Radiant Energy Vacuum or REV™) that is available for the first time in Australian red meat processing through an exclusive licence agreement with EnWave Corporation.

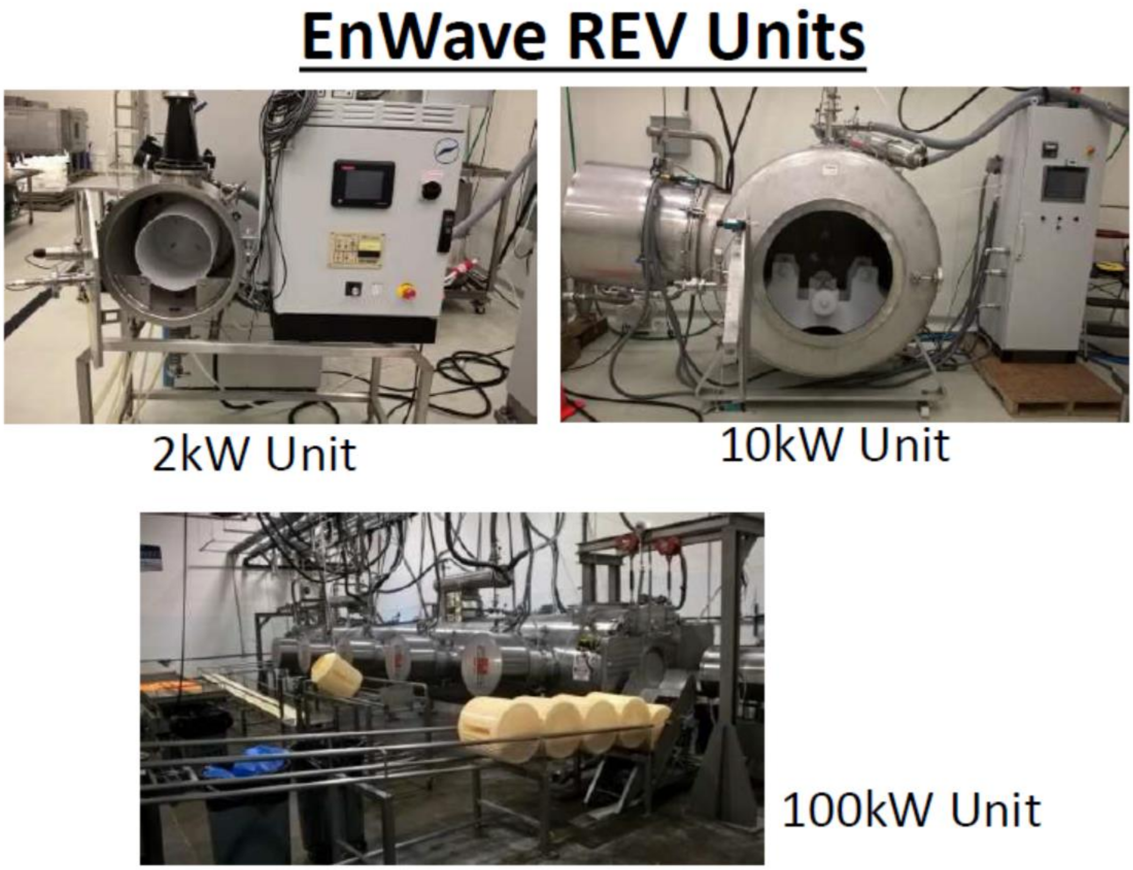


Figure 35: EnWave dehydration pilot scale equipment.

Figure 36: EnWave dehydration equipment used to develop Moon Cheese (Washington USA).

9.2 Meat snack products in the marketplace from the USA & Canada discovery exercise

9.2.1 Jerky

Price/unit: US$5.99 - $8.99



Price/unit: US$3.99

Price/unit: US$1.89

9.2.2 Meat bars / sticks / snacks

Price/unit: US$3.99 - $4.99

Price/unit: US$2.99

Price/unit: US$2.99

Price/unit: US$3.99 - $4.99

Price/unit: US$3.99

9.2.3 Meat platters

Price/unit: US$3.99 - $4.99

9.2.4 Snack kit combos

TOP 5 - MEAT/VALUE ADDED MEAT PRODUCTS ON THE CAD & USA MARKET

5) LUNCH/SNACK KIT COMBINATIONS

- Positioned for Kids lunch or Adult Snack

Price/unit: US$3.99 - 4.99

Price/unit: US$3.99


simply
Lunch
ham
& cheese
jambon
et fromage

Lunch
mate
HotDogs

Lunch
mate
MiniBurgers

Lunch
mate
Stackers
Ham
Jambon





simply
Lunch
Lunch
mate
Stackers
Nachos
HotDogs
MiniBurgers

NEW
Lunchables
SNACK COMBINATIONS
UPLOADED
Woohoo! Great Deal!
$1.09
Pizza Sauce
Mini Breadsticks
Pepperoni Made with Pork and Beef
Shredded Cheese Blend
Spork
NET WT 3.4 OZ (96g)

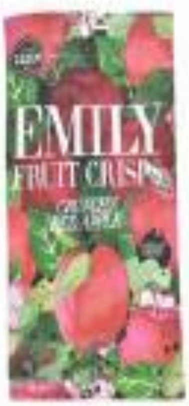
PEPPERONI

Nutrition Facts
COMBINE,
HEAT+EAT
COMBINE
HEAT
EAT

Medium Cheddar Cheese
AND PEPPERONI BITES
$6.85


9.3 Examples of Snack category products

Table 1: Examples of new product releases in the 'snacks' category in the last 12 months (excerpt from Table 14, Source: Mintel GNPD).

