

**OUR LAND
AND WATER**

Toitū te Whenua,
Toiora te Wai

National
SCIENCE
Challenges

WHENUA, LIFE, VALUES PROGRAMME



REPORT TWO

USING AN INDICATOR MATRIX TO DETERMINE CORRELATIONS AND RELATIONSHIPS BETWEEN MĀORI AGRIBUSINESS VALUE- DRIVERS

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Whakapapa. māi. Te Pō. ara i te tīma-
-hanga māi e tē te Māori āna korero.

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**Ngāi Tahu
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Introduction

As part of the Our Land and Water National Science Challenge Programme, the project Toitu te Whenua, Toitu te Koira, Toitu te Tikanga – Whenua, Life, Values (from here on WLV) – is focused on creating a decision-making tool for Māori trust and incorporation farms that will allow them to overcome, avoid, mitigate or ameliorate the constraints and take advantage, amplify or target the opportunities in their sector and their situation. WLW has mapped the specific constraints and enablers Māori agribusinesses face, producing a set of indicators to measure these restraints and opportunities which will then be used to develop the tool for Māori agribusiness.

To produce the indicators and develop the tool the project first conducted a literature review. This delivered an overarching outline of the Māori agribusiness sector from which four pillars and five domains were determined. These pillars – the dominant Māori values that shape and constrain Māori farming – and domains – the most important yet conflicted areas that determine the success or failure of an operation – were then used to develop a set of interview questions. A Māori agribusiness expert then conducted 15 key informant interviews with a representative range of Māori agribusiness leaders. Following the key-informant interviews the central pillars and domains were further refined to accurately reflect the current state and operations of Māori agribusiness, and how the businesses relate to one another. A survey is currently being conducted to provide further insight into the pillars from the interviews. Using the results from the above analysis an indicator suite that directly relates to Māori agribusiness goals and operations was developed. Finally, an online application will be developed that will allow Māori agribusinesses to create infographics demonstrating the tensions and synergies between various agribusiness pressures, drivers, and opportunities. This infographic tool will be used to guide strategic planning and operational decision-making.

This report will cover the survey design and indicator development, the previous report outlined the literature review, the interviews and the thematic analysis of the interviews. The pillars and domains outlined in that report were:

Four key pillars – the most important Māori principles of action that shape and constrain the practicalities for Māori trust and incorporation farms – were determined. These are: **whai rawa** – the principle of financial profitability; **kaitiakitanga** – the principle of protecting the environment; **mana whakahaere** – the principle of leading well; and, **whānaungatanga** – the principle of caring for the community.

Five key domains – the most important yet conflicted areas that determine the success or failure of an operation – were delineated. These are: **financial capacity** – the ability of a trust or incorporation to access working capital; **skills and knowledge** – the required skills and knowledge needed for the successful operation of a farm and the governance of the board; **relationships and trust** – the relationships and networks Māori trusts and incorporations require, both internally and externally, with an emphasis on social capital and trust; **paths to market** – the farm’s access to and use of the supply chain, from processors through to the market, as well as the use of branding and marketing; and, **regulatory environment** – the influence of key pieces of legislation on the operation, specifically key pieces of law such as the RMA and the Te Ture Whenua Māori Act, as well as the bodies charged with compliance and enforcement of these Acts.

Developing the Indicators Through a Matrix

Developing the key pillars and domains to understand the constraints and enablers of Māori agribusiness provided the basis for a matrix, outlined in Table 1 below. The way to understand the matrix is that each of the domains may be understood as either a constraint or an enabler on fulfilling the purpose of each pillar. For example, having the right skills and knowledge will help enable whai rawa (financial profitability) while not having the right skills and knowledge will constrain, to various degrees, profitability. Using the matrix, indicators were developed that would allow the various constraints and enablers on each pillar to be delineated. These indicators are outlined in Table 2 below, whereby the code in the left most column corresponds with a code in Figure 1.

Figure 1. Pillar and Domain Matrix

DOMAINS	PILLARS			
	WHAI RAWA	KAITIAKITANGA	MANA WHAKAHAERE	WHANAUNGATANGA
SKILLS & KNOWLEDGE	A1	B1	C1	D1
FINANCIAL CAPACITY	A2	B2	C2	D2
PATHS TO MARKET	A3	B3	C3	D3
RELATIONSHIPS & TRUST	A4	B4	C4	D4
REGULATORY ENVIRONMENT	A5	B5	C5	D5

Table 1. Indicators, Constraints, and Enablers

	Indicator	As Enabler	As Constraint
A1	Skills and knowledge in agribusiness and agricultural production	Skills and knowledge present	Skills and knowledge absent
A2	Expenditure on farm efficiency and product quality	Working capital available	Working capital unavailable
A3	Open channels to premium markets	Channels open	Channels closed
A4	Staff relationships	Positive relationships	Negative relationships

A5	TTWMA/RMA impacts on farm profitability	Legislation conducive	Legislation constraining
B1	Knowledge and capabilities in sustainable land management	Skills and knowledge present	Skills and knowledge absent
B2	Investment finance to support sustainability initiatives	Working capital available	Working capital unavailable
B3	Opportunity to self-brand	Channels open	Channels closed
B4	Collaboration across catchments for environmental outcomes	Positive relationships	Negative relationships
B5	RMA impact on environmental performance	Legislation conducive	Legislation constraining
C1	Knowledge, leadership, and skills in governance	Skills and knowledge present	Skills and knowledge absent
C2	Resources to contract specialists to inform governance decisions	Working capital available	Working capital unavailable
C3	Leadership focused on adding value across value chain	Channels open	Channels closed
C4	Connections, relationships, and trust among governors	Positive relationships	Negative relationships
C5	Te Ture Whenua Māori Act impact on governance	Legislation conducive	Legislation constraining
D1	Ability to train and/or employ whānau	Skills and knowledge present	Skills and knowledge absent
D2	Resources to support engagement and relationships with whānau/owners	Working capital available	Working capital unavailable
D3	Utilising whakapapa networks across value chain	Channels open	Channels closed
D4	Connections, relationships, and trust across whānau/owners	Positive relationships	Negative relationships
D5	Te Ture Whenua Māori Act impact on whānau relationships	Legislation conducive	Legislation constraining

Survey Design

The survey was influenced by the matrix outlined above. Firstly, the survey was designed to gauge the extent to which Māori agribusinesses valued each pillar in the matrix. If Māori agribusinesses did indeed value each pillar then our identification and selection of each pillar through the qualitative research would be validated. Secondly, the survey was designed to test the extent to which the indicators outlined constrain or enable Māori agribusiness. Once again this would enable the team to ascertain the relevance and importance of each indicator.

However, the survey did not follow the matrix structure, or sequence outlined in the table above, given that different questions needed to be developed for communication purposes, and different ‘decision-tree’ logics for the different types of people likely to be completing the survey. For example, we did not want to be asking financial questions of people without a financial decision-making role in a Māori agribusiness. Furthermore, the survey also opened up and explored different relevant constraint and enabler themes in more depth related to each indicator. Finally, research questions were added to explore themes relevant to the Our Land and Water Science Challenge and the broader interests of the research team. Despite the broad nature of the survey, each indicator and the survey question related to it, are outlined in Table 2 below:

	Indicator	Question/s
A1	Skills and knowledge in agribusiness and agricultural production	6,9
A2	Expenditure on farm efficiency and product quality	6
A3	Open channels to premium markets	5
A4	Staff relationships	9
A5	TIWMA/RMA impacts on farm profitability	9, 32
B1	Knowledge and capabilities in sustainable land management	16,17
B2	Investment finance to support sustainability initiatives	16,17
B3	Opportunity to self-brand	5
B4	Collaboration across catchments for environmental outcomes	16,17
B5	RMA impact on environmental performance	32
C1	Knowledge, leadership, and skills in governance	19, 20
C2	Resources to contract specialists to inform governance decisions	19, 20
C3	Leadership focused on adding value	20
C4	Connections, relationships, and trust among governors	19, 20
C5	Te Ture Whenua Māori Act impact on governance	33
D1	Ability to train and/or employ whānau	
D2	Resources to support engagement and relationships with whānau/owners	23
D3	Utilising whakapapa networks	
D4	Connections, relationships, and trust across whānau/owners	9, 19, 20
D5	Te Ture Whenua Māori Act impact on whānau relationships	33

To improve the granularity of the survey and understand who was completing it, an initial set of demographic questions were also asked. These included the following questions:

- What their role was in the Māori agribusiness;
- Whether they had ever worked as a farmer;
- Whether they grew up in a rural area;
- Which age group they belonged to.

Survey Monkey, the software used for the survey, allows for the survey results to be filtered by specific answers, so that, for example, only answers from board members, or farm managers, can be examined, or answers from a certain age cohort. It should be noted that except for answers where a different scale is given the scale for all the answers was 1-5 with 1 the lowest/worst and 5 the highest/best. Also, some questions required one answer, other respondents could select as many as applicable. These will be marked by [Single] and [Multiple] respectively. the survey has limitations due to the sample size and response bias (being an open survey).

The survey is an open survey and focused on capturing opinion. A database of Māori Land Trusts was created and 60 of these trust were contacted via emails to provide an anonymous link to the online survey. To date 27 respondents have completed the survey. Given that the survey is based on opinion legitimate criticisms may be directed at the survey that Māori agribusinesses will overinflate their performance, or have inadequate knowledge of farm operations to complete the survey accurately. However, a number of methods were introduced to limit bias. Firstly, decision tree logics were used to screen those without adequate knowledge from completing certain parts of the survey. For example, only those with knowledge of the agribusiness's financial performance could complete financial performance questions. Secondly, the survey was open to both those who might be considered disgruntled about the performance of their Trust/Incorporation (often shareholders) and those who might have a desire to overinflate performance (often Trustees/Directors). To date we have roughly 50/50 shareholder/trustee completion of the survey which should see biases balance out. Thirdly, the survey is anonymous and as such there is less pressure to inflate, or deflate performance because there is no reward for doing so. Fourthly, based on analysis to date of results against the characteristics of those completing it (e.g. age, place of residence (urban or rural) and role in the agribusiness (e.g. trustee, shareholder, or manager)) we find little substantive difference in the responses. Finally, in our results to date, we have a very good spread between farms doing poorly across the spectrum of measures through to those doing well.

