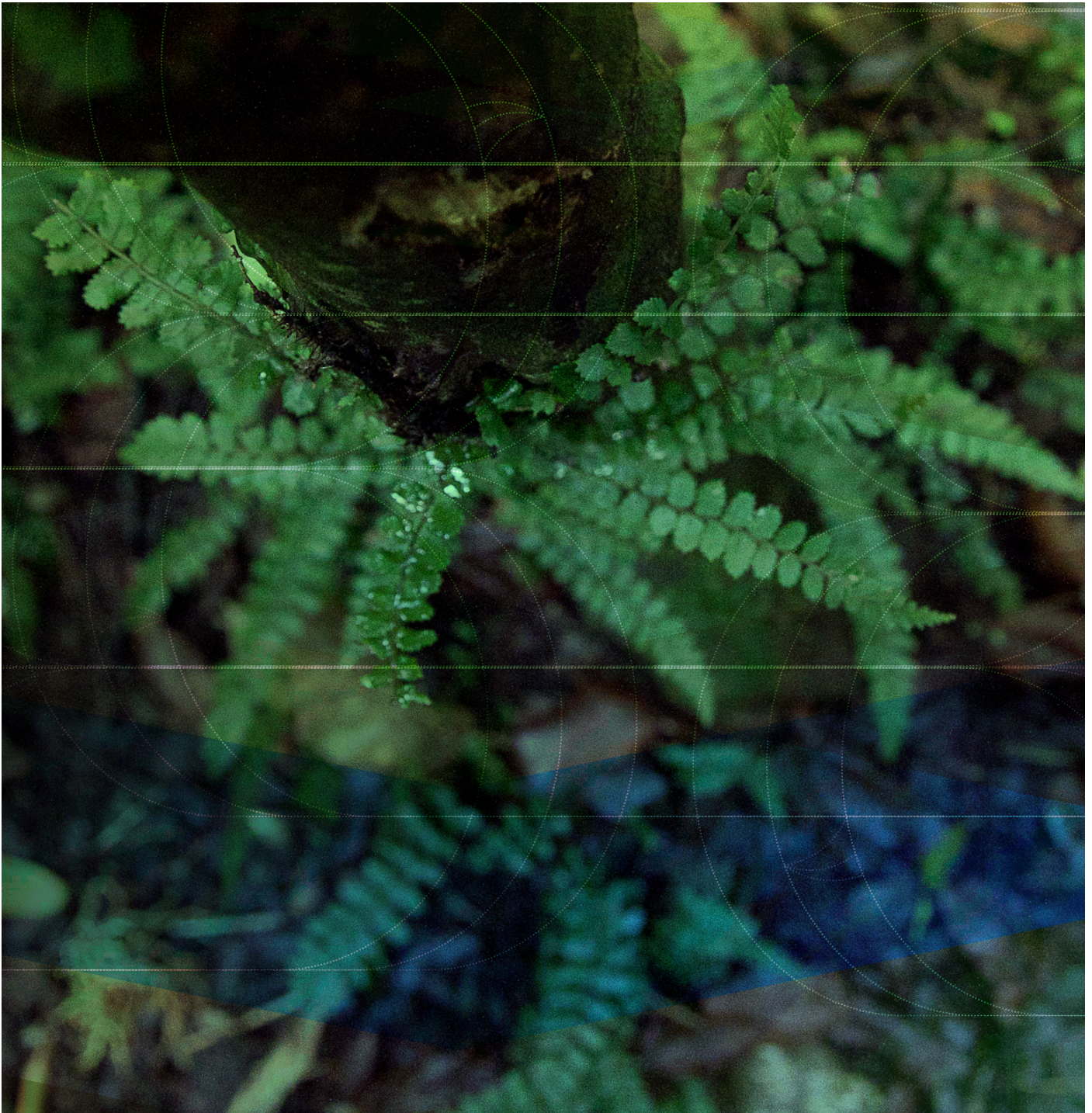


Kaitiaki Intelligence Platforms



Matthew Rout
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Capturing premiums for authentic Māori agrifood products
Consumer willingness to pay and authentication processes

The Kaitiaki Intelligence Platforms (KIPs) project aims to position Māori at the forefront of cutting-edge remote environmental sensing in Aotearoa.

Leveraging the latest and emerging technologies, this project is designing a robust tech platform that will empower iwi to access real-time and precise information about the environmental condition of their rohe (territories). Furthermore, it will equip Māori farming collectives with the essential data to confidently manage their farms in alignment with their kaitiaki principles. Additionally, the platform will facilitate Māori farms in verifying their sustainable production to markets, regulators, and assurance bodies. Simultaneously, it will provide invaluable data to iwi for informed decision-making regarding their environmental management plans and policies.

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Introduction and context

The purpose of the Kaitiaki Intelligence Platforms (KIPs) project is to position Māori as first movers in environmental intelligence. Environmental sensing technology is advancing rapidly, offering significant opportunities for Māori agribusiness collectives (MACs) and iwi to develop and deploy sophisticated sensor networks that provide continuous and comprehensive environmental data. This data can be used for a range of different outcomes, from improved land management through to providing verified and trustworthy data to market. The ability for MACs to gather precise information about the environmental condition of their farms and forests, and communicate this to consumers, could allow them to add value to their food and fibre products.

There has been much made of the premiums in market that can be gained for agrifood products from Aotearoa based on the characteristics, or credence attributes of products, which include elements like food safety, environmental quality, country of origin and so on. Much discussion has also concentrated on the premiums that Māori can gain for their agrifood products through the communication of indigenous credence attributes to consumers highlighting the environmental and social ethics that underpin the production practices of Māori collectives.

This report brings together the current literature identifying the credence attributes of Māori products and through scoping the willingness-to-pay (WTP) literature, identifies the premiums that Māori producers might expect in market for their attributes. The first section of this report examines the history and background to the field of market research concerning credence attributes. It shows how food products contain multiple credence attributes and traces changes in consumer preferences over time. It shows a growing interest in the types of attributes that indigenous food producers imbue in their products. The second section explores literature concerning the types of credence attributes that Māori agrifood products contain, and how these attributes might be communicated to Western consumers. The third section continues literature analysis looking at WTP studies, which provide some indication of premiums Māori food producers might receive for their products in market – should they communicate key attributes. Furthermore, it explores the types of mechanisms and verification systems required to assure consumers that the products they are purchasing contain the attributes being claimed.

History of Field

There are a number of interrelated dynamics that need to be outlined to explore the rise in demand for credence attributes from consumers. First, however, 'credence attributes' need to be defined. When consumers purchase food, they are influenced by a wide range of factors. These factors can be broadly divided into physical and credence attributes. Physical attributes of food include taste, freshness, and appearance, while credence attributes are less tangible factors that cannot be directly seen or experienced at the point of purchase but still influence the consumer.¹ Examples of credence attributes include food safety, environmental stewardship, animal welfare, social responsibility, authenticity, fair trade, functional foods, organic production, GM-free, water footprint, biodiversity, country of origin, and culture.² Demand for food that has these intangible credence attributes has grown significantly in recent decades.³ One of the most important aspects of credence attributes is that the "relevant attribute information is difficult to ascertain directly by consumers at any stage of purchase, even after consumption of the food."⁴ This means they must be communicated in a trustworthy and verifiable manner, as it ultimately all comes down to consumer perception.

Employment drop, complexity growth

For most of history, producing and processing food have been as fundamental a component of daily life as the preparation and consumption of food. "Prior to industrialisation," Campbell explains, "food was not only visible, it was the embodied and symbolic core of human cultural life."⁵ Up until the 18th century in most Western countries around 90% of the population were still directly involved in producing and processing of food. Over the last century and a half, agriculture has seen significant organisational, operational, technical, and in particular, technological innovations that have drastically increased yields and reduced labour requirements, and purchasing became the predominant means of sourcing food for most people. Now only around 10% of developed countries' populations are directly involved in food production and processing. At the same time, the food sector has grown in scale, scope, and complexity. Modern agri-food companies now form global corporations that are vertically and horizontally integrated, with divisions in virtually every country, from developing states, where much of the food is produced, through to the developed world, where most of it is consumed, and operations that go from supplying inputs for production

through to the logistics supplying retail outlets – generally speaking, retailers form their own significant, powerful yet generally independent bloc within this chain, though more recently even they have begun to be purchased by these massive agri-food companies.⁶