Product	Major ingredient	Pack price - $	Place of manufacture	% protein	% fat	# ingredients	Process
	Purple sweet potato	4.99	Indonesia	2.5	23	12 (other than sweet potato)	Not defined on pack - cooked in oil
	Green pea (62%)	2.25	Thailand	14.6	28.1	11 (other than pea)	Baked
	Potato	4.79	Malaysia	6	25	15 (other than potato)	Not defined on pack - cooked in oil
	Apple (92%)	4	China	1.3	8	1 (other than apple)	Hand cooked in oil

	Beef (94%)	8.69	Australia	59	<5	7 (other than beef)	cured and air dried
	Rice	3.5	Australia	5	27	16 (other than rice)	Not defined on pack - cooked in oil
	Beef (93%)	6.99	Australia	39	14	10 (other than beef)	cured and air dried
	Potato	3.5	Australia	8	24	13 (other than potato)	Not defined on pack - cooked in oil

Table 2: Examples of ‘Snacks’ products released in Australian retail snack market in last 12 months (Source: Mintel GNPD).

Product	Brand	Unit Pack Size (ml/g)	Price - $/pack	Pack image	Major ingredient
Lightly Salted Yellow Sweet Potato Crisps	Ajitas Vege	100	4.99		Sweet Potato
Baked Pea Crisps with Salt & Vinegar Flavour	Calbee Harvest Snaps	85	2.20		Peas
Sea Salt Chips	The Good Crisp Company	160	4.79		Potato
Smokey Barbecue Chips	The Good Crisp Company	160	4.79		Potato
Sour Cream and Onion Chips	The Good Crisp Company	160	4.79		Potato
Brazilian BBQ Flavoured Savoury Snack	Pringles	134	2		Potato
Purple Sweet Potato Rosemary & Garlic Deli Crisps	Ajitas Vege	100	4.99		Purple Potato
Lemon Sesame Flavoured Hummus Crisps	Vege Deli	100	4.99		Potato Starch
Texas BBQ Baked Pea Crisps	Calbee Harvest Snaps	93	3		Peas
Crunchy Fig Banana Crisps	Emily Fruit Crisps	35	4		Banana
Crunchy Pineapple Crisps	Emily Fruit Crisps	30	4		Pineapple

Crunchy Red Apple Crisps	Emily Fruit Crisps	20	4		Apple
[illegible] Traditional Cured & Air Dried Beef Bite	The Biltong Man	30	9.99		Beef
Slow-Cooked Pork Belly & Mustard Cider Jus Ultra Deluxe Potato Crisps	Red Rock Deli Special Reserve	150	4.49		Potato
Honey Soy Flavour Rice Crisps	Sakata Rice Crisps	75	3.5		Rice
Sweet Chilli & Sour Cream Flavour Rice Crisps	Sakata Rice Crisps	75	3.5		Rice
Wasabi Baked Pea Crisps	Calbee Harvest Snaps	55	3		Peas
Chicken Baked Pea Crisps	Calbee Harvest Snaps	55	3		Peas
Worcestershire Sauce & Sundried Tomato Hand Cooked Crisps	Tyrrells	165	4.49		Potato
Lightly Seasoned Vegetable Crisps	Blackstone Gourmet Snack Co	140	4.99		Vegetables
Crunchy & Crispy Veggie Chips	[illegible] Foods	100	5		Vegetables

Meat Pie Flavoured Potato Crisps	Pringles	134	4		Potato
Traditional Sausage Cured & Air Dried Beef Droewors	The Biltong Man	100	6.66		Beef
Original Mixed Vegetables	OJ&A Veggie Crisps	90	5.6		Vegetables
Deli Style Sweet Potato Crisps Naturally Seasoned with Sweet Spanish Paprika, Crushed Sea Salt, Thyme & Black Pepper	Red Rock Deli	135	4.1		Sweet Potato
Salt & Vinegar Flavour Savoury Snack	Pringles	214	2.9		Potato
Original Salted Baked Pea Crisps	Calbee Harvest Snaps	85	3.5		Peas
Chilli Flavoured Baked Pea Crisps	Calbee Harvest Snaps	85	3.5		Peas
Slow Cooked Lamb with Banana Shallot Ultra Deluxe Potato Crisps	Red Rock Deli Special Reserve	150	3.5		Potato