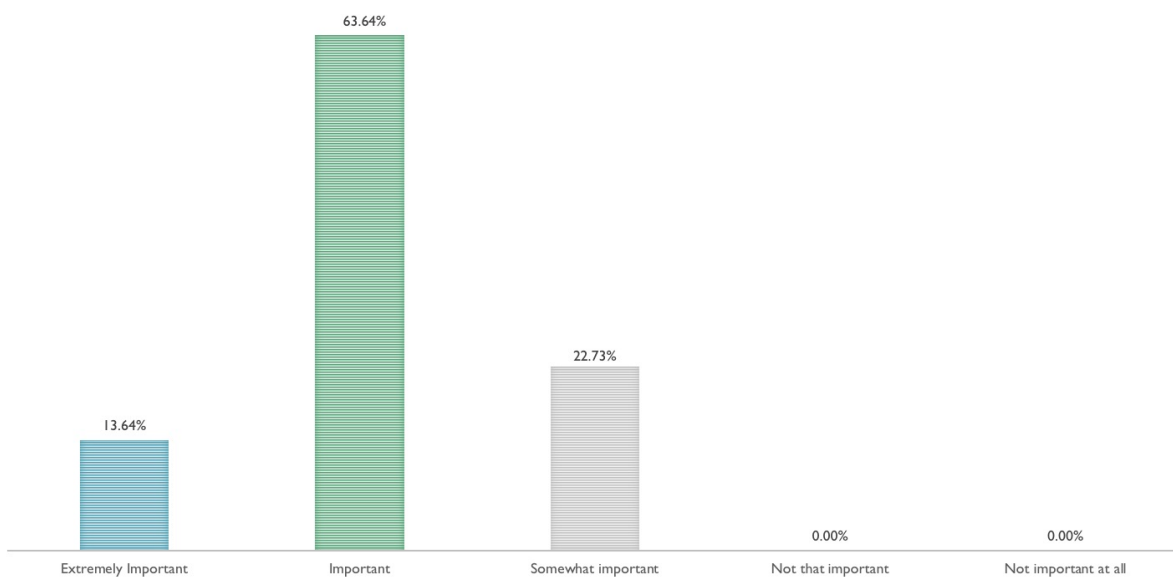
The survey remains open and the results presented below are provisional.

Provisional Survey Results

The first set of questions covered the pillar of whai rawa:

1. How important do you think it is to make as much profit as possible from farming [Single]:

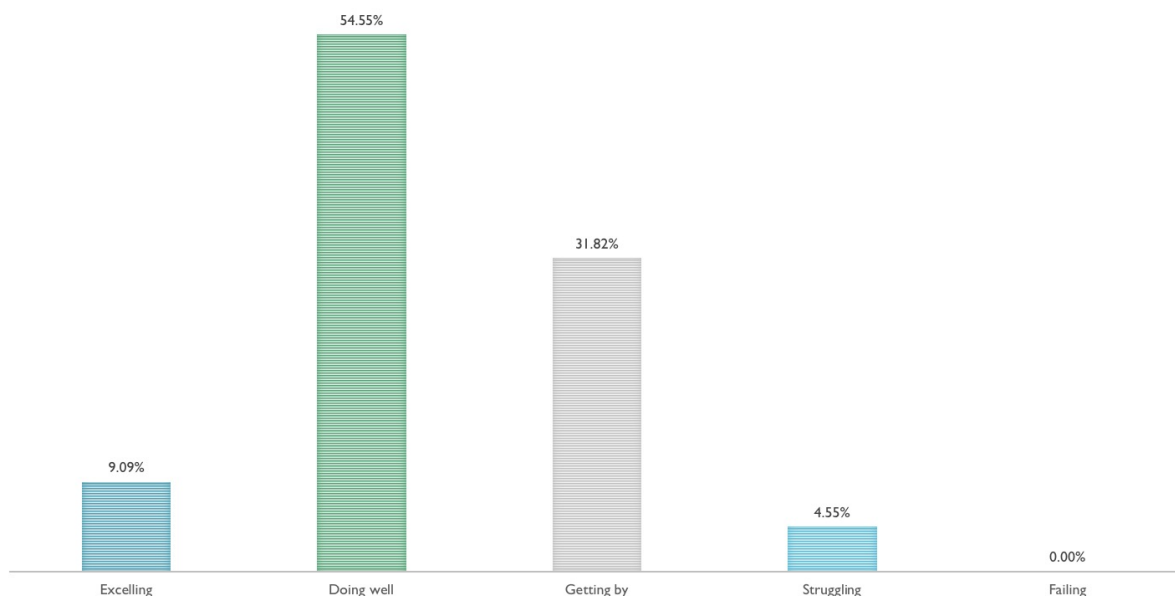
Perception of respondents on importance of making as much profit as possible from farming by percentage (n=25)



The majority of respondents indicated that profit was 'important', giving this a 4 out of 5 on the scale. None of the respondents gave a score lower than 3, with almost equal amounts scoring either 3 or 5.

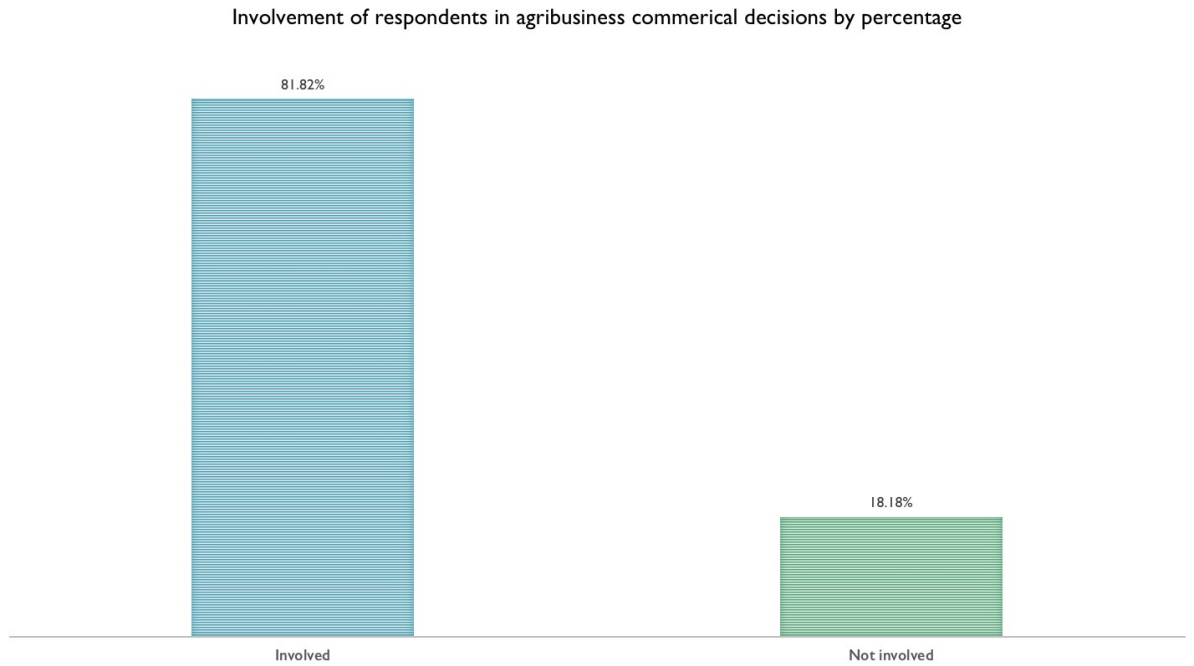
2. What is the financial status of your farming business [Single]:

Description of the current financial status of Māori agribusinesses surveyed by percentage (n=22)



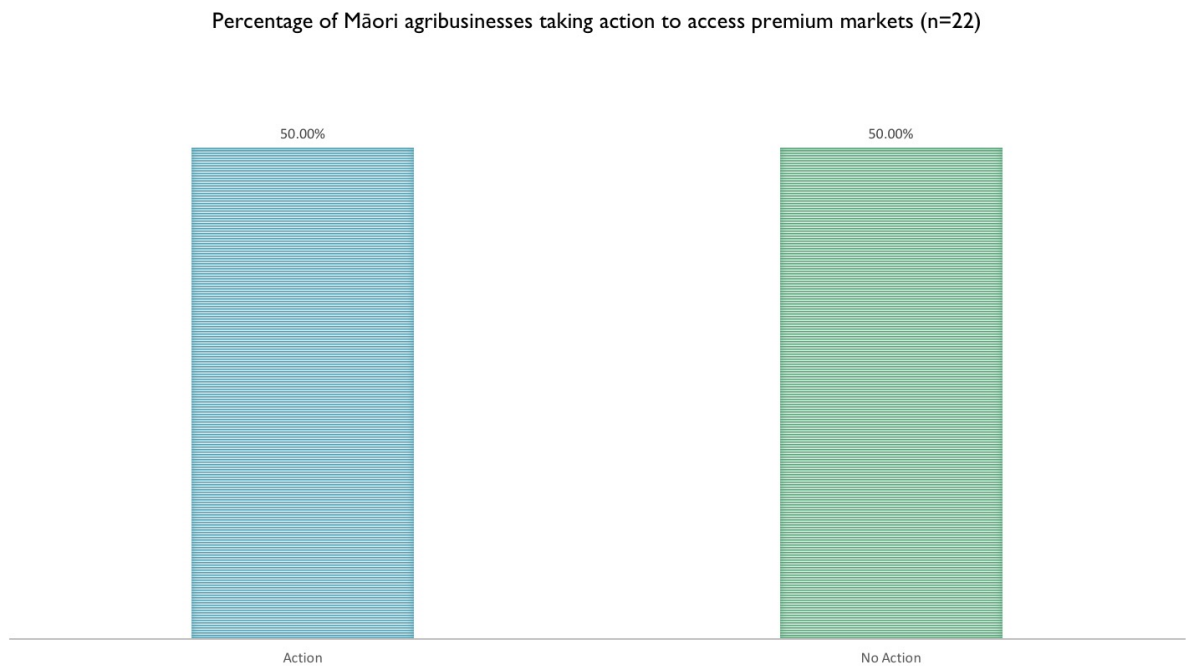
Most respondents gauged their farming business as 'doing well', another 4 out of 5 score. The second highest score here was 3, or 'getting by'.