Physically and psychologically distanced

As a result, consumers have become physically distanced from their food, as food has become industrialised it has become 'food from nowhere.'⁷ Increasingly, agricultural production and food consumption have become "two separate realms of activity and this separation dramatically decreased the culturally familiar aspect of a visible life of food from field to table."⁸ This physical disconnection enabled the food sector to further distance consumers from food through fictitious portrayals of the food's origins, constitution, and benefits as a means of selling more food at higher prices, which has psychologically distancing them as well. At the peak of this trend, during 1940s-1960s, food was inscribed with the "technologically optimistic tropes of high modernity" as embodied by concepts used in advertising such as 'scientific', 'artificial', and even 'synthetic' – qualities that are no longer desired by most consumers.⁹ The food system became "opaque and behind

the immediate veil that disguised food as a consumption item from its origins and transformations literally anything could, and did, happen", with an ever-dominant and all pervasive marketing and advertising machine that reframed food in ways that suited the corporations rather than the consumers.¹⁰

Food crises and loss of trust

In the late 1970s and 1980s the agri-food sector was hit by wave after wave of crises, from food safety scares to concerns over environmental sustainability, all of which saw a resulting drop in trust of the agri-food system.¹¹ Before "the mid 1970s, food safety was neither a significant political, scientific or societal concern."¹² In the 1980s there were a number of significant 'food scares', particularly across Europe, which caused a significant loss of trust, including the Bovine Spongiform Encephalopathy or 'mad cow' scare in UK in 1984, salmonella scares in the UK and Scandinavia in the late 1980s, botulism scares in Italy, France, Spain and Germany also during the late 1980s, wine adulteration using glycol across the continent throughout the 1980s and 1990s, and many more.¹³ These scares "resulted in consumers neither taking food safety for granted nor necessarily trusting governments to police these systems."¹⁴ Concurrent to these concerns over food safety, during the 1970s and

1. Dalziel, P. C., Saunders, C. M., Tait, P. R., & Saunders, J. (2018). *Credence attributes and New Zealand country of origin: A review*. Lincoln University, Research Report No. 351. Retrieved from <https://researcharchive.lincoln.ac.nz/bitstream/handle/10182/11956/RR%20351%20Credence%20Attributes%20Report.pdf?sequence=3&isAllowed=y>

2. Dalziel et al. (2018, p. 2).

3. Moser et al. (2011); Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products—A meta-analysis. *Journal of Agricultural Economics*, 70(3), 618-639.

4. Moser, R., Raffaelli, R., & Thilmany, D. D. (2011). Consumer preferences for fruit and vegetables with credence-based attributes: A review. *International Food and Agribusiness Management Review*, 14(1030-2016-82774), 121-142, p. 122.

5. Campbell, H. (2015). Spurlock's vomit and visible food utopias: Enacting a positive politics of food. In *Food utopias: Reimagining citizenship, ethics and community*, eds. P. V. Stock, M. S. Carolan, and C. J. Rosin, 195-216. Oxfordshire, New York: Routledge, p. 196.

6. Friedmann, H., & McMichael, P. (1989). Agriculture and the state system: The rise and fall of national agricultures, 1870 to the present. *Sociologia Ruralis*, 29 (2), 93-117

7. Friedman & McMichael (1989).

8. Campbell (2015, p. 198).

9. Campbell (2015, p. 200).

10. Campbell (2015, p. 198).

11. Freidberg, S. (2004). *French beans and food scares: Culture and commerce in an anxious age*. New York: Oxford University Press; Power, M. K. (2003). Auditing

and the production of legitimacy. *Accounting, organizations and society*, 28(4), 379-394.

12. Knowles, T., Moody, R., & McEachern, M. G. (2007). European food scares and their impact on EU food policy. *British food journal*, 109(1), 43-67, p. 43

13. Knowles et al., (2007).

14. Richards, C., Lawrence, G., & Burch, D. (2011). Supermarkets and agro-industrial foods: The strategic manufacturing of consumer trust. *Food, Culture & Society*, 14(1), 29-47, p. 29

1980s awareness of humanity's impact on environmental systems was also growing. Rachel Carson's influential book *Silent Spring* is often identified as one of the catalysts for the modern environmental movement.¹⁵ The book highlighted the dangers of pesticides, "providing a critical appraisal of the relationships among agricultural technology, science and nature."¹⁶ During this period there were "growing criticisms of 'industrial agriculture' [that] identified a series of negative environmental effects."¹⁷ The loss of trust in the agri-food sector saw the importance of credence attributes grow. In turn, a number of components that underpin credence attributes and their communication to consumers were either developed or expanded to help restore consumer trust. Traceability, assurance, provenance, and authenticity are four interrelated concepts in the sourcing and supply of food, all in their way seeking to build trust in food products.

Traceability

Traceability is the "ability to identify and trace the history, distribution, location and application of products, parts and materials."¹⁸ It works in two directions: "Downstream traceability (tracking) allows a company to trace a food material

from the beginning of its life (raw material) to the final product... Upstream traceability (tracing) allows a company to trace the history of a food product through production, back to the origin of its ingredients and packaging."¹⁹ Food traceability is the most basic and common way of reconnecting consumers with their food, providing them with a potential way of going back upstream through the various stages and steps to the source of their food.

Assurance schemes

Traceability is complemented by assurance schemes, which are "schemes which establish production standards covering food safety, animal welfare and environmental protection."²⁰ These schemes can be voluntary or compulsory, and are operated by either public or private entities. Assurance schemes verify, usually through regular third party inspection, that producers are meeting these production standards. "To address this distrust," following the food crises, Eden et al. explain, "a range of schemes have developed, at both national and international scales, to provide assurance about food production to consumers at the point of sale and thus to reconnect consumers with producers and increase consumer confidence."²¹

Provenance

Provenance first emerged in the 1930s because regional producers in Europe wanted to assert the origin of their high quality, location-specific products, such as champagne. In the last few decades it has seen a resurgence in popularity and an expansion in scope. It is now defined as having "a spatial dimension (its place of origin), a social dimension (its methods of production and distribution), and a cultural dimension (its perceived qualities and reputation)."²² While all food has provenance, it only becomes important when the consumer is informed of it and values this provenance. Provenance becomes 'activated' as a mechanism for reconnecting people with their food – and adding value – when the consumer is made aware of a correspondence between their values and the food's provenance.

Authenticity

Authenticity refers to how 'real' or 'genuine' a product is seen to be. A product is viewed as 'authentic' only when a consumer sees it as so, it is in the 'eye of the beholder'. "People increasingly see the world in terms of real and fake, and want to buy something real from someone genuine, not a fake from some phony."²³ There are a number of sources of authenticity including brand, history, quality, environmental credentials, and culture.²⁴ The demand for transparency and authenticity has been largely generated by the food crises and loss of trust but there are also other

factors, particularly for authenticity. In many ways, the modern agri-food system has abstracted consumers from their food, both physically and psychologically, as food was sourced from a growing array of different locations around the globe and the branding and marketing used to sell these products to consumers used sophisticated tactics to obscure or reframe how their food was made, where it came from, and what happened to it along the supply chain.²⁵ Authenticity, then, involves telling the consumer a believable story about the food and its qualities, as they "are increasingly interested in the stories that accompany their food: from sustainability assurances, to a focus on traditional and 'authentic' production methods, to foods from unique origins or associated with distinct cultural identities."²⁶

Summary

Traceability and assurance have overlapping spheres, with both providing mechanisms of connection, largely by engendering a degree of trust in consumers by making the production and processing of food more transparent. Provenance describes the origins, methods of production, and qualities of the product, while authenticity refers to the consumer viewing these aspects being both truthful and resonant with their expectations. Taken together, they are all involved in the communication of credence attributes along the chain from production to purchase.

15. Wezel, A., Bellon, S., Doré, T., Francis, C., Vallod, D., & David, C. (2009). Agroecology as a science, a movement and a practice. *A review. Agronomy for sustainable development*, 29, 503-515.
 16. Wezel et al. (2009), p. 506.
 17. Woodhouse, P. (2010). Beyond industrial agriculture? Some questions about farm size, productivity and sustainability. *Journal of agrarian change*, 10(3), 437-453, p. 438.
 18. Norton, T., Beier, J., Shields, L., Househam, A., Bombis, E., & Liew, D. (2014). *A guide to traceability: A practical approach to advance sustainability in global supply chains*. United Nations Global Compact Office: New York, NY, USA, p. 6.

19. Montet, D., & Dey, G. (2017). History of food traceability. In *Food traceability and authenticity* (pp. 1-30). CRC Press, p. 11.
 20. <https://ahdb.org.uk/assurance-schemes#:~:text=Assurance%20Schemes%20are%20voluntary%20schemes%20which%20establish%20production,and%20Lamb%20QSM%20embracing%20additional%20eating%20quality%20requirements.>
 21. Eden, S., Bear, C., & Walker, G. (2008). The sceptical consumer? Exploring views about food assurance. *Food Policy*, 33(6), 624-630, p. 624.
 22. Morgan, K., T. Marsden, and J. Murdoch. (2008). *Worlds of food: Place, power, and provenance in the food chain*. Oxford: Oxford University Press, p. 4.

