

Opportunities for Value Added Vegetable Production

A report for:



By Michael Vorrasi
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Executive Summary

This report will detail investigations into opportunities for value-added vegetables to boost grower returns, consumption of fresh produce and markets for second grade produce. Research for this report was conducted in Singapore, Hong Kong, Philippines, Ireland, England, China, USA, Canada, and Dubai.

Customers are seeking value added (VA) vegetable options with 67% of customers purchasing VA products. Producers must be customer-focused rather than supply-chain-focused to take advantage of these opportunities. Successful implementation of VA produce will largely depend on the producer's ability to change according to the market and customer preferences.

Continued urbanisation is presenting opportunities for further VA product as customers are increasingly time poor and seek convenience through a greater range of products. This trend is likely to continue.

Vegetable producers can position themselves to compete with other non-vegetable categories. This is particularly important with the movement towards healthy living.

It is an exciting time for the vegetable industry, given significant growth opportunities in the VA category.

Vegetable producers can make greater use of second grade produce, deliver greater cost savings and add value to their current offerings. These changes combined with technological advances will allow producers to gain competitive advantages and open new markets.

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Foreword

With vegetable consumption remaining stagnant and only 6% of the population consuming vegetables daily, I intended to find out; why this is so? What does the future hold?

I have a great interest in this question as we have known for over a millennium that vegetables have consistently shown positive health benefits, created elevated energy levels, and displayed the ability to assist the body's immune system in fighting diseases and sickness.

Customers in the past have shown that they are not against consuming vegetables but simply lack either the knowledge to cook them or display time restraints when wanting to cook and prepare them which ultimately inhibits potential sales and income for producers.

Prior to completing a Bachelor of Business (Marketing) Degree in 2005, I had little interest in being involved in the farm's operating business. This was because I failed to see the opportunities within the industry and the potential it has. During my degree, I began to see some potential to transform the business and turn it into a viable long-term operation. Coming into the vegetable industry was one of my great decisions. It's full of great people, with great values and it is one of only a few industries that provides a product that is healthy and beneficial to the customer.

The Vorrasi family business – DSA Fresh – is now the nation's largest leafy vegetable hydroponic producer. As a business, DSA Fresh believes that VA production can assist in increasing vegetable consumption. In 2014, DSA Fresh set up the brand 'Fresh Made Easy' to focus on direct customer engagement and develop products based on customer needs. This strategic change was implemented as growing a product in hope of a sale was not a viable solution for future growth. Fresh Made Easy develops products based on customer trends and needs. The goal of the business is to increase vegetable consumption through convenient offerings. DSA Fresh now produces over 90 different stock keeping units (SKU's).



Figure 1: Michael Vorrasi at DSA Fresh hydroponics

Throughout my Nuffield Scholarship I travelled to investigate these questions and look at emerging trends from other markets. The scholarship took me to nine countries including Singapore, Hong Kong, Philippines, Ireland, England, China, USA, Canada, and Dubai over a three-month period.

Acknowledgments

Most notably, I would like to thank Hort Innovation and Nuffield Australia for the investment and trust they have placed in the growth of Australian vegetable producers. Development of young leaders within the industry is vital for the ongoing success of the industry. I believe this scholarship has equipped not only myself but several other growers to new levels of leadership. The return on investment (ROI) will be one which will continue to produce throughout the years.

The numerous people I met throughout my travels, and the hospitality they provided by opening their homes and businesses was greatly appreciated.

The DSA Fresh team continued to lead the business in the right direction in my absence and I am very grateful.

My father, who demonstrated on a daily basis what it is to be passionate about the industry. He is a great inspiration as to what it is to be persistent.

Finally, I'm extremely thankful for my wife and kids. My wife, who supported me throughout the whole Nuffield journey. Thank you for always supporting and believing in me, without you this opportunity would not be possible.

Abbreviations

FHIS – Food and Health Innovation Service

ROI – Return on Investment

SKU – Stock keeping Unit

UK – United Kingdom

USA – United States of America

VA – Value Add

Objectives

To seek out the benefits of value-added vegetables which in turn boost higher returns, consumer consumption of fresh produce and encouraging markets to take on manipulated and raw second-grade produce.

Specifically, the main objectives were identified as follows:

- Understand the reasons for value added production, and the economic benefits.
- Investigate opportunities for Australian growers to use second-grade produce for value added vegetable production.
- Form a view on the effects that value-add has on customer buying behaviour.
- Identify value added vegetable trends and believed opportunities for Australian growers.
- Identify means and methods for producers to efficiently maintain and boost their profits regardless of the type and quality of their product.