3. Whether they are involved in decisions about what the farm produces and who they sell to [Single]:



Four fifths of the respondents indicated that they were involved in these decisions.

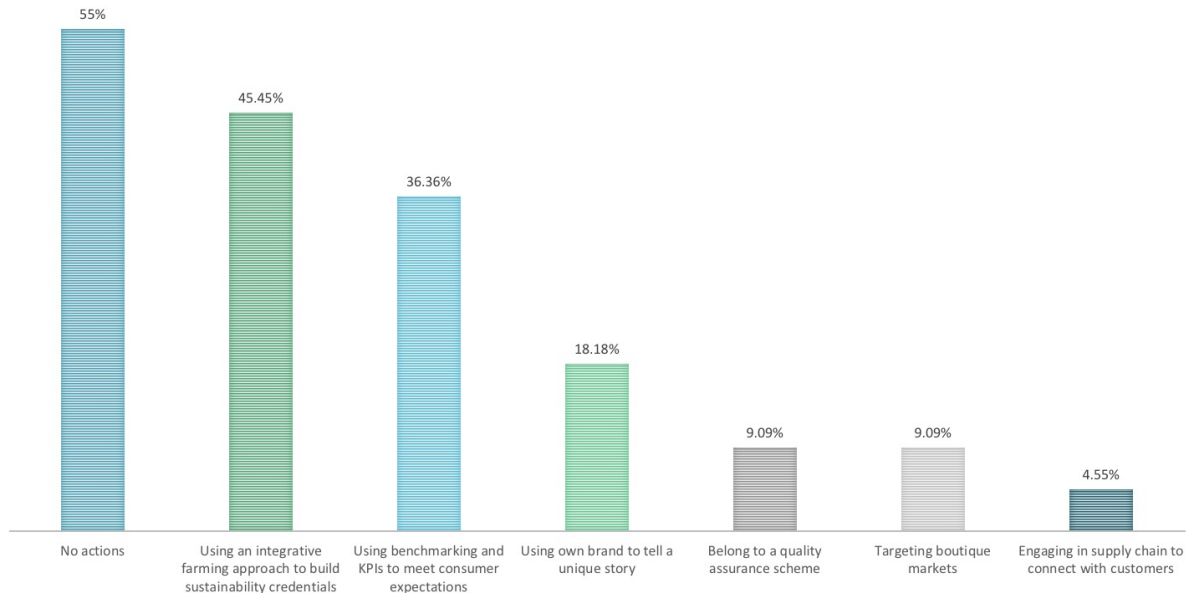
4. Whether they do anything special on-farm to get paid more for their product (e.g. farm organically, participate in an assurance scheme, or grow something a bit different) [Single]:



The responses were equal between 'yes' and 'no'.

5. What they were doing on-farm to get paid more (e.g. assurance scheme, benchmarking and KPIs, branding, boutique markets, integrated farming, supply chain control) [Multiple]:

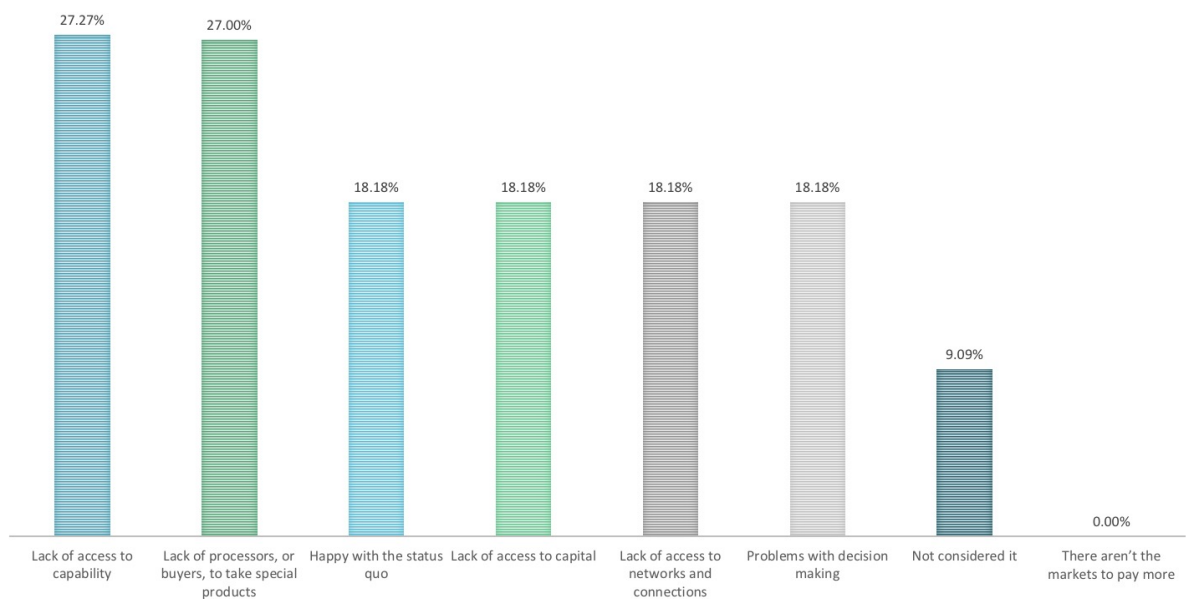
Actions of Māori agribusinesses to improve access to premium markets by percentage (n=22)



The two most common responses were benchmarking and KPIs and the use of integrated farming, with assurance schemes and branding the two next most common.

6. What was preventing them from doing anything special on-farm (e.g. happy with status quo, haven't considered it, lack of money, no supply chain access, no premium markets, lack of capability, no networks or connections, decision making problems) [Multiple]:

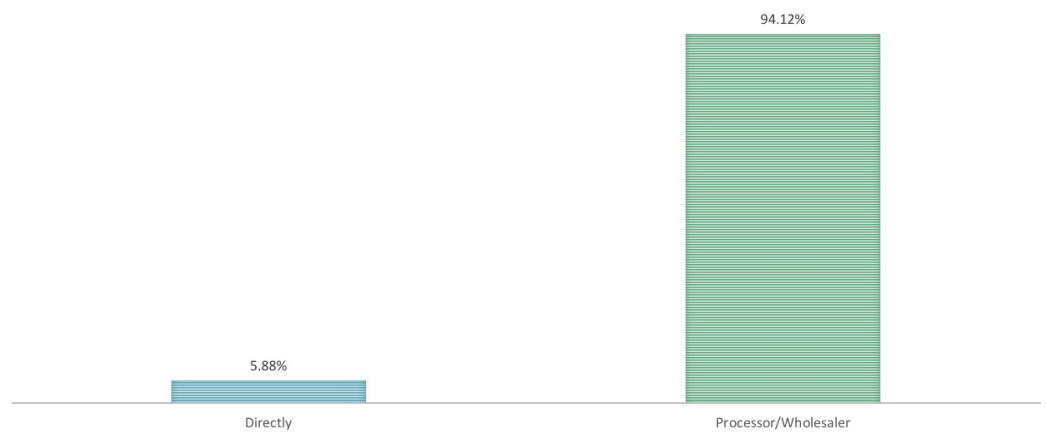
Perceived factors preventing Māori agribusinesses accessing premium markets (n=11)



The most common response was that the farm lack of capability. No respondent indicated that the supply chain or premium markets were an issue, with the other factors all scoring roughly equally.

7. Whether they sell their products to consumers directly, or do supply a processor, or wholesaler [Single]:

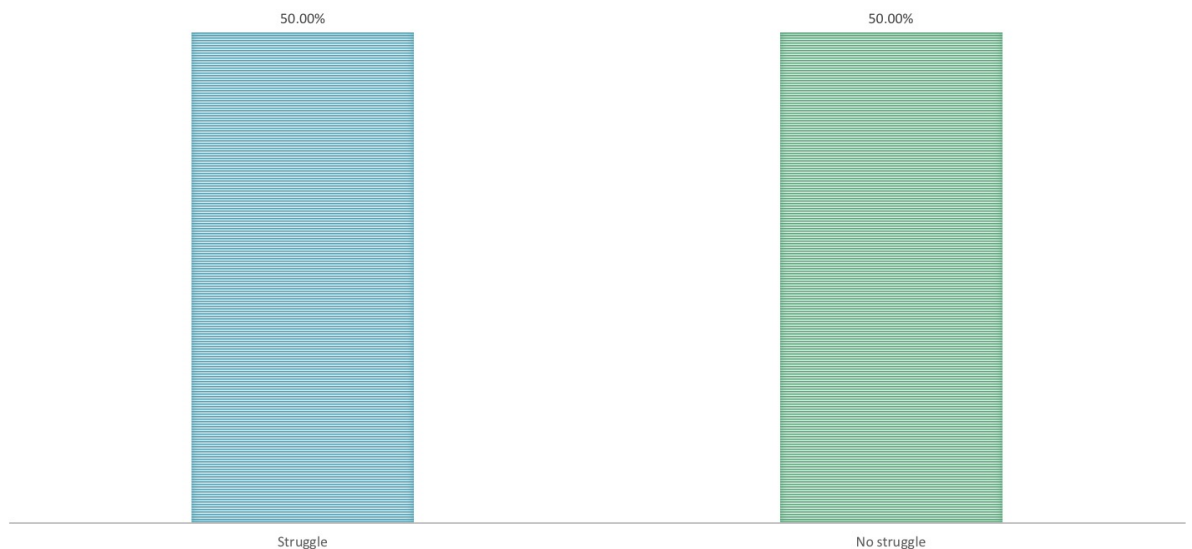
Percentage of Māori agribusinesses that supply consumers directly or a processor (n=17)



The majority of respondents indicated that they sold to a processor or wholesaler.