23. Gilmore, J. H., & Pine, B. J. (2007). *Authenticity: What consumers really want*. Harvard Business Press, p. 1.
 24. Danezis, G. P., Tsagkaris, A. S., Camin, F., Brusica, V., & Georgiou, C. A. (2016). Food authentication: Techniques, trends & emerging approaches. *TrAC Trends in Analytical Chemistry*, 85, 123-132.

25. Reid, J., & M. Rout. (2016). Getting to know your food: The insights of indigenous thinking in food provenance. *Agriculture and Human Values*, 33(2): 427-438.
 26. Yang, Y., Hobbs, J. E., & Natcher, D. C. (2020). Assessing consumer willingness to pay for Arctic food products. *Food Policy*, 92, 101846, p. 1.



Literature Review

This section will first outline the potential credence attributes from products made using Māori environmental ethics. It will then describe WTP uses and methodologies, before drilling down into specific indigenous credence attributes, and then it will detail the relevant Western analogues to these attributes that can be used as proxies when searching for willingness-to-pay metrics. After this it will outline the strengths and weakness of WTP data before outlining a number of ways in which the KIPs project seeks to improve on this data.

Credence attributes of Māori production

There are a number of credence attributes that emerge from Māori production. These, as well as definitions and possible similar Western understandings are shown in Table 1.

Before examining specific WTP categories that align with these attributes, a brief overview of WTP usage and methodologies is useful.

WTP

Most companies make pricing decisions without any analysis of how much their consumers would pay and what attributes they would pay most for. Research has shown that only about 8-15% of companies conduct any research into pricing and

related issues relating to marketing and branding as means of influencing consumers, with the majority still using 'intuitive pricing', essentially guesswork.²⁷ Those companies still pricing by intuition "fail to pursue a pricing strategy that is suitably customised to their marketing environment and thus also risk ignoring valuable sources in increasing profitability of the products offered."²⁸ As Miller et al. explain:

"Accurately gauging consumers' willingness to pay (WTP) for a product or service is critical for formulating competitive strategies, conducting value audits, and developing new products. It is also important for implementing various pricing tactics, such as nonlinear pricing, one-to-one pricing, and targeted promotions."²⁹

WTP studies are the "cornerstone of marketing strategy."³⁰ There are two key reasons for this:

"First, consumers' WTP is the central input for price response models that inform optimal pricing and promotion decisions. Second, a new product's introductory price must be carefully chosen, because a poorly considered introductory price can jeopardise the investments in its development and threaten innovation failures."³¹

They are one "of the most well-known demand-revealing indicators in economics and marketing."³² These studies provide companies with critical insights into what consumers will pay for different attributes, being "used to express consumer valuations

27. Breidert, C., Hahsler, M., & Reutterer, T. (2006). A review of methods for measuring willingness-to-pay. *Innovative Marketing*, 2(4), 8-32.

28. Breidert et al. (2006, p. 8).

29. Miller, K. M., Hofstetter, R., Krohmer, H., & Zhang, Z. J. (2011). How should consumers' willingness to pay be measured? An empirical comparison of state-of-the-art approaches. *Journal of marketing research*, 48(1), 172-184, p. 172.

30. Schmidt, J., & Bijmolt, T. H. (2020). Accurately measuring willingness to pay for consumer goods: a meta-analysis

of the hypothetical bias. *Journal of the Academy of Marketing Science*, 48, 499-518, p. 499.

31. Schmidt & Bijmolt (2020, p. 499).

32. Dolgoplova, I., & Teuber, R. (2018). Consumers' Willingness to Pay for Health Benefits in Food Products: A Meta-Analysis. *Applied Economic Perspectives and Policy*, 40(2), 333-352, p. 333.

33. Dolgoplova & Teuber (2018, p. 333).

Table 1: Cultural credence attributes of Māori food and their alignment with Western concepts

Related Value or Concept	The Cultural Credence Attributes of Māori Food	
	Māori Understanding	Western Understanding
Whakapapa (all of creation is related) Atua (gods from which all creation emerges)	Food comes from our relatives in nature and is gifted by the gods	Food is a part of our natural legacy from the Earth.
Mana (power and dignity)	Consumption of the food enhances the mana or dignity of the person consuming it and that of the atua domain from which it derives.	Consumption of the food enhances the moral standing of the person consuming it and that of non-human community from it emerges.
Mauri (life force of everything)	Consumption of the food enhances the mauri or vitality of the person consuming it and that of the atua domain from which it derives.	Consumption of the food enhances the health vitality of the person consuming it and that of the non-human-community/ecosystem from which it emerges.
Tapu/noa (tapu is sacredness, noa is the opposite, referring to mundane and thus safe)	The food is spiritually safe to consume after undergoing a transition from tapu (protected sacred state) to noa (usable sacred state).	The food has been produced, or procured, in a way that observes the intrinsic value and dignity of living and non-living things and is therefore ethically safe to consume.
Utu (ethic of seeking balance)	The food is formed through a relationship of balance between the atua and Māori, which ensures the mauri and mana of each is enhanced.	The food is formed through a health-creating relationship of mutualism, balance, and respect between humans and the ecological systems that support them.
Tino Rangatiratanga (sovereignty, independence)	The food is produced by Māori seeking management over their lands to fulfil their kaitiaki (guardian) obligations to the atua.	The food is produced by indigenous people seeking self-determination over their lands and waters to ensure that their non-human relatives (lands and waters) are cared for.
Turangawaewae (land with significance and which Māori hold rights to)	The food is produced by those that are deeply related and interconnected with non-human relations from which the food emerges.	The food is produced by those who deeply care for place and have had a long enduring connection to its lands and waters.
Kaitiakitanga (ethic of environmental guardianship)	Food that is produced by those guarding the environmental for future generations of non-human communities, and in turn feeling guarded and supported by them.	The food is produced by those who feel an obligation to act as stewards and guardians of the lands and waters from which the food derives.
Manaakitanga (ethic of hospitality)	Food that is provided to grow, support, and nurture the mana and welfare of those consuming it.	Food that is provided to grow, support, and nurture the moral standing and welfare of those consuming it.
Whanaungatanga (ethic of relationships)	Food from communities that uplift and enhancing kinship ties between people and the environment so that both may flourish.	Food from communities that uplift and enhancing kinship ties between people and the environment so that both may flourish.
Kaihaukai (a method of food exchange that builds social obligations and connections)	The food comes from methods of exchange that acknowledge the tapu/sanctity of whanau-to-whanau and community-to-community connections and relationships.	The markets and supply chains from which the food derives are built on ethical relationships of care, trust, and respect
Self-sufficiency	The food has been sourced by traditional hunter-gatherers who have a strong connection with the ecosystems in which they operate.	
Seasonality	The food is produced by those with a history of travel, enterprise, and movement with the seasons. Such food is fresh and wild.	
Kinaki	The food is rare and a delicacy produced for special occasions only - such as weddings, tangi (funerals), and mana-enhancing tribal exchanges.	
Modern Vitalism	Food that has an attribute of being both contemporary yet produced according to an indigenous wisdom tradition	
Cultural Regeneration	Food that is rare and has an attribute of maintaining cultural practices at risk of extinction	
Indigenous Investment	Food that has the attribute of supporting the wellbeing and welfare of indigenous people and their lands and water.	

of products and services in monetary terms. Based on these valuations, potential market demand can be estimated.³³

There are several different approaches to WTP studies, the primary differences being whether they measure WTP directly or indirectly and whether they determine consumers' hypothetical WTP or actual WTP.³⁴ There are also numerous ways of conducting WTP studies, including laboratory experiments, field work, auctions, expert judgements, customer surveys, conjoint analysis, and discrete choice analysis.³⁵ The first three utilise revealed (hypothetical) preferences, gathering insights from market data and experiments, while the last four use stated (actual) preferences, specifically asking what values would be placed on different products.³⁶ Direct methods simply ask how much someone is willing to pay, while indirect methods use conjoint analysis, which juxtaposes a number of different options with carefully calibrated differences. Both direct and indirect methods have their flaws, "studies have shown that both direct and indirect approaches can generate inaccurate results for various psychological and technical reasons."³⁷ As Miller et al. explain, "both approaches measure consumers' hypothetical, rather than actual, WTP and thus can generate hypothetical bias, which the economics literature defines as the bias induced by the hypothetical nature of a task."³⁸ That said, Schmidt and Bijmolt note that "many researchers assume that direct methods create a stronger hypothetical bias, because they evoke greater price consciousness", warning against their use over indirect methods.³⁹ Despite this, "practitioners largely

continue to rely on direct survey methods, which tend to be easier to implement."⁴⁰ While WTP is the main mechanism for ascertaining consumer values for different attributes, the field has not advanced significantly and many of the studies utilise the least accurate but easiest methods.