Chapter 1: Introduction

Throughout this Nuffield Scholarship, the author was looking to gain greater clarity as to what Australian vegetable growers can do to drive higher consumption resulting in greater returns and growth for their businesses. In order to achieve this objective, trends were investigated and analysed as they emerged from other countries, and how they will help to address these issues.

Value added vegetable production is defined in several ways. This report is taking a holistic approach and investigating VA production, starting at the point the product is harvested and finishing when it is placed on the shelf, focusing on where Australian growers can add value throughout the supply chain to the point of consumption.

The Oxford Living Dictionary (Dec. 2017) defines value added as *“the amount by which the value of an article is increased at each stage of its production, exclusive of initial costs”*.

Consequently, an increase in consumption and growth caused by VA within any category of production will ultimately increase the return to growers and producers.

The main focus of this study is the ability to increase return to growers through value added production. Increased return can be delivered through a number of ways including:

- Value added provides growers greater opportunities to sell second grade produce (depending on commodity).
- Vertical integration has given growers greater control of the supply chain by increasing the ability to capture greater value.
- It has provided the ability to find niche opportunities within the market place.

In order to identify outcomes to this research, this report focuses on the following:

- Consumers.
- Products.
- Food wastage.
- 4 P's of marketing – product, placement, promotion and price.

Financial return modelling on VA products has not been included in this report due to the diverse range of vegetable products explored. Laura Scott from Produce Marketing Association states that *“VA production doesn’t only provide vegetable growers with the ability to increase returns from adding value but also grow the category as required by focusing on customers’ needs and adjusting to reflect those changes”*.

The majority of all VA manufacturing companies state that greater returns are the main reason for going down this path of diversity.

Chapter 2: The Consumer

In order for growers to increase their returns they must focus on customer needs. Ultimately, customers are the cornerstone of all future purchasing habits. Therefore, customers must be in the centre of all current, and future developments in order to increase consumption. This chapter will investigate the importance of produce in purchasing behaviour and how to impact customers' purchasing habits.

2.1 Power of Produce

Produce is considered one of the vital selling points by retailers. Marie, A. (2016) states that one quarter of shoppers switch outlets when purchasing fresh produce, versus the bulk of groceries. Australian retailers have continued to place a strong emphasis on rearranging store layouts and produce displays to ensure consumers continue to enter their stores. Getting this offering right with limited shelf space and a high demand for a visually appealing product is a key challenge for the retailer.

As the millennial age group become more affluent consumers they are creating new avenues in markets otherwise dominated by more conventional selling points. Digital and in-store research is allowing retailers to reach the millennials that were otherwise, unreachable a decade ago. The younger generation is also purchasing through alternative channels, including farmers markets, specialty stores and online purchasing.

On a global scale, consumers rank produce as the most important factor contributing to decisions on where they choose to do their shopping. The Neilson Perishables Group, on behalf of Produce Marketing Association, prepared a report outlining just how important fresh produce is to purchasing habits globally. The report, (Harrison, 2015) summarised fresh produce trends regarding executive and mid-level fresh produce retailers and the supply chain they use to reach consumers. In order to do so, customer behaviour with regards to preference, frequency and average household spend were all analysed. They found that not only is fresh produce one of the most frequently purchased perishable products, but that it is purchased at least three times weekly. Also, its popularity stems from the importance

consumers place on their health, which ranked second only to the economy in terms of universal concerns.

Other notable findings from the 2015 report included, but were not limited to:

- Fresh fruit was the second most consumed snack globally; 62% of the respondents consumed fresh fruit in the month before the survey.
- Closely behind fresh fruit as the third most consumed snack was vegetables; 52% of respondents had consumed vegetables in the month before the survey.

Harrison, 2015 further adds that the increased consumption of fresh produce has been contributed to by many other factors including:

- The desire to lose weight. More than half of all global households state that they have taken steps to incorporate fresh produce into their eating habits to lose weight.
- No additives or modifications in vegetables. This has been the highest contributing factor to global consumers purchasing fresh produce.