8. Whether their business struggles with large fluctuations in cashflow (i.e. high one year and low the next) [Single]:

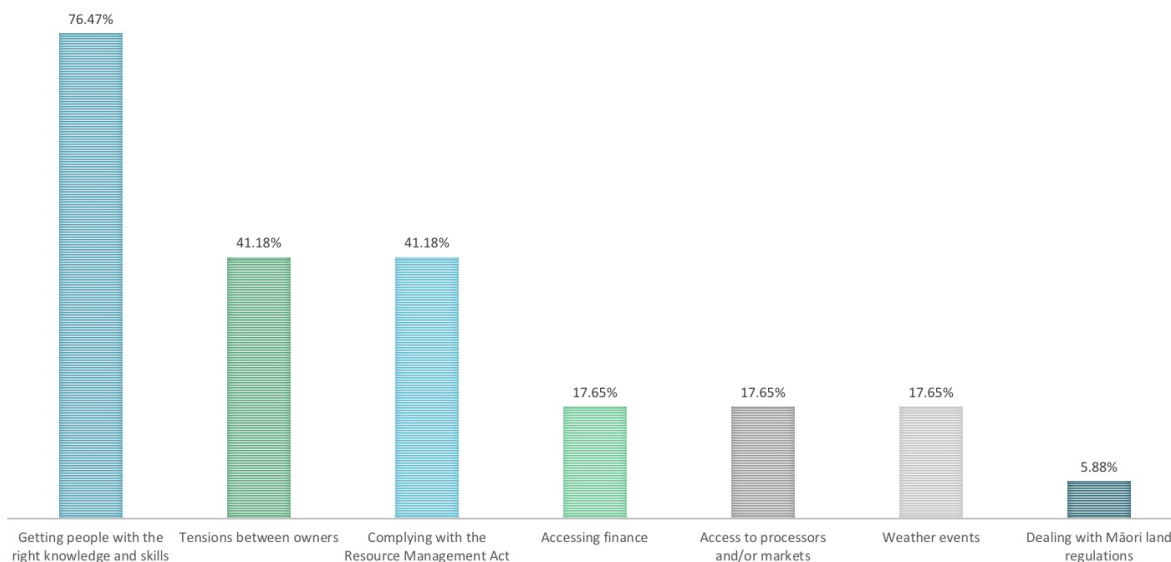
Percentage of Māori agribusinesses that struggle with fluctuations in cashflow



Equal amounts struggled as did not struggle with clashflow.

9. What constraints to profitability they faced (e.g. skilled employees, finance; Māori land regulations; tensions between owners; processor/market access, RMA) [Multiple]:

Constraints to profitability identified by Māori agribusinesses by percentage (n=17)

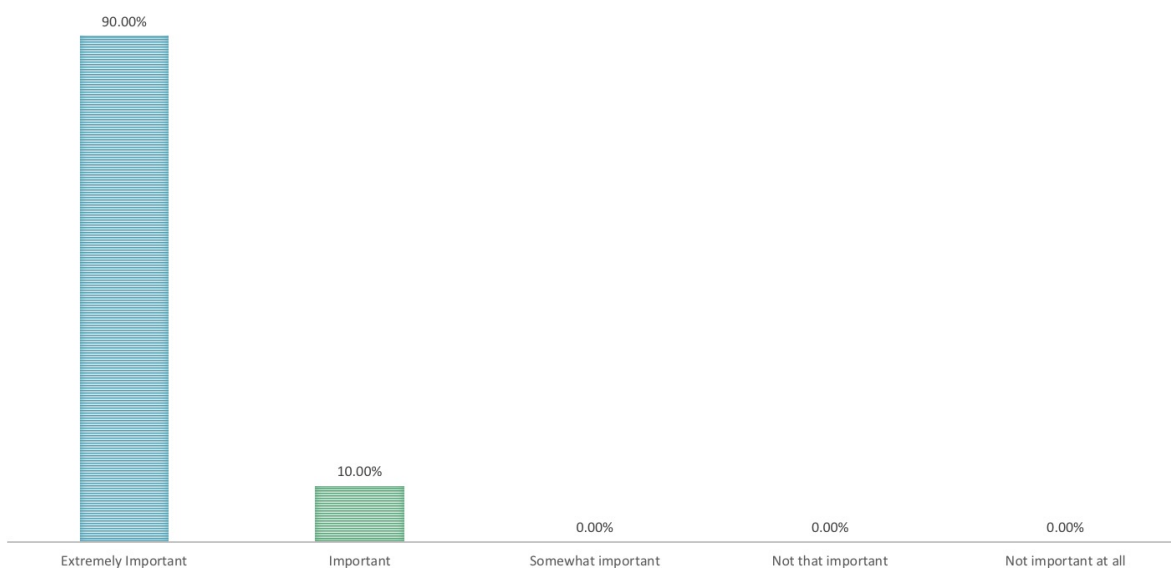


The biggest constraint was skilled employees, followed by tensions between owners, then RMA issues. These three accounted for at least two thirds of responses.

The next set of questions focused on kaitiakitanga:

10. How important do they think it is to maintain, or enhance, the mauri/health of the whenua/land [Single]:

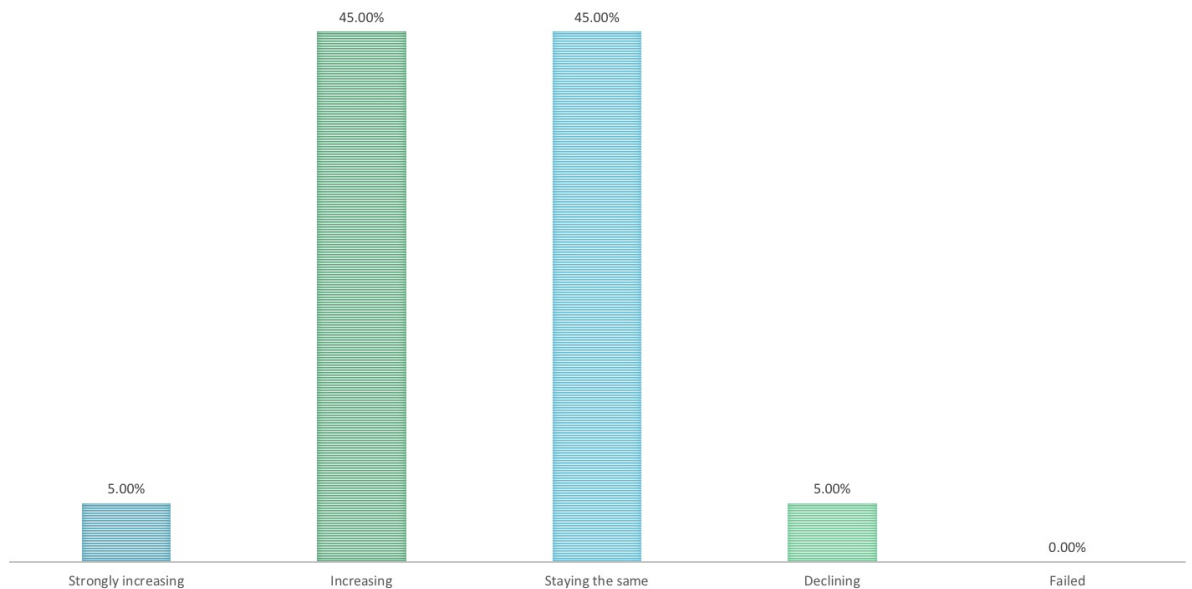
Importance Māori agribusinesses attribute to maintaining and enhancing the mauri/health of the whenua/land by percentage (n=20)



Almost every response rated this as 'extremely important', the highest score of 5, with only a few giving it a 4.