WTP and indigenous products

Generally speaking, there have not been many WTP studies of indigenous products though there are some that can be drawn on here to provide a summary. Yang et al. conducted a WTP study on food from the Arctic, which has a number of potential indigenous credence attributes. As they note, most of the general WTP literature examines a specific attribute in isolation – e.g. sustainability. "In reality," they explain, "foods from a specific region often imbue a number of credence attributes, and teasing apart which of these attributes really matter to consumers is valuable from a regional development perspective."⁴¹ The indigenous credence attributes are inherently connected to the environment, they explain. They surveyed consumers' perceptions of Arctic foods across six dimensions: perceptions of the Arctic as a unique food-producing origin, the sustainability of Arctic foods, the relationship between Arctic foods and indigenous culture/traditions, perceptions of taste, quality and healthiness, as well as perceived impacts of Arctic foods on the environment and on local indigenous communities.⁴² Of particular interest are those focused on indigenous issues. They found that over 70% believed consuming Arctic foods allows the experience of indigenous cultures and helps preserve local Arctic indigenous

34. Miller et al. (2011).
 35. Dolgoplova & Teuber (2018).
 36. Dolgoplova & Teuber (2018).
 37. Miller et al. (2011, p. 173).
 38. Miller et al. (2011, p. 173).
 39. Schmidt & Bijmolt (2020, p. 500).

40. Schmidt & Bijmolt (2020, p. 500).
 41. Yang et al. (2020, p. 1).
 42. Yang et al. (2020).
 43. Yang et al. (2020).
 44. Yang et al. (2020, p. 9).

culture and tradition, 88.5% agreed that buying Arctic foods can support local Arctic indigenous communities, and that 78.5% of respondents were very or somewhat willing to try indigenous-inspired foods.⁴³ In terms of WTP, they found that consumers also respond positively to indigenous fishers, with estimated WTP premiums of between \$7.14 and \$8.00 “for Arctic char [a species of fish] harvested by Indigenous fishers compared to those harvested by non-Indigenous fishers.”⁴⁴

Tait et al. conducted a WTP of New Zealand beef products into California, which included questions on Māori culture and production. After first filtering for those respondents who had never heard of Māori or knew very little, they asked to indicate which attributes that they associated with beef produced by a Māori enterprise. “Respondents stated the most associated attributes with beef produced from a Māori enterprise included”, Tait et al. explain, “‘care of traditional cultures’ (56 per cent strong association/moderate association), ‘traditional’ (53 per cent strong association/moderate association), and ‘local knowledge’ (51 per cent strong association/moderate association). Respondents also indicated that ‘spirituality’ (46 per cent strong association/moderate association), ‘stewardship over land’ (49 strong association/moderate association), and ‘natural’ (50 per cent strong association/moderate association) were also important attributes associated with beef produced from a Māori enterprise.”⁴⁵ They did not ask

a specific Māori-oriented question in the WTP part of the study. However, as they note:

“The description used here was formed on the basis of being a central defining characteristic of Maori enterprises. This view was formed by reviewing of Māori enterprise definitions available online used in current products. These reflected an important Māori enterprise characteristic concerning collective ownership structures. The review also revealed a second major defining characteristic, stewardship over relevant natural resources including land. We consider that the environmental sustainability attributes already included are sufficient to meet this criteria and so do not specify a stewardship specific attribute.”⁴⁶

There were also some other questions that align well with the above table of Māori credence attributes. The following are WTP results for minced beef, top sirloin, and ribeye steak respectively that have some degree of alignment:

- 100% grass fed – 2.46, 2.72, 4.05;
- Social responsibility – 1.00, 1.09, 1.64;
- Organic – 1.72; 1.82, 2.60;
- Enhanced animal welfare – 1.04, 1.13, 1.70;
- Environmental sustainability – 0.52, 0.57, 0.85;
- NZ raised and processed – 1.54, 1.71, 2.54.

Aside from environmental sustainability, which was a negative in terms of WTP, the rest all scored highly, with 100% grass fed the highest WTP in the study.

45. Tait, P. R., Rutherford, P., Driver, T., Li, X., Saunders, C. M., Dalziel, P. C., & Guenther, M. (2018). Consumer insights and willingness to pay for attributes: New Zealand beef products in California, USA. Research Report No. 348, Lincoln University: Agribusiness and Economics Research Unit, p. 21.

46. Tait et al. (2020, p. 8).

47. Rout, M., & Reid, J. (unpublished). The use of indigenous cultural attributes to obtain premiums in international perfume markets. AERU

48. Rout & Reid (unpublished), p. 53.

Table 2: Credence attributes used in determining WTP for New York survey

Perfume attributes	Description
Purity (Mauri/ Kaitiakitanga)	The ingredients of the fragrance come from the pristine mountains in New Zealand.
Vitality (Mauri)	The fragrance is understood by Māori to confer vitality on the wearer.
Empowering (Mana/Tino Rangatiratanga)	This fragrance is made using restored cultural knowledge and processes and supports the social and economic development of the tribe that makes it.
Authenticity (Tikanga)	The origins and story surrounding this fragrance will be verified to the consumer
Exclusivity (Taonga/Mana)	This fragrance will be made in small batches, assuring its exclusiveness, and conferring status and dignity to the wearer.

While not a food product, a WTP study has also been conducted for perfume made using taramea (a plant also called Wild Spaniard).⁴⁷ This study surveyed citizens of New York to determine their WTP for a range of Māori credence attributes, listed in Table 2 overleaf: The study found that “consumers in New York are willing to pay significant premiums for taramea cultural attributes.”⁴⁸ Overall, the “cultural credence attributes attract a 71% premium over average expenditure.”⁴⁹ While the exact amounts are not available publicly due to commercial sensitivities, the dollar amounts where significant and, if accurate, inferred that use of indigenous credence attributes to add value to this perfume was financially viable and possibly even lucrative.

WTP alignments

There are WTP studies across numerous different credence attributes for food, as well as related domains. A non-exhaustive list of different food categories is: sustainability, fair trade, organics, local foods, country of origin, animal welfare, ethical production, food security, food sovereignty, provenance, and luxury/premium.⁵⁰ Finding alignments is both easy and difficult. While there are many similarities, they are never perfectly aligned. Furthermore, often the studies are not directly relevant for a range of other reasons including being focused on specific food products that may not cross over with those produced by Māori or from a specific region

49. Rout & Reid (unpublished), p. 54.

50. Adams, D. C., & Salois, M. J. (2010). Local versus organic: A turn in consumer preferences and willingness-to-pay. *Renewable agriculture and food systems*, 25(4), 331-341; Bhatt, S., Ye, H., Deutsch, J., Ayaz, H., & Suri, R. (2020). Consumers' willingness to pay for upcycled foods. *Food Quality and Preference*, 86, 104035; Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. *Appetite*, 163, 105239.

51. Bamwesigye, D., Hlavackova, P., Sujova, A., Fialova, J., & Kupec, P. (2020). Willingness to pay for forest existence value and sustainability. *Sustainability*, 12(3), 891; Turpie, J. K. (2003). The existence value of biodiversity in South Africa: how interest, experience, knowledge, income and perceived level of threat influence local willingness to pay. *Ecological Economics*, 46(2), 199-216.

52. Bamwesigye et al. (2020, p. 891).

53. Turpie (2003, p. 199).

54. Bamwesigye et al. (2020, p. 892).

55. Clark, B., Stewart, G. B., Panzone, L. A., Kyriazakis, I., & Frewer, L. J. (2017). Citizens, consumers and farm animal welfare: A meta-analysis of willingness-to-pay studies. *Food Policy*, 68, 112-127

56. De Pelsmacker, P., Driesen, L., & Rayp, G. (2005). Do consumers care about ethics? Willingness to pay for fair-trade coffee. *Journal of consumer affairs*, 39(2), 363-385; Konuk, F. A. (2019). Consumers' willingness to buy and willingness to pay for fair trade food: The influence of consciousness for fair consumption, environmental concern, trust and innovativeness. *Food research international*, 120, 141-147.