Harrison's (2015) analysis of global sales (frequency and spending amount) of fresh produce revealed significant differences between countries. Breaking fresh produce into smaller categories such as fruits and vegetables revealed further differences. For example:

- In the United Kingdom (UK), consumers spent 60% more on fruit than they did on fresh vegetables over the data gathering period.
- New Zealand consumers had the reverse trend, spending 20% more on vegetables than fruit over the data gathering period.
- Hong Kong consumers purchase fresh vegetables at 1.7 times the global average, higher than any other country in which data was collected.
- Consumers in the USA displayed purchasing habits for both fruit and vegetables which were lower than most other observed countries, highlighting a significant opportunity for growth in the sector.

2.2 Consumer buying habits

Roerink, A. and Stein, R. (2016) outlined their key findings of consumer buying habits. They found that 13% of people in the USA say they eat their recommended daily intake of fruit and vegetables, with only 6% doing so in Australia. 39% of Americans claim they will try to consume more fruits and vegetables following being questioned. Such low numbers represent areas of potential growth, which once addressed would be expected to change consumer buying habits. These potentially include:

- The allure of health and wellbeing offerings, i.e. the Halo Effect Marketing – a consumer bias toward products due to a good experience with their other products.
- New consumption occasions such as juicing, snacking or food replacement.
- Presenting better purchasing convenience, whether that be through delivery to the customer's door, the retailer situating themselves in a position conducive to driving to, or the ease of online shopping particularly for millennials as discussed earlier.

Fresh produce is in demand as shoppers recognise their current consumption is falling short. Fresh produce is a mature category and driving growth requires innovation strategy aimed at moving shoppers into new usage occasions as new categories add to higher consumption frequencies. Fresh produce is in high demand with 39% of people trying to eat more fruits and vegetables. Value adding is one contributor continually creating new usage occasions that increases consumption frequencies.

The VA proposition – the option to purchase either a value added or base product – drives the purchasing decision more than the actual price of the product. While price and promotions influence the purchase during the pre-trip planning, ultimately, shoppers seek the ideal combination of the best produce for the best price by emphasising appearance over cost.

Shoppers are susceptible to impulse purchases when exposed to point to eye displays, recipe or serving ideas, nutrition callouts and sampling, all of which can be used in a manner that value-adds a product. And clearly the use of VA is a viable strategy given that value-added produce has been consistently growing, with 67% of shoppers buying VA produce as opposed to its base product counterpart.

2.3 Customer Engagement

Malhotra, R. (2016) discuss the importance of the emerging demographic opportunities. A key driver to VA growth is the urbanising of consumers. In 2015, 1.86 billion people sat within the demographic of an urban customer with this expected to increase to 2.3 billion by 2020. This grouping is typically considered time poor with convenience being the main driving factor with regards to where they purchase their fresh produce.

Consumer engagement is therefore a pivotal standpoint that must be addressed in order to continually drive up the consumption of fresh produce. The Nuffield Global Focus Program six-week tour highlighted a clear trend that is emerging amongst different agriculture businesses, those able to engage and maintain the attention of consumers through advertising their product by telling a story, recorded significant success compared to those who did not.

Taylor's Farms

A good example of significant customer engagement is Taylor's Farms. Based out of Salinas Valley, California, they have developed a significant social media base that allows them to advertise their product to a target consumer, explained Michael Tejada (personal communication, 2016). Taylor Farms are one of the USA's largest vegetable producers, employing over 10,000 people and with a strong focus on convenient and healthy produce. This also provides an opening to tell a story of both their background and the nature with which their product is grown. Boasting a full-time social media team, they are able to participate on several social media platforms. They provide classy and sharp advertisements of *'Our Story'*, *'The Products'* and *'Taylor Recipes'* that engage consumers, particularly the urban millennials who are keen to know where their produce is coming from and what is put into it. On top of this, they also engage in what may be termed a *'Community Outreach Program'*. This takes the form of recipes to better use the produce they grow and the consumer buys on their website. In addition to this they involve themselves in numerous *'giving back'* organisations such as the Salvation Army's *'Operation Give Back'*, and the US Marine Corps' *'Toys for Tots'* Campaign. This is done to place a good light on the company in

the local, national and global community, provide happiness for their employees and encourage purchasing from a company seen to have good moral foundations regardless of their products.

G's Produce

As Forber, G. (2016) explains, G's Produce, from in Lincolnshire, England, attempts to engage their consumers through a website is a standout. It contains profiles of their growers, continually updated pages detailing news and community involvement the company undertakes and an insight into the timeline of a product from its sourcing from growers to being purchased. G's are an international marketing lead farming business that produces over 800 SKU's which focus on customer insight data and innovation. Like Taylor's Farms, they provide a storyline of the company itself, beginning with their commencement of farming in the 1950's and then advancing through time; highlighting significant achievements made by the company up until the present day. In doing so they are using the Halo Marketing Effect to engage customers, which will presumably encourage them to buy G's Produce.