11. What was the health/mauri of their whenua [Single]:

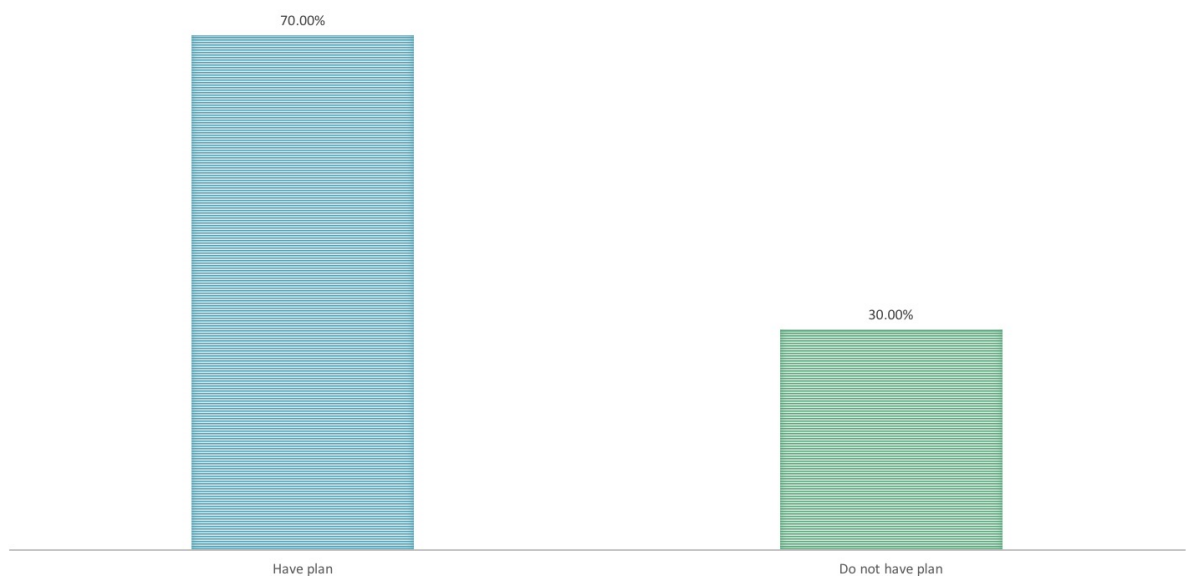
Perceptions of Māori agribusinesses concerning the health/mauri of their whenua by percentage (n=20)



The most common response was 'staying the same', which gave a score of 3 out of 5, with 'doing well' or 4 the second highest, and only several 5s, a single 2 and no 1s.

12. Whether they had a farm environmental plan [Single]:

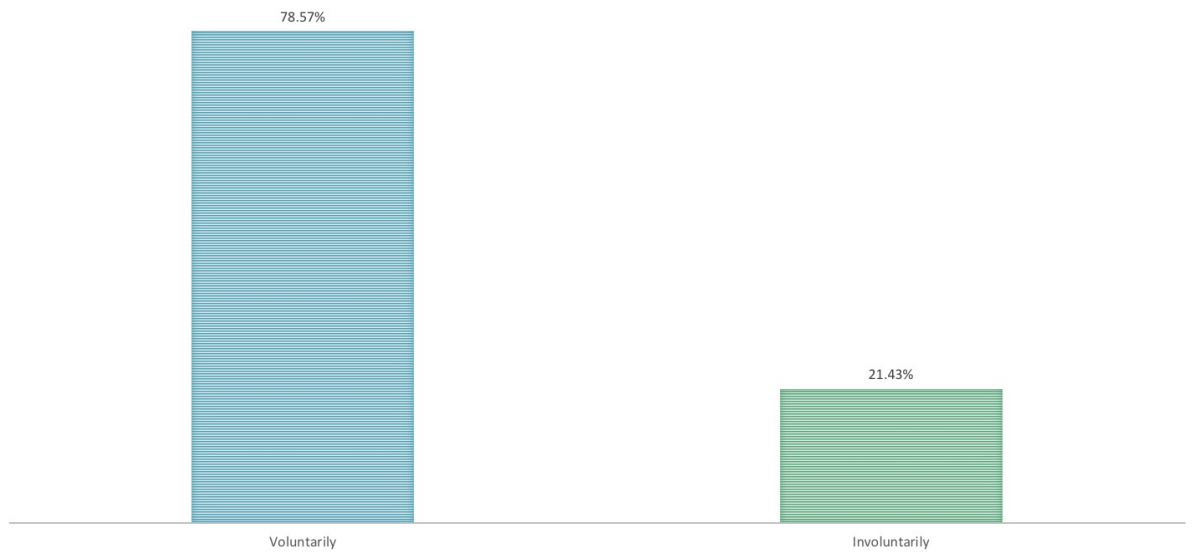
Percentage of Māori agribusinesses that have farm environmental plan (n=20)



Roughly twice as many respondents had an environmental plan than did not.

13. Whether this plan was internally developed or is it a council requirement [Single]:

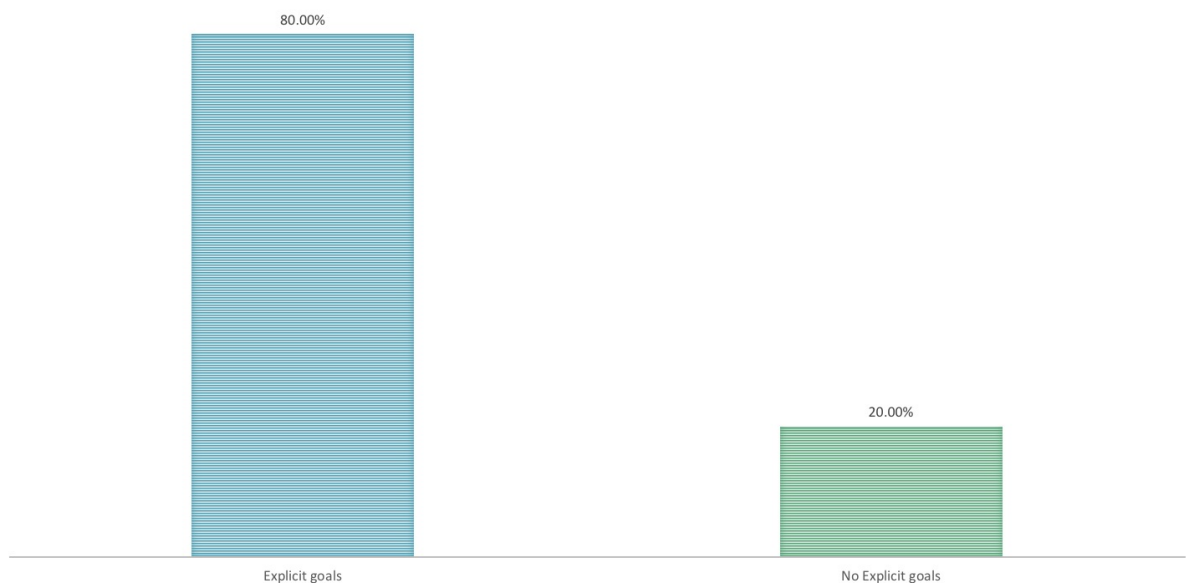
Percentage of Māori agribusinesses that have voluntarily developed their own environmental plan versus as a regulatory requirement



Most respondents noted that their environmental plan was internally developed, with just a few a council requirement.

14. Whether they had a set of kaitiaki or environmental goals and aspirations for their farm [Single]:

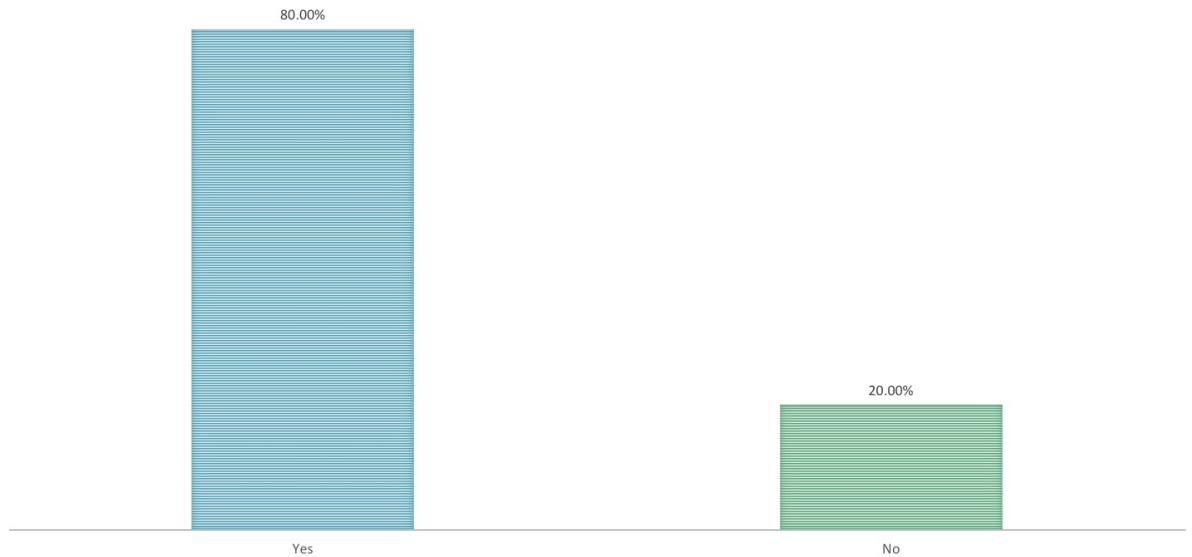
Percentage of Māori agribusinesses that have explicit kaitiaki (land stewardship) goals (n=20)



Roughly three quarters of respondents felt that their farm was able to meet its kaitiaki or environmental goals.

15. Whether they felt their farm is able to meet its kaitiaki or environmental goals [Single]:

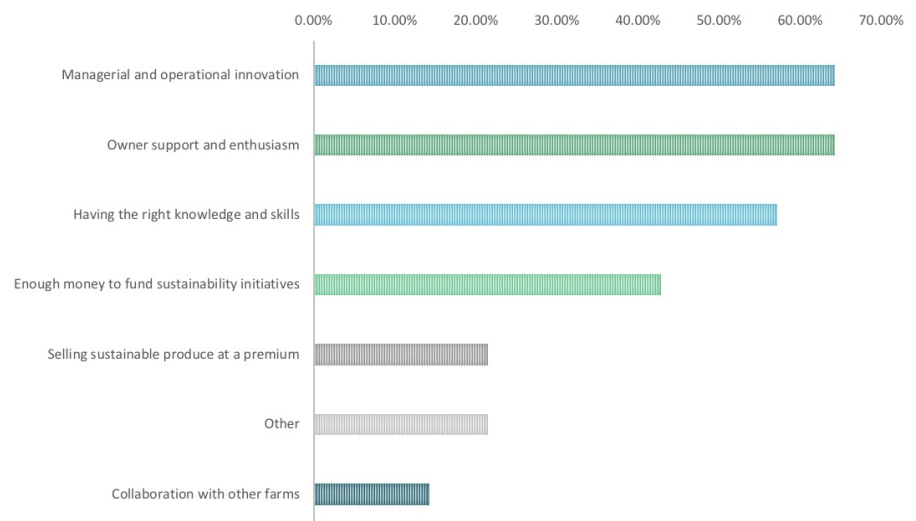
Percentage of Māori agribusinesses that feel they can meet their kaitiaki (land stewardship) goals (n=20)



Three quarters of respondents felt that their farm was able to meet its kaitiaki or environmental goals.