57. Patel, R. (2009). Food sovereignty. *The Journal of Peasant Studies*, 36(3), 663-706.

58. Dolgoplova & Teuber (2018).

59. Dolgoplova & Teuber (2018).

60. Dolgoplova & Teuber (2018).

outside of Aotearoa. Nevertheless, they do give some indication and are all that are currently available. Generally speaking, the WTP analogues have been taken from food studies, though where necessary broader topics will be covered. For example, there has been research into the existential value of ecosystems and biodiversity which provide useful insights into some of the more esoteric elements of Māori credence

attributes that are unlikely to have been examined by more prosaic food studies WTP analysis. Likewise tourism provides a number of WTPs that cover culture, offering a useful resource. Further, while most of the analogues in the table below are fairly standard – viz. fair trade – some of them, including existential values, are more outré and will be explained in Table 3 below:

Table 3: Alignment between Māori credence attributes and WTP study categories

Credence attribute	Māori	Aligned WTP area of study
Whakapapa and atua	Food comes from our relatives in nature and is gifted by the gods	Existence value. WTP studies have examined "forest existence value and sustainability." Another study has examined the "existence value of biodiversity." Existence value is "a component of non-use value, arises from the idea that some individuals express a willingness to pay to conserve an element of biological diversity even though they neither make use of it nor intend others to benefit from it."
Mana	Consumption of the food enhances the mana or dignity of the person consuming it and that of the atua domain from which it derives.	Animal welfare. Fair trade. Food sovereignty.
Mauri	Consumption of the food enhances the mauri or vitality of the person consuming it and that of the atua domain from which it derives.	Healthy/functional foods. Functional foods are foods that offer health benefits beyond their nutritional value. They have an intermediate status between food and medicine. They are often innovative as well, adding an extra dimension to WTP.
Noa (opposite of tapu)	The origins and story surrounding this fragrance will be verified to the consumer	Halal/Kosher foods. Food safety.
Utu	This fragrance will be made in small batches, assuring its exclusiveness, and conferring status and dignity to the wearer.	Animal welfare. Fair trade. Human values. WTP studies have examined cross-cultural human values to understand how these impact a range of ethical/moral purchasing decisions, including on social/collective outcomes.

Credence attribute	Māori	Aligned WTP area of study
Tino Rangatiratanga (sovereignty, independence)	The food is produced by Māori seeking management over their lands to fulfil their kaitiaki (guardian) obligations to the atua.	Sustainable foods. Fair trade. Food security. Alternative food networks. Human values.
Turangawaewae (land with significance and which Māori hold rights to)	The food is produced by those that are deeply related and interconnected with non-human relations from which the food emerges.	Local foods. Provenance/country of origin.
Kaitiakitanga (ethic of environmental guardianship)	Food that is produced by those guarding the environmental for future generations of non-human communities, and in turn feeling guarded and supported by them.	Sustainable foods
Manaakitanga (ethic of hospitality)	Food that is provided to grow, support, and nurture the mana and welfare of those consuming it.	Fair trade. Local foods. Food sovereignty. Alternative food networks
Whanaungatanga (ethic of relationships)	Food from communities that uplift and enhancing kinship ties between people and the environment so that both may flourish.	Fair trade. Local foods. Food sovereignty. Alternative food networks
Kaihaukai (a method of food exchange that builds social obligations and connections)	The food comes from methods of exchange that acknowledge the tapu/sanctity of whanau-to-whanau and community-to-community connections and relationships.	Fair trade. Local foods. Food sovereignty. Alternative food networks
Self-sufficiency	The food has been sourced by traditional hunter-gatherers who have a strong connection with the ecosystems in which they operate.	Wild caught.
Seasonality	The food is produced by those with a history of travel, enterprise, and movement with the seasons. Such food is fresh and wild.	Seasonality. Wild caught.
Kinaki	The food is rare and a delicacy produced for special occasions only - such as weddings, tangi (funerals), and mana-enhancing tribal exchanges.	Innovative food. Novel foods. Luxury/premium foods.
Modern Vitalism	Food that has an attribute of being both contemporary yet produced according to an indigenous wisdom tradition	Natural food.
Cultural Regeneration	Food that is rare and has an attribute of maintaining cultural practices at risk of extinction	Culture (tourism). Food sovereignty.
Indigenous Investment	Food that has the attribute of supporting the wellbeing and welfare of indigenous people and their lands and water.	Food sovereignty.

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64. Fitzsimmons & Cicia (2018).

65. Feucht, Y., & Zander, K. (2017). Consumers' willingness to pay for climate-friendly food in European countries. *Proceedings in Food System Dynamics*, 360-377; Huang, Y., Zhao, C., Gao, B., Ma, S., Zhong, Q., Wang, L., & Cui, S. (2022). Life cycle assessment and society willingness to pay indexes of food waste-to-energy strategies. *Journal of Environmental Management*, 305, 114364; Tait, P., Saunders, C., Guenther, M., & Rutherford, P. (2016). Emerging versus developed economy consumer willingness to pay for environmentally sustainable food production: A choice experiment approach comparing Indian, Chinese and United Kingdom lamb consumers. *Journal of Cleaner Production*, 124, 65-72.

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71. Arnoult, M., Lobb, A., & Tiffin, R. (2010). Willingness to pay for imported and seasonal foods: A UK survey. *Journal of International Food & Agribusiness Marketing*, 22(3-4), 234-251.

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73. Canavari, M., Castellini, A., & Xhakollari, V. (2023). A short review on willingness to pay for novel food. *Case Studies*

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Willingness to Pay Studies for an International Audience

In this section we consider a broad range of WTP studies from New Zealand and international research. Table 4 provides a compilation of results from various studies. Additionally, this table aligns the credence attributes studied with the Māori equivalent attributes described in Table 2.

The results shown in Table 4 demonstrate significant variations for WTP, often for

the same credence attribute. For a Māori enterprise seeking to position its products as premium offerings in export markets, understanding these consumer preferences can help inform marketing strategies, product development, and targeting efforts. However, it is crucial to consider the strengths, weaknesses, and inconsistencies in the data to develop a balanced understanding of how this information can be used by Māori producers.

Table 4: Meta-analysis of WTP studies

Attribute	Alignment	Mean WTP (%)	Reference
Handcrafted product	Whakapapa and atua, Mana, Tino Rangatiratanga, Cultural Regeneration, Indigenous Investment	10%	Kovacs, I., & Keresztes, E. R. (2022). Perceived consumer effectiveness and willingness to pay for credence product attributes of sustainable foods. Sustainability, 14(7), 4338
Preservative/colouring-free	Mauri, Kaitiakitanga, Seasonality, Modern Vitalism	10%	
Traditional	Whakapapa and atua, Mana, Tino Rangatiratanga, Turangawaewae, Cultural Regeneration, Indigenous Investment	9%	
Modified	Noa, Self-sufficiency, Modern Vitalism	9%	
Local food	Turangawaewae, Kaitiakitanga, Manaakitanga, Whanaungatanga, Kaihaukai, Self-sufficiency, Seasonality, Indigenous Investment	21%	Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. Appetite, 163, 105239.
Organically grown	Mauri, Kaitiakitanga, Seasonality, Modern Vitalism	9%	Kovacs, I., & Keresztes, E. R. (2022). Perceived consumer effectiveness and willingness to pay for credence product attributes of sustainable foods. Sustainability, 14(7), 4338.
		44%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products—A meta-analysis. Journal of Agricultural Economics, 70(3), 618-639.
		38%	Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. Appetite, 163, 105239.
		7%	Kovacs, I., & Keresztes, E. R. (2022). Perceived consumer effectiveness and willingness to pay for credence product attributes of sustainable foods. Sustainability, 14(7), 4338.
Gluten - or lactose-free	Manaakitanga, Whanaungatanga, Kinaki	26%	Kovacs, I., & Keresztes, E. R. (2022). Perceived consumer effectiveness and willingness to pay for credence product attributes of sustainable foods. Sustainability, 14(7), 4338.
Environment -friendly	Mauri, Kaitiakitanga, Manaakitanga	1%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products—A meta-analysis. Journal of Agricultural Economics, 70(3), 618-639.
			Goebel, P., Reuter, C., Pibernik, R., Sichtmann, C., & Bals, L. (2018). Purchasing managers' willingness to pay for attributes that constitute sustainability. Journal of Operations Management, 62, 44-58.
			Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. Appetite, 163, 105239.