Figure 2: L-R: Graham Forber from G's Produce and Michael Vorrasi at a Tesco retail visit in 2016

Chapter 3: Products

This chapter will investigate the current international landscape and the emerging trends of VA vegetable production. This will be achieved by looking at the following:

- Product development
- Product trends
- Niche market opportunities
- Research and Development

3.1 Product development – customers at the centre

New products are goods and services that differ in their characteristics or intended uses from products previously produced. In terms of VA vegetable production, growers and producers are looking at using current products and creating greater value for the consumer as well as creating new products along the way.

The continual growth in the VA category has been focused on taking a customer focus rather than farm production focus. Gaining customer insights in terms of behaviour and trends has led to the development of new and innovative products.

Taylor, B. (2016) stated that *'growers must move away from the mentality of growing products in the hope of a sale and rather focus on becoming customer-focused. By trying to fulfil their wants and needs through innovation and customer research, they are more likely to sell their products'*.

Gluth, O. (2016) discussed the process of future innovation as open innovation. Open innovation is a process whereby a company uses external ideas as well as internal ones, and external to sell a product in order to continually advance the product at the consumer's behest. In short, the process opens collaboration with end customers.

To do so, they must first engage with customers with an open mind for feedback as to the product they are offering. From there, they must take on what has been provided and manipulate their product to best meet an array of consumer needs.

Google trends and analytics have also presented opportunities for open innovation. Google can be used to search interest levels in a product offering via tracking customers search patterns. This information is used to validate the relevance and potential of new product development. It also assists in presentations to buyer, showing development of new trends and interests.

3.2 New products and trends

As populations increase and consumers perceive themselves as time poor and in need of the most convenient item possible, there is a continual drive toward creating new products and implementing them into an already diverse product line that fits the specific needs of each individual customer. As a consequence, VA has become a vital aspect of the supply chain particularly as a means of analysing current consumer needs and addressing them in a manner that is mutually beneficial to all parties.

This may be evident in the steps taken by companies including Manns, Ready Pac, Green Giant and Attitude who have been placing a strong focus on the production of their ready to go salad bowls. These are currently experiencing an estimated 15% growth per annum, while salad bags sales are remaining stable. Also, the convenience snacking category is growing at approximately 8% per annum.

Attitude, a company based in Florida and Canada, has implemented a marketing strategy that has moved towards premium salad kits. They have seen a strong increase in sales due to this move, believing that the convenience it provides to customers is substantial. It also provides more variety and opportunities for customers to use the product that would otherwise require significant handling to prepare the same salad kit individually. Examples of these such offerings provided by Attitude include party packs and single serves that are ready to go.

Delallo, an Italian Market located in Jeannette, PA, who in the past has typically supplied base foods ranging from oils and vinegars to pastas and grain, cured meats and speciality cheeses, are further expanding this offering by working with retail partners to create a mix and match

salad range. This includes lettuce as the base and then the customer adds their favourite sides, such as onions, sauces and cheeses. By value adding their already existing produce line, they believe they have reached a niche market that otherwise would not purchase their product.

3.3 Niche market opportunities

Further opportunities to help drive consumption are through new use products. These products have been developed as health alternatives to compete with existing commodities that are either considered unhealthy or no longer popular. Examples of this include but are not limited to:

Cauliflower rice. While this is not a replacement for the sales of cauliflower or rice, cauli rice is expected to compete with rice as a substitute. The Green, a fresh produce company based out of the USA currently produce the product for 70% of the nation and are expected to reach 100% by the end of 2017. The product uptake has been exceptional with further developments of this range including carrot, broccoli and more are expected within the near future.

The Veggie Noodle Co. Founded by Mason Arnold and situated in Austin, Texas, they have developed vegetables as a replacement for noodles. They offer beetroot, zucchini, butternut and sweet potato alternatives that can be eaten both raw and cooked. By maintaining the label of gluten free and 100% vegetable, they are able fill a niche market of consumers seeking a pasta alternative.

3.4 Research and development

By starting dedicated research arms, the author believes that companies which focus on innovation and improvement of products and processes are better able to improve their VA product and meet the demands of consumers.