16. How their farm managed to meet its kaitiaki (environmental) goals (e.g. enough capital, managerial and operational innovation, owner support, skills and knowledge, collaboration with other farms, selling sustainable product at a premium) [Multiple]:

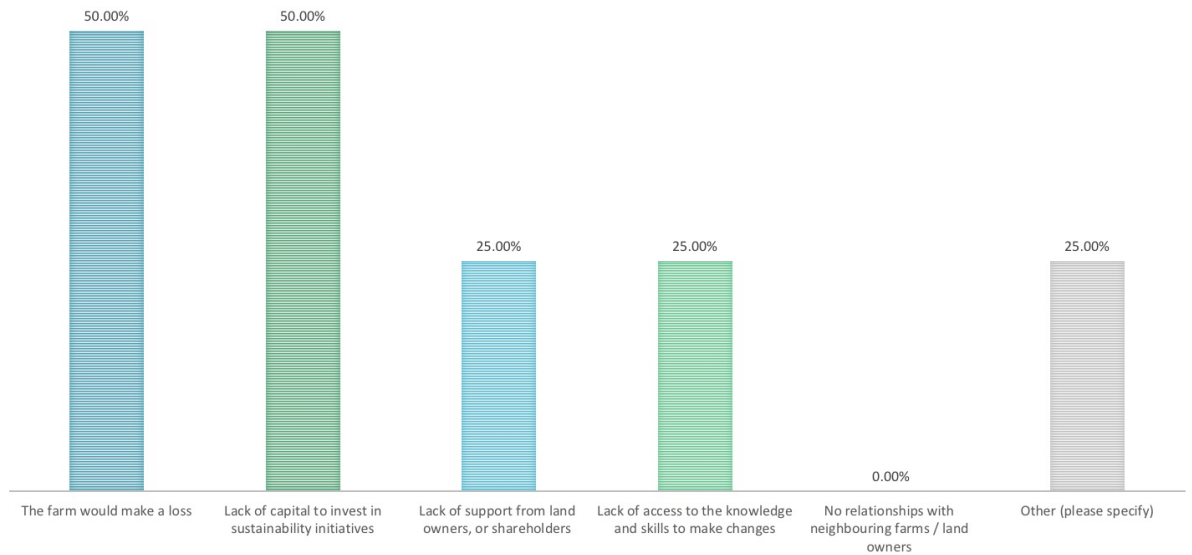
Means by which Māori agribusiness meet their kaitiaki goals by percentage (N=14)



The two most common responses were managerial and operational innovation and owner support, with skills and knowledge and enough capital also rated highly and several responses to the rest.

17. Explain any constraints they face in meeting their kaitiaki/environmental goals (e.g. focus on profitability, lack of money, lack of owner support, lack of skills and knowledge, lack of relationships with other farms) [Multiple]:

Reasons why some Māori agribusinesses feel they cannot reach their kaitiaki goals by percentage (n=4)

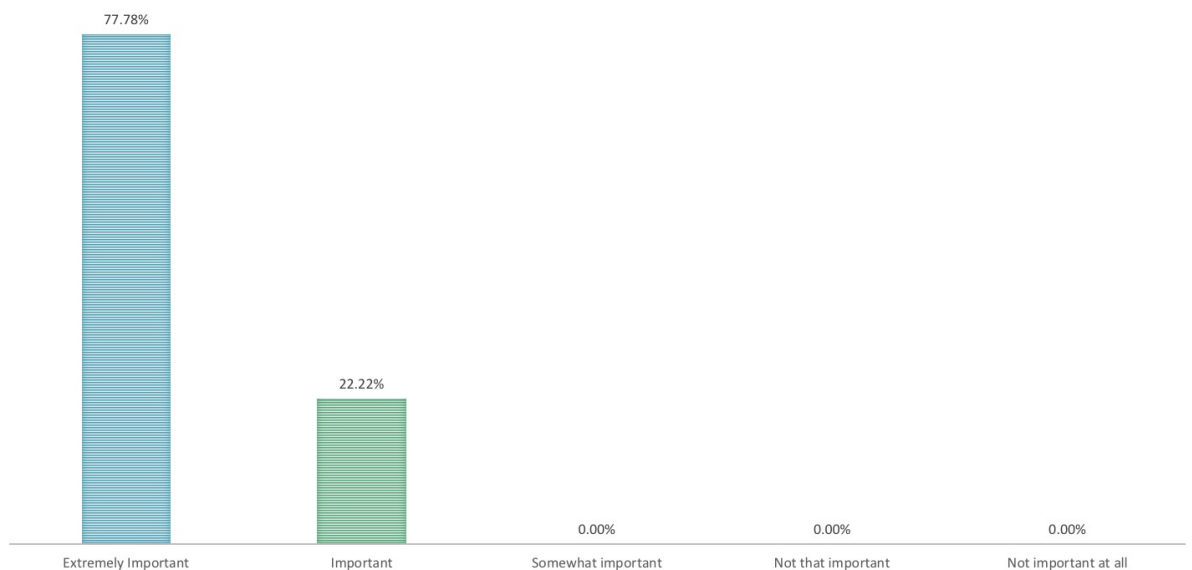


The three most common responses were focus on profitability, lack of money and lack of owner support, with the other three scoring several responses each.

The third set of questions were on the pillar of mana whakahaere:

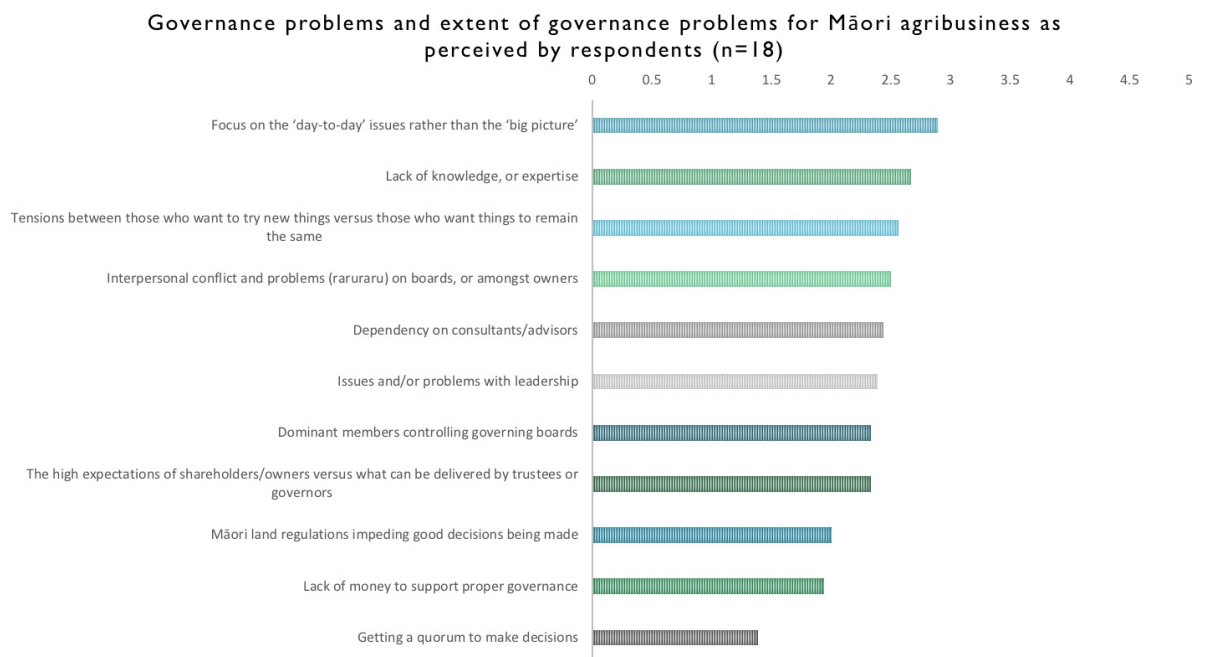
18. How important do they think it is to have good governing structures in place for their farm:

Respondents perceptions of the importance of good governing structures by percentage (n=18)



Roughly three quarters of responses were ‘extremely important’, scoring 5 out of 5, with the rest scoring 4.