Attribute	Alignment	Mean WTP (%)	Reference
Hormone/antibiotic-free	Mauri, Kaitiakitanga, Modern Vitalism	21%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products—A meta-analysis. Journal of Agricultural Economics, 70(3), 618-639.
Grass-based	Turangawaewae, Kaitiakitanga, Seasonality	60%	
Food safety	Mana, Mauri, Manaakitanga, Whanaungatanga, Utu	42%	
Protected Designations of Origins (PDOs)/Protected Geographical Indications (PGIs)	Whakapapa and atua, Mana, Tino Rangatiratanga, Turangawaewae, Cultural Regeneration, Indigenous Investment	63%	
Country of Origins (COOs)/Region of Origins (ROOs)	Whakapapa and atua, Mana, Tino Rangatiratanga, Turangawaewae, Cultural Regeneration, Indigenous Investment	34%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products—A meta-analysis. Journal of Agricultural Economics, 70(3), 618-639.
Traceability	Whakapapa and atua, Mana, Utu, Kaitiakitanga, Indigenous Investment	40%	
Mixed attributes	Mauri, Kaitiakitanga, Manaakitanga, Whanaungatanga, Modern Vitalism	32%	Tait, P., Saunders, C., Guenther, M., & Rutherford, P. (2016). Emerging versus developed economy consumer willingness to pay for environmentally sustainable food production: A choice experiment approach comparing Indian, Chinese and United Kingdom lamb consumers. Journal of Cleaner Production, 124, 65-72.
Safety	Mana, Mauri, Noa, Manaakitanga, Whanaungatanga, Utu	34%	
Water	Mauri, Kaitiakitanga	33%	
GHC	Kaitiakitanga, Manaakitanga	11%	
Biodiversity	Mauri, Kaitiakitanga	14%	*Results have been averaged across studies from China, India, and the U.K.
Anti-Corruption Standards	Mana, Noa, Utu, Tino Rangatiratanga	12%	Goebel, P., Reuter, C., Pibernik, R., Sichtmann, C., & Bals, L. (2018). Purchasing managers' willingness to pay for attributes that constitute sustainability. Journal of Operations Management, 62, 44-58.
Labor Standards	Mana, Noa, Manaakitanga, Whanaungatanga, Utu, Tino Rangatiratanga	1%	
Human Rights	Mana, Noa, Manaakitanga, Whanaungatanga, Utu, Tino Rangatiratanga	1%	
Drinks	Manaakitanga, Whanaungatanga, Kaihaukai, Kinaki	25%	Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. Appetite, 163, 105239.
Seafood		17%	
Dairy	Mauri, Kaitiakitanga, Manaakitanga, Kinaki, Whanaungatanga, Kaihaukai, Seasonality	35%	
Fruit & vegetable		39%	
Meat		29%	
Fair-trade	Mana, Noa, Manaakitanga, Utu, Tino, Whanaungatanga, Rangatiratanga, Kaitiakitanga, Indigenous Investment	31%	
Animal welfare	Mauri, Kaitiakitanga, Manaakitanga, Whanaungatanga	51%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products—A meta-analysis. Journal of Agricultural Economics, 70(3), 618-639.
		9%	Kovacs, I., & Keresztes, E. R. (2022). Perceived consumer effectiveness and willingness to pay for credence product attributes of sustainable foods. Sustainability, 14(7), 4338.
		51%	Tait, P., Saunders, C., Guenther, M., & Rutherford, P. (2016). Emerging versus developed economy consumer willingness to pay for environmentally sustainable food production: A choice experiment approach comparing Indian, Chinese and United Kingdom lamb consumers. Journal of Cleaner Production, 124, 65-72.
		28%	Clark, B., Stewart, G. B., Panzone, L. A., Kyriazakis, I., & Frewer, L. J. (2017). Citizens, consumers and farm animal welfare: A meta-analysis of willingness-to-pay studies. Food Policy, 68, 112-127.
		78%	
• Pig		28%	Clark, B., Stewart, G. B., Panzone, L. A., Kyriazakis, I., & Frewer, L. J. (2017). Citizens, consumers and farm animal welfare: A meta-analysis of willingness-to-pay studies. Food Policy, 68, 112-127.
• Layer Hen		78%	
• Broiler Chicken	Mauri, Kaitiakitanga, Manaakitanga, Whanaungatanga	40%	
• Dairy Cow		111%	
• Beef Cow		120%	
• Fish		37%	

Note: In Table 5 we have compiled data on demographic characteristics and their influence on WTP.

Table 5: Demographic relationships to WTP

Demographics	Sub-category	Mean WTP	References	
Region	Northern Europe	12%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products–A meta-analysis. <i>Journal of Agricultural Economics</i> , 70(3), 618-639.	
	Southern Europe	143%		
	Western Europe	107%		
	Europe		49%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products–A meta-analysis. <i>Journal of Agricultural Economics</i> , 70(3), 618-639.
			32%	Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. <i>Appetite</i> , 163, 105239.
	North America		34%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products–A meta-analysis. <i>Journal of Agricultural Economics</i> , 70(3), 618-639.
			75%	Clark, B., Stewart, G. B., Panzone, L. A., Kyriazakis, I., & Frewer, L. J. (2017). Citizens, consumers and farm animal welfare: A meta-analysis of willingness-to-pay studies. <i>Food Policy</i> , 68, 112-127.
			26%	Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. <i>Appetite</i> , 163, 105239.
	Asia		56%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products–A meta-analysis. <i>Journal of Agricultural Economics</i> , 70(3), 618-639.
			32%	Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. <i>Appetite</i> , 163, 105239.
Oceania		78%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products–A meta-analysis. <i>Journal of Agricultural Economics</i> , 70(3), 618-639.	
		17%	Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. <i>Appetite</i> , 163, 105239.	
Other regions		54%	Yang, W., & Renwick, A. (2019). Consumer willingness to pay price premiums for credence attributes of livestock products–A meta-analysis. <i>Journal of Agricultural Economics</i> , 70(3), 618-639.	
Gender	Male	49%		
	Female	62%		
Age (years)	18–24	66%	Khan, W., Siddiquei, M. I., Muneeb, S. M., & Farhan, M. (2022). Factors affecting willingness to pay premium prices for socially responsible food products: Evidence from Indian consumers. <i>Business and Society Review</i> , 127(2), 423-436.	
	25–34	46%		
	35–44	48%		
	Above 45	37%	Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. <i>Appetite</i> , 163, 105239.	
	18–30 years old	30%		
	31–55 years old	35%		
56 and older	30%			
Professional status	Service	52%		
	Self-employed	54%		
	Students	57%		
Family monthly income level (Rs.)	Less than 10,000	62%	Khan, W., Siddiquei, M. I., Muneeb, S. M., & Farhan, M. (2022). Factors affecting willingness to pay premium prices for socially responsible food products: Evidence from Indian consumers. <i>Business and Society Review</i> , 127(2), 423-436.	
	10,000–25,000	53%		
	25,000–50,000	44%		
	More than 50,000	42%	Li, S., & Kallas, Z. (2021). Meta-analysis of consumers' willingness to pay for sustainable food products. <i>Appetite</i> , 163, 105239.	
	< \$30,000	28%		
	\$30,001–60,000	26%		
> \$60,001	31%			

Strengths of the data

The data provide a broad overview of credence attributes, highlighting the relative importance of each attribute for consumers. This information can help Māori enterprises identify the key attributes that resonate with their target market and align their products accordingly to achieve a price premium. The data highlight differences in WTP values for credence attributes across various regions, with consumers from Southern and Western Europe exhibiting higher WTP compared to other regions. This information can help Māori enterprises identify potential export markets with greater demand for products with these attributes, enabling them to target their marketing efforts and achieve a price premium. The data also provide other demographic insights, showing for example, that younger and female consumers generally display higher WTP values for credence attributes, which can be useful for Māori enterprises to focus their marketing efforts on these segments in the export market.

Weakness of the data

The data have numerous limitations that are crucial to highlight. The relationship between income and WTP for credence attributes is not straightforward, with some evidence suggesting that lower-income consumers may prioritise credence attributes more than those with higher incomes. This finding is inconsistent with the general expectation that higher-income consumers would be more willing to pay a premium for such products. Further research is needed to understand the underlying factors driving these results and how they may affect Māori enterprises' marketing strategies.

The study provides aggregated data for various regions and demographic groups, which may not capture specific consumer preferences within those groups. For instance, while the data indicates a higher WTP for credence attributes among European consumers overall, it may not accurately reflect the preferences of individual countries within the region. Māori enterprises may need more granular data to identify specific target markets and tailor their marketing strategies accordingly.

The study does not account for potential cultural differences within the demographic groups analysed, which may impact consumer preferences for credence attributes. Cultural factors may play a significant role in determining WTP values, especially for Māori products, which are deeply rooted in Māori values and traditions. Understanding these cultural nuances is essential for Māori enterprises to develop effective marketing strategies that resonate with their target audience.