G's Produce has implemented an R & D focus into their business. With three full time product technicians working on developing new products and offerings, this department with the help of market research – and by contacting the customer directly – have begun to VA their produce

to further meet requirements of a more specific consumer base products. A result of this research, G's Produce have commercialised ready to go soups, potato chips dips and juices.

Campden BRI, a company based out of Gloucestershire in the UK, provides the means and the resources for product development, technological advancements and customer feedback for the products of companies that otherwise wouldn't necessarily develop their product. As a result, Campden BRI has assisted in the development of several more viable food products. This includes but is not limited to, a shelf stable cauliflower rice, the creation of burgers with a higher fibre content and alternative methods of processing vegetable juices.

Having created a cauliflower rice alternative in collaboration with Cauli Rice Ltd, consumers now have a product that is a viable food source that remains edible for up to 12 months. Having done this, it is now possible for the continuous improvement of this product.

Cauli Rice Ltd, are now focussing on bringing a greater taste profile as well as different mixes and recipes for different customers. This is due to research showing consumer willingness to purchase a healthier alternative to rice. Cauliflower rice has been advertised as a product with 75% less calories, gluten free, preservative free and vegan approved. Hence, establishing a base for a product that otherwise would not sell to these parts of the population.

Campden BRI have also worked alongside the Food and Health Innovation Service (FHIS) in the UK to essentially reinvent the entry level beef burger, known as economy burger, to now provide the consumer with a healthier product that remains affordable. To do so, the sodium, fibre and filler contents were all adjusted. Given that 47% of the entry level burgers are 'fillers' or bulking agents, it was these that were manipulated to achieve a satisfactory product. Three variants of the burger were tested, a fine milled oat bran, milled oats and ground quick oats replaced a low fibre rusk filler typically used in burgers. The three new burgers were found to contain 30% less sodium and now met the necessary guidelines of 300mg Na/100g set by the Department of Health in 2017. Informal tests also showed that the milled bran filler was preferred over the ordinary economy burger.

Consequently, the work showed that replacing a rusk filler in an economy beef burger with oat bran filler, produced a burger that contained less sodium, more fibre and crucially had a

preferred taste to an ordinary economy burger. This in turn should result in better value for the producer as more products are sold.

With an increased push for natural and healthier products, producers have needed to ensure that their products have a marketable shelf life whilst still remaining safe for consumption. To do so, Campden BRI, in association with Innocent Vegetable Juices – who market two different types of juice – attempted to determine if high pressure processing would be a suitable method to destroy the relevant microorganisms for safe human consumption and if any surviving microorganisms would be able to grow at a temperature of 5°C for up to 35 days after processing. The test focused on the pathogens *Clostridium botulinum*, *Bacillus cereus*, and *Salmonella*. Through the use of appropriate packaging and high-pressure treatment conditions, it was found that all of the above pathogens were absent for at least 35 days following testing. In addition, high-pressure processing provides a value adding opportunity for producers that they otherwise would not have access to.

Chapter 4: Food Wastage

Sadan, G. (2016), identified that 33% of all food produced is wasted every year. Waste occurs at all stages of production, processing, retailing and consumption. Sadan saw an opportunity to use packaging to tell the story about food waste, in turn allowing consumers to take it upon themselves to solve an ever-growing problem that is only added to by the earth's ever growing population.

4.1 Second grade opportunities - imperfect vegetables

In the USA and UK, having found that 20% of all vegetables were not meeting supermarkets strict criteria in order to make it to point of sale, the imperfect vegetable campaign was started. The vision for these products was, and still is, to find an outlet for products that don't meet supermarket stringent specifications, despite maintaining the nutritional values and taste of the more appealing produce. The man at the forefront of this movement is Tristram Stuart who, in his own words, sees food waste as a '*scandalous and grotesque*' problem, and has been working to rectify it. He has been encouraging sellers to take food that would otherwise add to greenhouse emissions during disposal and instead either use it for charity work to feed the less fortunate or take the food that is of an even lesser quality and feed it to pigs. Australia has followed suit in recent times to mitigate the wastage of vegetables and provide customers with savings and a product that is still of a high quality despite its irregular size and shape.

From a fresh produce grower's perspective, there are opportunities to use second grade produce for alternative income streams. Unlike in the past where supermarkets or other retailers would cut back on their purchase at the last moment, the grower or producer bore the cost of removal and disposal. Following the implementation of programs like Tristram Stuart, legislation was introduced in the UK whereby retailers must share the burden of waste food. Essentially, they now have the incentive to curb the amount of produce they discard as waste, as consumers have now provided a demand for the product.