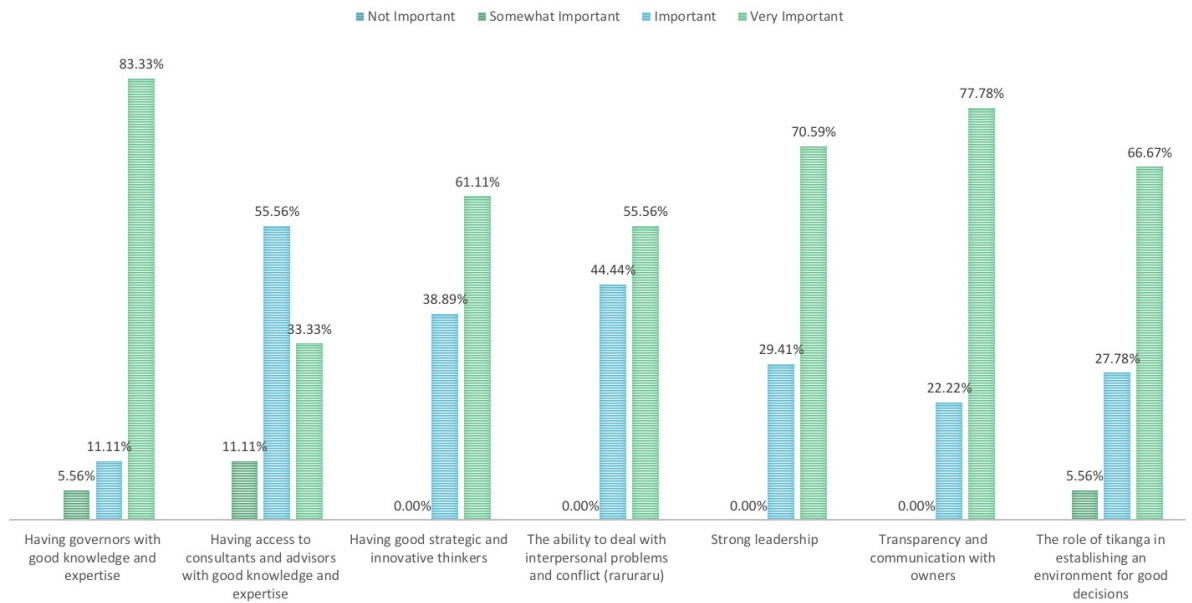
19. What problems they faced with regard to governance (e.g. lack of skills and knowledge, focus on day to day management, dependency on consultants, lack of leadership, lack of money, Māori land regulations, board power dynamics, shareholder expectations, tensions on strategy, gaining a consensus) [Multiple – with each answer having its own scale]:



The constraint causing the greatest problem for governance was a focus on day to day management, followed by lack of skills and knowledge, then board power dynamics.

20. What they see as representing good governance (e.g. skills and knowledge, good consultants, strategic and innovative thinkers, ability to overcome conflict, strong leadership, transparency with owners, following tikanga) [Multiple – with each answer having its own scale]:

Factors identified by respondents as underpinning good governance, by percentage, and how important that factor is (n=18)

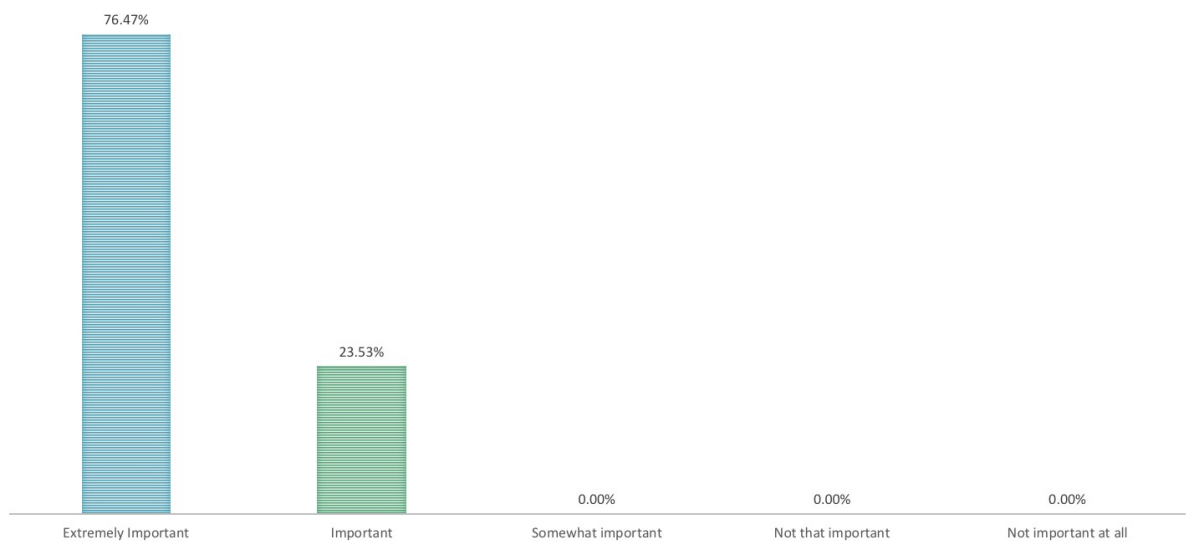


These all scored equally highly except for strong leadership, which scored slightly lower than the rest.

The questions for whānaungatanga were:

- Importance of the whenua (land) as a place of connection and belonging for tangata whenua (land owners/caretakers) [Single]:

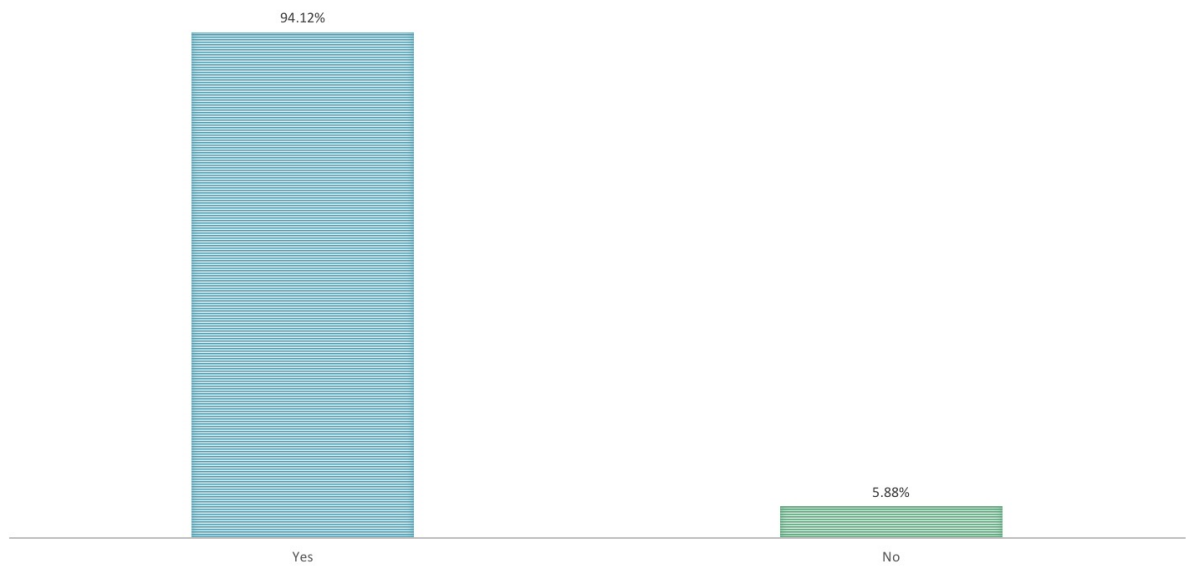
Percieved importance of the whenua (land) as a place of connection and belonging for tangata whenua (land owners/caretakers) (n=17)



Roughly three quarters ranked this as 'extremely important', giving it a 5 out of 5, with a quarter giving it a 4 and only one ranking it a 1, as 'not important at all'.

22. Are there opportunities for whānau to connect with their whenua [Single]:

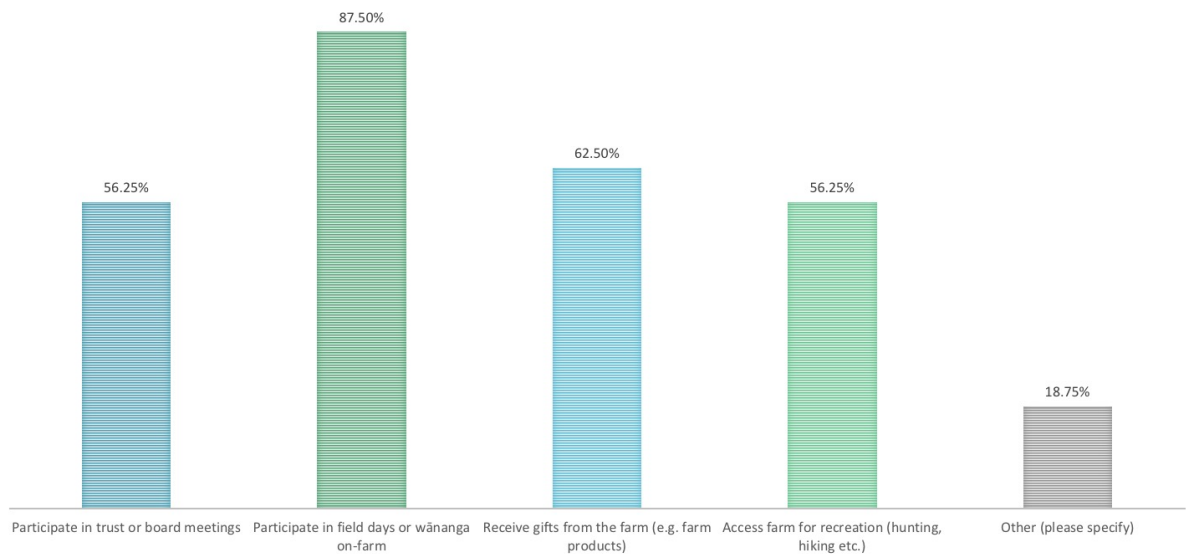
Percentage of Māori agribusinesses that consider there are opportunities for whānau to connect to their whenua (land) (n=17)



Virtually every respondent answered 'yes'.