How Māori enterprises could use these data

The study provides a comprehensive list of credence attributes and their associated WTP values. Māori enterprises can use this information to align their products with the credence attributes that resonate with their target market while also staying true to their cultural values. This approach can help Māori enterprises position their products as premium offerings that cater to consumer preferences and command a price premium. The demographic analysis of WTP values can help Māori enterprises identify consumer segments that are more likely to value their products' credence attributes, such as younger and female

consumers. By targeting these segments, Māori enterprises can enhance their marketing effectiveness and achieve a price premium in export markets. WTP values indicate that consumers in Southern and Western Europe generally exhibit higher WTP for credence attributes. Māori enterprises can exploit this opportunity by focusing their marketing efforts and product positioning in these regions, which may be more receptive to their premium offerings.

The analysis of WTP data for credence attributes, combined with demographic data, offers valuable insights for Māori enterprises seeking to position their products as premium offerings in export markets. By understanding the regional and demographic variations in consumer preferences, Māori enterprises can develop targeted marketing strategies, align their products with the desired credence attributes, and achieve a price premium. However, it is essential to consider the strengths, weaknesses, and inconsistencies in the data and to invest in market-specific research to ensure that marketing efforts are tailored to the unique needs and preferences of the target audience. Furthermore, Māori enterprises should be mindful of potential cultural differences that may impact consumer preferences for credence attributes and ensure that their marketing strategies and product offerings resonate with the values and traditions of their target market. By doing so, Māori enterprises can capitalise on the growing demand for products with credence

attributes and strengthen their position in export markets.

Improving Data Quality

There are several approaches that could be undertaken to improve the data beyond what is presented in Tables 4 and 5 for Māori enterprises. Detailed market research could be undertaken using similar methods taken by the cited authors to obtain more context-specific WTP estimates. However, this approach does not align well with the need for agile, accurate, and up-to-date data, which would be critical to a data information platform to guide producers. A list of alternative options to resource-intensive market research are presented below along with their strengths and weaknesses.

Transaction data analysis:

Collect and analyse transaction data from retailers and e-commerce platforms selling Māori products. This data can provide insights into consumer preferences and purchasing patterns, allowing Māori enterprises to identify trends and target their marketing efforts accordingly. Additionally, analysing the transaction data over time can help identify seasonal trends or product-specific preferences.

Strengths:

- Offers direct insights into consumer purchasing patterns, making it easier to understand preferences and trends.
- Can identify seasonal trends or product-specific preferences for better targeting.

Weaknesses:

- Lacks qualitative information on consumer motivations and reasons for purchase.
- May not represent consumers' willingness to pay for a premium product, as it focuses on actual transactions.

Social media analytics:

Social media platforms are a rich source of consumer opinions and preferences. Analysing social media data (e.g., posts, comments, and hashtags) can provide valuable insights into consumer sentiments, emerging trends, and popular product attributes. Sentiment analysis and natural language processing (NLP) tools can be used to mine this data and extract relevant information.

Strengths:

- Provides real-time insights into consumer opinions and preferences.
- Can identify emerging trends and popular product attributes.

Weaknesses:

- May not directly translate to actual consumer behaviour or willingness to pay.
- Social media data can be noisy and subject to bias.

Online reviews and ratings: Analyse online reviews and ratings of Māori products on various e-commerce platforms, blogs, and

forums. This data can provide insights into the specific product attributes that consumers value most and any areas where improvements can be made. Text mining and NLP techniques can be employed to extract relevant information from these reviews and ratings.

Strengths:

- Offers insights into specific product attributes valued by consumers.
- Provides direct feedback on areas of improvement.

Weaknesses:

- Subject to reviewer bias and may not represent the broader market.
- Does not provide quantitative data on willingness to pay.

Market basket analysis:

Examine the purchasing patterns of consumers who buy Māori products in conjunction with other products. Market basket analysis can help identify product associations and complementary items, enabling Māori enterprises to develop targeted marketing strategies and promotional campaigns.

Strengths:

- Identifies product associations and complementary items for targeted marketing strategies.
- Can reveal consumer preferences that are not immediately apparent.

Weaknesses:

- Lacks information on why consumers purchase certain products together.
- May not capture premium products' value in the analysis.

Data mining of existing studies:

Conduct a comprehensive review of existing studies and databases (other than WTP studies) related to consumer preferences for food products, organic products, and other attributes relevant to Māori products. This information can be used to identify common trends and patterns that can inform the marketing strategies of Māori enterprises.

Strengths:

- Leverages existing research to identify common trends and patterns.
- Provides a broad overview of consumer preferences and attitudes.

Weaknesses:

- Limited by the scope and quality of existing studies.
- May not be specific to Māori enterprises and premium products.

Big data analysis:

Utilise big data analytics tools to analyse large datasets from various sources, such as retail sales, online searches, and social media mentions. This data can help identify emerging trends and consumer preferences, allowing Māori enterprises to adapt their product offerings and marketing strategies accordingly.

Strengths:

- Enables identification of emerging trends and consumer preferences across various data sources.
- Can process large amounts of data quickly and efficiently.

Weaknesses:

- May require significant investment in tools and resources.
- Complex datasets can lead to challenging interpretation of results.

Machine learning and AI-driven insights:

Employ machine learning and artificial intelligence tools to analyse large volumes of consumer preference data from multiple sources. These tools can help identify patterns and trends that may not be immediately apparent through traditional data analysis techniques.

Strengths:

- Capable of identifying patterns and trends not easily detected by traditional analysis techniques.
- Can process and analyse large amounts of data from multiple sources.

Weaknesses:

- Requires significant investment in tools, infrastructure, and expertise.
- Predictive models may be subject to bias and misinterpretation.

Collaboration with industry partners:

Establish partnerships with retailers, distributors, and industry associations to access and analyse their proprietary data on consumer preferences and sales trends. This data can provide valuable insights into the attributes and product characteristics that drive consumer demand and help Māori enterprises position their products effectively.

Strengths:

- Access to proprietary data from retailers and distributors can provide valuable insights.
- Facilitates knowledge sharing and collaborative strategies.

Weaknesses:

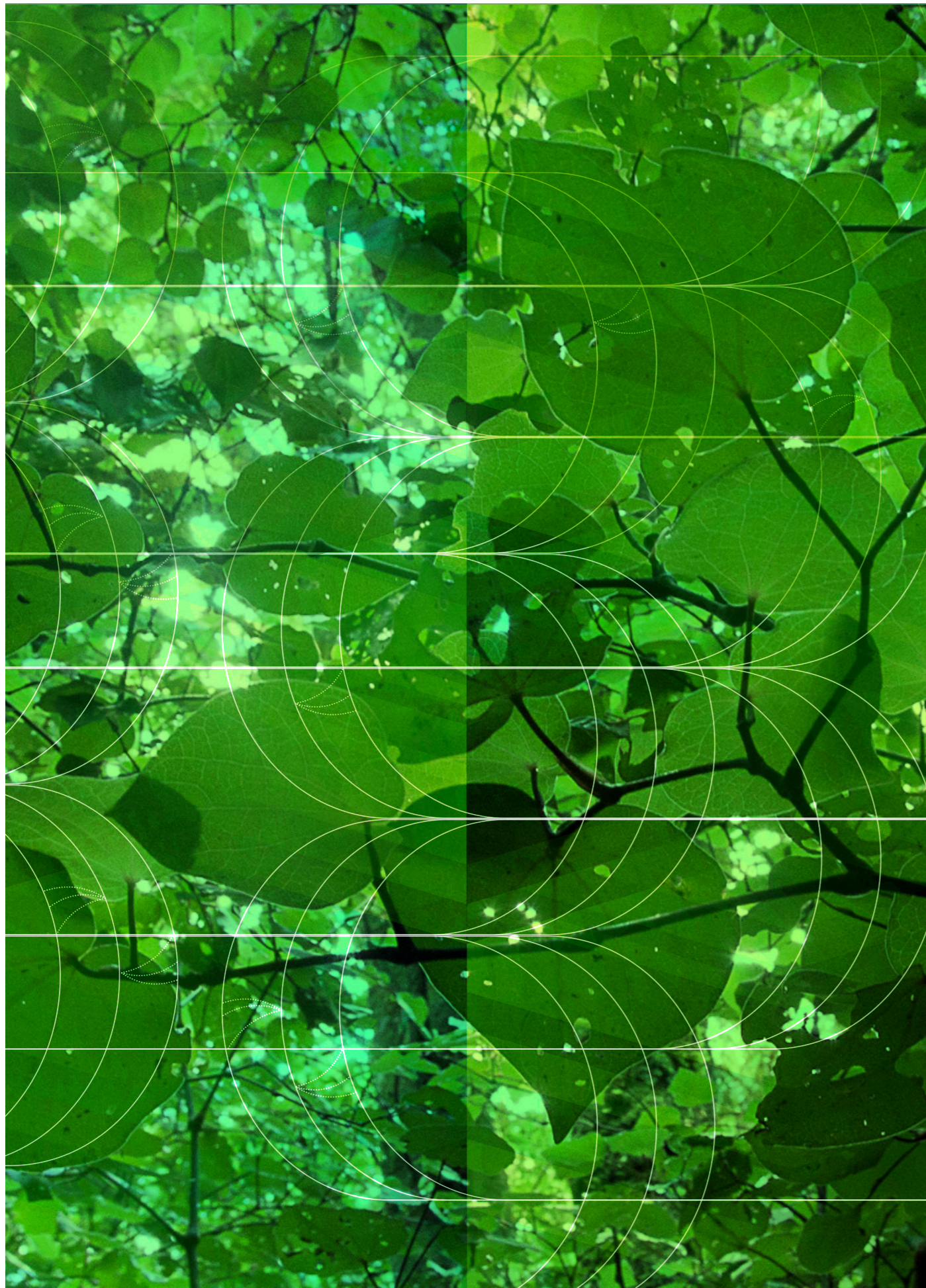
- Partners may be unwilling to share sensitive data.
- Competing interests among partners could limit collaboration.