4.2 Repurposing

By taking advantage of second grade materials, producers now have the opportunity to repurpose their goods, particularly vegetables for different formats and markets. Two broad examples of this are the shredding of lettuce and the selection of broccoli florets. Following the sale of premium grade lettuce to the likes of leading supermarkets, the hearts of the second-grade product is processed, shredded, packaged and sent to fast food restaurants or other like-minded retailers that do not require a supermarket grade product. Also, like lettuce, whole broccoli plants unfit for supermarket sale are repurposed by removing individual florets and packaging them as a 'meal ready' alternative to preparing their own whole plant.

From a more specific perspective, producers like Taylor Farms and G's Produce have moved towards reprocessing broccoli and carrot amongst other materials to make a coleslaw fit for sale using second grade versions of these materials. In doing so, they limit the amount of waste material produced whilst providing customers with a product that despite possibly having lower nutritional values, no longer appears unappealing and it is advertised as easy to use in the kitchen.

4.3 Technology

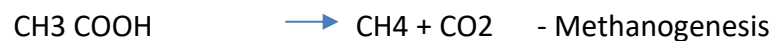
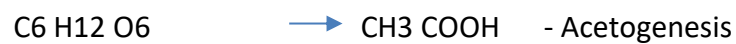
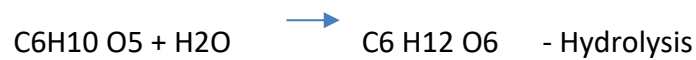
Technological advancements have led to increased shelf lives, better quality of fresh produce and store presentation. Companies are using these technical advancements as competitive advantages over rivals. Because of increased shelf life, the distance with which produce may be shipped has increased significantly. Patents around these technological advancements are being continuously lodged and used as marketing advantages.

Cauli Rice Ltd are a prime example whereby they have patented a method for the processing and storage of their product, Cauli Rice. Brett, C (2016) explains this method consists of a size reduction stage, where the cauliflower is diced up mechanically, a softening stage where the product is heated or frozen for a pre-determined time and at a set temperature and finally, a treatment step where the softened vegetable product is brought into contact with one or more reactive oxygen types such as peroxides, superoxides or ozone. This method has

consequently resulted in the storage life of their cooked cauliflower rice from five to three months. Packaging advancements such as 'steam in bag' packaging and pre-washing have also provided minor contributions toward storage life.

Read, G. (2016) explains that Staples vegetables in the UK run all their waste through a water channel system direct to a 1.4 MW biogas plant in Wrangle in Lincolnshire, England. Staples are the largest producers of brassicas in the UK, employing over 600 employees directly with over 10,000 acres of land farmed. This makes them 100% self-sufficient in green electricity, as well as providing heating, refrigeration and fertiliser.

Upon reaching the plant, leftover produce undergoes a process of anaerobic digestion, turning the complex sugars residing with the material into methane and carbon dioxide via three chemical reactions:



The methane produced is the only viable by-product of this process but is used in several ways. Some of the methane is used directly for energy production while the rest is converted to biomethane a nutrient-rich solid leftover produced to be used as fertiliser.



Figure 3: L-R – Michael Vorrasi and George Read at Staples Vegetables Anaerobic Digester (March 2016)

The water channel system used by Staples Vegetables provides two major benefits. Firstly, the waste product left over from growers is shipped directly to the biogas plant. The decreased cost associated with being able to send waste down a water channel also appears on two fronts, not only is the product washed and ready to be treated upon arrival at the plant but also the cost associated with transporting the waste is now almost non-existent.

Ludebao, a brand from the Shenzhen Ludebao Health Food Company in China, are currently growing Spirulina to feed chickens so as to alter the health offerings of their eggs. Ludebao are a government owned organisation in Shenzhen. Ludebao engage in Spirulina research, breeding, production and marketing. Youg (2017) explains after incorporating Spirulina into the chickens over a 13-day period the nutritional value of the eggs produced are altered providing an increase in protein by 305.3% as well as vitamin and mineral increases. This product is sold in China at a 400% price differential to conventional eggs.

Chapter 5: 4P's of Marketing

The 4P's of marketing (product, placement, promotion and price) provide ways for growers to add value and potentially increase returns whilst maintaining customer satisfaction through each of these channels.

5.1 Product

Growers have no ability to derive an income stream without a product. If growers identify their capabilities and constraints in production, it can provide a range of potential options for the way they think about their product. Take for example a carrot farmer who is incapable of consistently producing a high-grade product but can still produce a nutritional but visually unappealing carrot. The farmer has the opportunity to repurpose the carrot to be more consumer-friendly. This may mean cutting up their lower grade produce to be used in frozen vegetable mixes or having it used in soups where its visual appearance is not relevant. This in turn adds value to the product at little extra cost to the producer. An income stream can be maintained which would otherwise be unavailable if the only focus was on premium grade product.

The opposite to this scenario would see the carrot farmer consistently producing premium grade produce. Options to value add still exist and would potentially involve providing a prewashed and cut, unfrozen option as opposed to 'straight-out of the ground' variant that must be prepared by the consumer. The former increases convenience and thus, value for the customer.

An alternative to these scenarios is the Ugly Produce is Beautiful (UPIB) Campaign. Founded by food expert and entrepreneur Sarah Phillips in January 2016, it aims to educate consumers to the fact that despite the visual appearance of a product, it may still provide the premium nutritional values expected. 40% of all food in the USA goes to waste. The value of this waste is \$165 billion and causes unnecessary stress on the producer who is growing the produce for no reason. The UPIB campaign uses recipes, how-to and tips in conjunction with the baking site craftybaking.com with the intention of encouraging customers to save food that would

otherwise go to waste. This passes on benefits to both the producer and consumer, whereby the consumer does not contribute to landfill and hence, global warming and the producers are able to continue producing a quality produce that customers actually consume.

5.2 Placement (packaging)

The manner in which an object is displayed both within packaging and on the shelf, provides an excellent opportunity for producers to maximise the value of their produce. From the basics of moving from an economy to a premium packaging source to the specific placement together with products that complement each other, every small change influences the typically time poor, urban consumer.

Convenience is typically considered a driving force behind the placement of produce and the manner it is packaged. Convenience has seen a drive towards more and varying vending machines that now provide healthier products that reflect the wants of a typical customer. The desire for healthy lunch alternative to fast foods has resulted in the opening of Salad Bars that provide pre-made meals that maintain the nutritional values of a homemade salad, whilst providing a VA opportunity for producers.

Lastly, by repurposing second grade vegetables they no longer need to be packaged as a 'home brand' variant. Given the customer now sees them as a reasonable alternative to other foods, they may now be sold as a VA product, providing a greater profit to producers and allowing them to continue to advance their product for both the consumers and their benefit. An example of this is again Cauli Rice, a repurposed version of second grade cauliflower that is value added and provides the above benefits to the producer and consumer.

5.3 Promotion

Outside of the physical handling of a product, the products promotion or the manner in which it is conveyed to the public is essential in influencing consumers decision to purchase. It is believed that 73% of shoppers actively search out promotional products when deciding what

they will buy. The following examples of apples and avocados demonstrate the VA opportunity through promotion.

Having crossed several variants of apple, Rokit Apples are promoting an alternative to the per kilogram method of sale by providing miniature apples in flashy tubular package. By doing so, they are focusing on children, busy adults and sports people that require a healthy small snack. By advertising them as a unique, hygienic and convenient alternative to regular apples it is possible for them to be sold at a premium price where the profits can be passed onto producers.

Avocado has also seen reform in its advertising sector. With a focus on selling to middle-aged women alongside a 'ready to go' value added scheme that particularly involves spreads and the use of avocado in salads. This type of product has seen an increase in sales by over 900% in recent years which can be directly attributed to the use of promotion on this product.

Methods other than media may also be used to promote a producer's produce. IM Investment, based out of Singapore, own a distribution company for fruit and vegetables and their alternative method for reaching customers include: cooking demonstrations at seminars in a purpose-built kitchen and by running similar kitchens in the retailers themselves. The later allows for direct contact with the customer with the hope of swaying them to purchase a particular product.

5.4 Price

Given the operation of a free market in Australia, the manipulation of the price of produce is guided by forces of supply and demand and is considered free from any intervention by a government, price-setting monopoly, or other authority. Considering this, the creation of a brand name is essential to ensuring that producers and retailers maintain a price they deem reasonable for firstly the product and secondly their profit margins. In doing so, producers attempt to gain customer confidence in their products, which in turn will hopefully sway their purchasing decisions e.g. Laura M Scott of PEPSI Co. has said that producers are looking to create a product that consumers trust and are willing to pay more for.