Data gathered by these methods can be used to develop targeted marketing strategies, product development, and positioning efforts, enabling Māori enterprises to achieve a price premium in export markets.

A Multi-Method Approach – Future Stretch

A promising strategy for helping Māori enterprises target premium products in international markets likely involves combining various methods. Numerous international datasets offer insights into different nations' priorities. For instance, the Human Development Index (HDI) reveals social wellbeing metrics, while the Environmental Performance Index (EPI) offers country-level environmental data. These databases, when combined, create a solid foundation for understanding pressing issues in export markets. Enterprises offering products that address these issues can better align with consumer preferences.

Further datasets from the International Trade Centre (ITC) and the World Bank can help estimate market opportunities. Google Trends assesses target market interests, and a sustainability assessment or assurance framework ensures an enterprise demonstrates clear impact on the issues at hand. A multi-stage model combining these datasets and methods would significantly advance strategic decision-making resources for Māori enterprises.



Suitable Indicators/ Frameworks/Systems

There are numerous indicator frameworks or approaches that could be used by an enterprise to measure and communicate their performance against the credence attributes. The precise metrics to be used would depend on the context of the enterprise; for example, a dairy farmer would require different metrics to a dairy producer. At a high level, several well regionalised frameworks could be used.

Global Reporting Initiative (GRI) Standards: The GRI Standards are a widely used set of sustainability reporting guidelines that help organisations measure and report their economic, environmental, and social performance. GRI Standards can be applied to assess performance against several credence attributes, such as environment-friendly, labour standards, and human rights.
[Source: https://www.globalreporting.org/standards/](https://www.globalreporting.org/standards/)

Sustainable Development Goals (SDGs) Indicators: The United Nations' SDGs provide a comprehensive framework of 17 goals and 169 targets that cover various aspects of sustainable development. Enterprises can use these indicators to measure their performance on different credence attributes, such as biodiversity, water, GHG emissions, and fair trade.
[Source: https://unstats.un.org/sdgs/indicators/indicators-list/](https://unstats.un.org/sdgs/indicators/indicators-list/)

International Organization for Standardization (ISO) Standards: ISO offers various standards that enterprises can use to measure their performance against specific credence attributes. For instance, ISO 14001 focuses on environmental

management systems, while ISO 22000 covers food safety management systems.
[Source: https://www.iso.org/standards.html](https://www.iso.org/standards.html)

B Corporation Certification: B Corp Certification is a third-party certification that assesses a company's overall social and environmental performance. The B Impact Assessment (BIA) tool can help enterprises measure their performance against several credence attributes, such as labor standards, environment-friendly practices, and fair trade.
[Source: https://bcorporation.net/certification](https://bcorporation.net/certification)

Fair Trade Certification: Fair Trade USA and Fairtrade International provide certification systems that ensure products meet specific environmental, labour, and developmental standards. Enterprises can use these frameworks to assess their performance against fair trade and labour standards attributes.
[Sources: https://www.fairtradecertified.org/](https://www.fairtradecertified.org/)

Rainforest Alliance Certification: The Rainforest Alliance offers a certification program that promotes sustainable agriculture practices and biodiversity conservation. Enterprises can use this framework to measure their performance against environment-friendly and biodiversity-related attributes.
[Source: https://www.rainforest-alliance.org/business/certification/](https://www.rainforest-alliance.org/business/certification/)

SA8000 Standard: The SA8000 Standard is a social accountability standard developed by Social Accountability International (SAI). It focuses on labor rights, working conditions, and human rights, allowing

enterprises to measure their performance against labor standards and human rights attributes.

Source: <https://sa-intl.org/sa8000/>

Carbon Disclosure Project (CDP): CDP is a global environmental disclosure system that helps organisations measure and manage their environmental impacts. Enterprises can use CDP to assess their performance against GHG emissions and other environment-friendly attributes.

Source: <https://www.cdp.net/en>

For New Zealand primary producers, a range of more specific frameworks could be used, including:

New Zealand Sustainability Dashboard (NZSD): The NZSD provides a framework and set of indicators for the sustainable development of New Zealand's primary sector. It provides a comprehensive set of indicators and monitoring tools that enable primary producers to assess their performance on various social, economic, and environmental aspects.

Source: <https://www.nzdashboard.org.nz/>

One Billion Trees Programme: The New Zealand government's One Billion Trees Programme aims to increase tree planting and support sustainable land management. Primary producers can use this program to measure their performance against environmental and biodiversity-related attributes.

Source: <https://www.teururakau.govt.nz/funding-and-programmes/forestry/one-billion-trees-programme/>

New Zealand Farm Assurance Programme (NZFAP): NZFAP is a farm certification program that sets out a unified standard for New Zealand's red meat sector. It covers food safety, animal welfare, and

environmental management, allowing producers to assess their performance against these attributes.

Source: <https://www.nzfap.com/>

Māori Agribusiness: Māori agribusiness initiatives, such as the Ahuwhenua Trophy and the Māori Agribusiness Programme, support the development of sustainable and culturally appropriate business practices. These initiatives can be used to assess the performance of Māori enterprises against credence attributes related to cultural regeneration, indigenous investment, and Māori values.

Sources: <https://www.ahuwhenuatrophy.maori.nz/>

New Zealand Good Agricultural Practice (NZGAP): NZGAP is a certification program for fruit and vegetable growers that ensures compliance with food safety, traceability, and environmental management standards. It allows producers to measure their performance against food safety, environment-friendly, and traceability attributes.

Source: <https://www.nzgap.co.nz/>

AsureQuality: AsureQuality is a New Zealand-owned assurance company that provides a range of food safety, biosecurity, and quality management services. Primary producers can use AsureQuality's services to measure their performance against food safety, traceability, and other related credence attributes.

Source: <https://www.asurequality.com/>

An important consideration for any enterprise will be to understand what they are already measuring and whether there are any gaps in their measurement approach that would require an additional framework.



Lessons for the design of a Kaitiaki Intelligence Platform

Indigenous products with distinctive cultural credence attributes, such as authenticity and sustainability, hold the potential for commanding significant market premiums. However, quantifying these premiums necessitates more targeted research, given the current body of work's lack of generalizability to Māori products and the broad variance in findings. It is recommended that these specific credence attributes be empirically tested in targeted markets to verify the feasibility of realizing perceived premiums. Additionally, research should be undertaken to determine the verification processes for these attributes. Innovative methodologies that are both cost-effective and reliable should be explored for their potential to provide assurance with minimal expense.

Existing consumer assurance frameworks fall short in effectively transmitting indigenous attributes that hold market recognition. However, data generated by a KIP could bolster reporting within these frameworks, despite the indigenous attributes themselves not being directly captured. A KIP's primary focus on environmental data aligns with these frameworks' capabilities, suggesting that leveraging a KIP could be an efficient method to communicate critical information to consumers, provided it represents the most cost-effective and efficacious approach.

To fully leverage KIP-generated data for the benefit of indigenous attributes, the development of a dedicated indigenous assurance and certification system is necessary. Such a system would employ a continuous feedback mechanism, guiding a KIP to collect data aligned with consumer interests and reflecting the priorities of indigenous communities. This process would likely necessitate collaboration among multiple Māori Authorities and iwi to co-develop the assurance system in harmony with the KIP's design.

For primary producers in A-NZ achieving international market premiums is fraught with challenges, notably the complexities of establishing effective value chains in target markets, significant costs, and high risks. While a KIP does not mitigate these risks, it can reduce verification costs for specific attributes, thereby offering a cost-effective strategy for Māori producers to enhance their products' value. This approach enables the utilization of inherently generated data as a means to potentially achieve added value for their products in a cost-neutral manner.

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