Fresh produce branding provides an example, an orange may not simply be considered an orange, and an apple not just an apple once given a brand name such as Sunkist or Pink lady. Having been rebranded and despite remaining essentially the same product, they are now held in higher esteem by the customer and thus are able to be sold at a higher price. This also requires little reproduction of the actual product in terms of value adding while still increasing producer profits in the long-term.

Use of promotions may also be linked to driving up price, with 73% of shoppers looking for promotions when making their purchasing decisions. Promotion can be used to generate awareness of new and novel products into the market. If a new product i.e. cauli rice or any branded product is launched; customers need to become aware of the product. The price in conjunction with promotion can be used to raise the awareness of the product.

Conclusion

Success of value added production comes through understanding customers' needs and addressing them. Throughout the course of the study, the author observed the same message being repeated. To be successful in value added production, companies must continually develop product offerings based on changing customer needs. The increase in convenience food has been driven by customer demand rather than the producer's abilities. Producers must focus on the buyers of the produce and understand their needs rather than plant a product in hope of a sale.

The move to value add presents several opportunities for Australian vegetable growers.

Firstly, the increase in convenience is also leading to vegetables becoming more important within the customer's food selection and leading to increased production. Producers can directly influence the growth of a product category by understanding consumer preferences and creating products to suit them. This will directly affect the revenue of the producer.

Producers can also compete in categories other than whole vegetables. Snacking markets, juices and meal substitutes are also seeing increase in consumption. Customers are willing to increase consumption of vegetables, so producers must find ways to make it more convenient.

Producers can increase profit by addressing food wastage by finding opportunities to use second grade produce through either directly value adding or working with processing companies. Producers must actively seek these opportunities to gain greater value for their produce.

The vegetable industry is at an exciting time and has a great potential to increase in volume. With only 6% of Australians eating their recommended intake of vegetables per day and 39% wanting to increase consumption, the opportunities are substantial. This is amplified with the movement of retailers using vegetables as a pull strategy for retail purchases and the push towards 'food is medicine'. The opportunities largely depend on the produce the producer is growing. However, the larger influence will be on producer's ability to adapt to change and structure the business around customer preferences.

Recommendations

- Producers must have a customer-focus rather than a supply-chain-focus if they wish to achieve success in VA.
- Urbanisation presents opportunities for further VA product as customers are time poor and seek convenience. This is a growth category where growers can work with customers to develop product offerings.
- Successful implementation of VA will largely depend on the producer's ability to change according to market and customer preferences. This must be at the forefront of product development.
- Customers are seeking a greater range of products. VA products allow growers to customise their offerings helping to grow the category and their product offerings.
- Vegetable producers can position themselves to compete with categories other than vegetables.
- Vegetable producers can use second grade produce more and deliver greater cost savings and add value to their current offerings.
- Technological advances allow producer to gain competitive advantages and open new markets.
- It is an exciting time for the vegetable industry with significant growth opportunities available.

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Plain English Compendium Summary

Project Title:	Opportunities for Value added vegetable production
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Scholar:	Michael Vorrasi
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Objectives	Opportunities for value-added vegetables to boost grower returns, consumption of fresh produce and markets for second grade produce
Background	The value-added vegetable category has been growing at 8-15% year on year for the past three years. This is likely to continue to grow. Throughout this scholarship, the author was looking to gain greater clarity as to what Australian vegetable growers can do to drive higher consumption resulting in greater returns and growth for their businesses. In order to achieve this objective, trends were investigated and analysed as they emerged from other countries, and how they will help to address these issues
Research	Value added manufacturing producers, government institutes, private companies, research facilities, retail outlets and trade shows were visited throughout nine counties to investigate the objectives.
Outcomes	Success of value added production comes through understanding customers' needs and addressing them. Producers must focus on customer demands and tailor an offering based on reaching their needs rather than planting a product in hope of a sale. Value added production has the ability to increase consumption with conveniences being the main influencer of growth in this category.
Implications	Producers must adapt to changing customer's preferences and market influences to remain successful in value added vegetable production. Producers must have a customer-focus rather than a supply-chain-focus if they wish to achieve success. Customers are seeking a greater range of products. VA products allow growers to customise their offerings helping to grow the category and their product offerings
Publications	Verbal presentation at the 2017 Nuffield Australia National Conference in Darwin, September 2017.