23. The opportunities for whānau to connect with their whenua (land) (e.g. trust board meetings, field days/on-farm wananga, gifts from farm, access farm for recreation) [Multiple]:

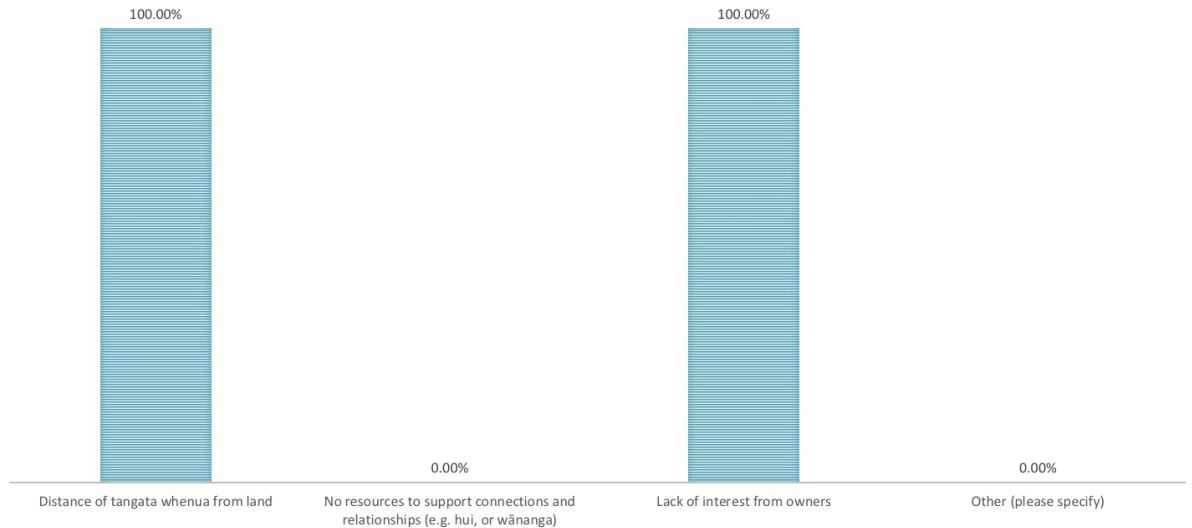
Types of opportunities available for whānau to connect with their whenua across Māori agribusinesses (n=16)



The most common response was field days/on-farm wananga, with the other three all scoring highly.

24. What prevents whānau from connecting to their whenua (distance from land, no resource to support connection, lack of owner interest) [Multiple]:

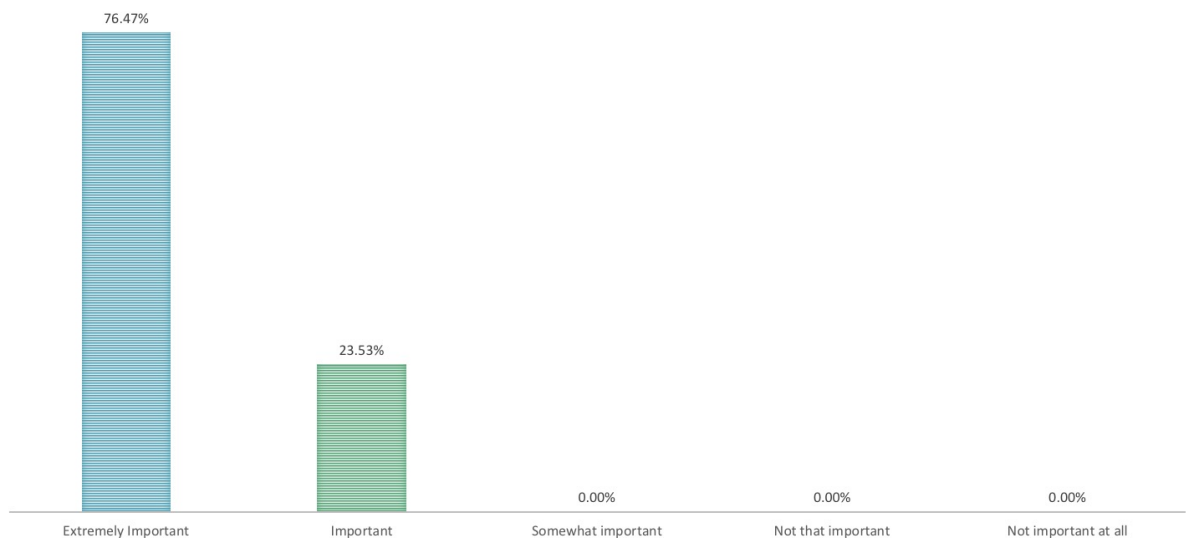
Why is there a lack of opportunities for whānau to connect with their whenua (land)?
(n=1)



Only one respondent answered this question, with distance from land and lack of owner interest both scoring a single response each.

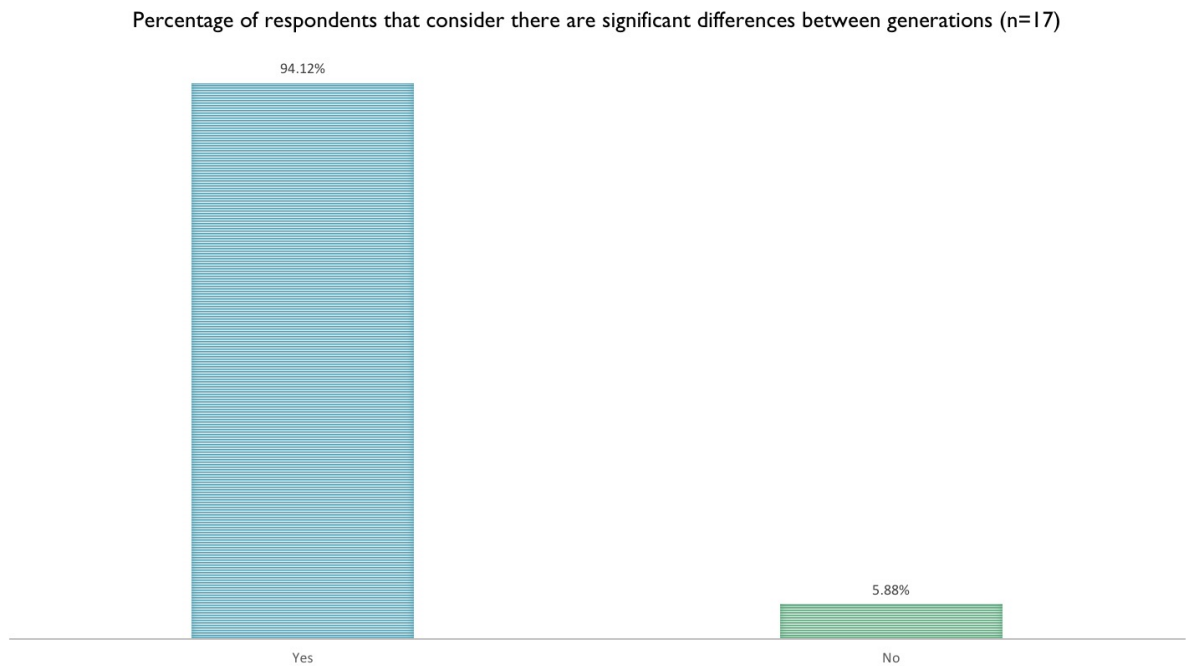
25. How important do you consider Māori land is for supporting whānau connections, relationships, and sharing whakapapa [Single]:

Perceived importance of the whenua (land) as a place of connection and belonging for tangata whenua
(land owners/caretakers) (n=17)



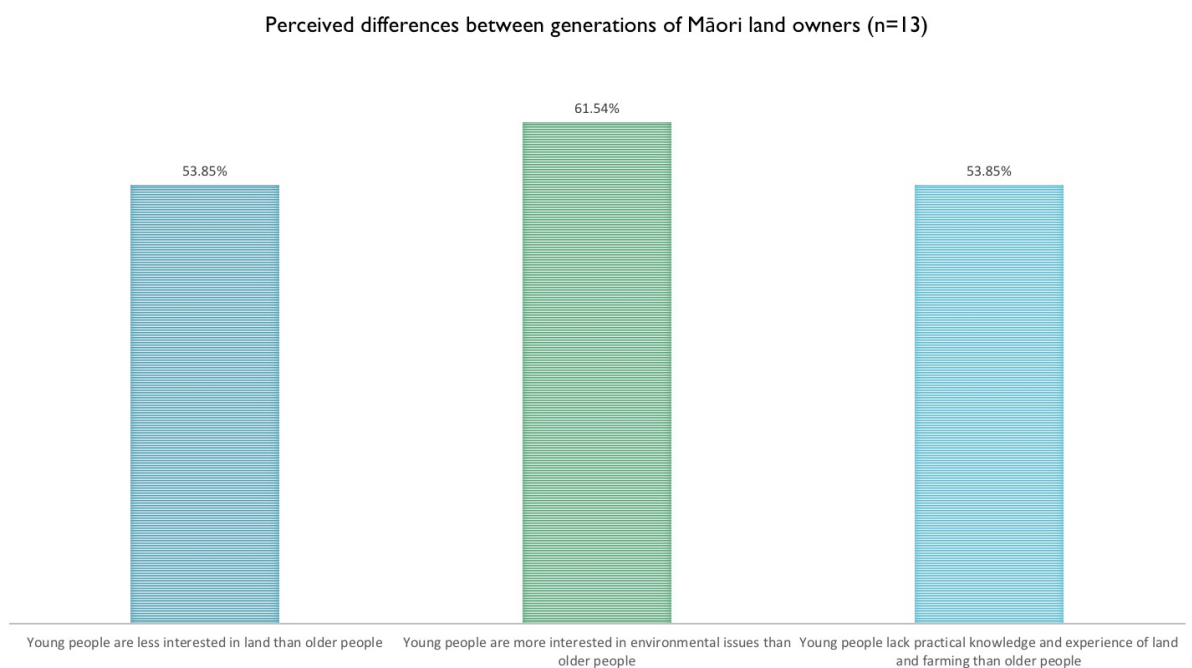
Over half indicated this was 'very important', giving a score of 5 out of 5, with the majority of the rest giving this a 4.

26. Whether they thought that there are significant differences between generations of Māori land owners [Single]:



Virtually every respondent indicated that 'yes' there were significant differences.

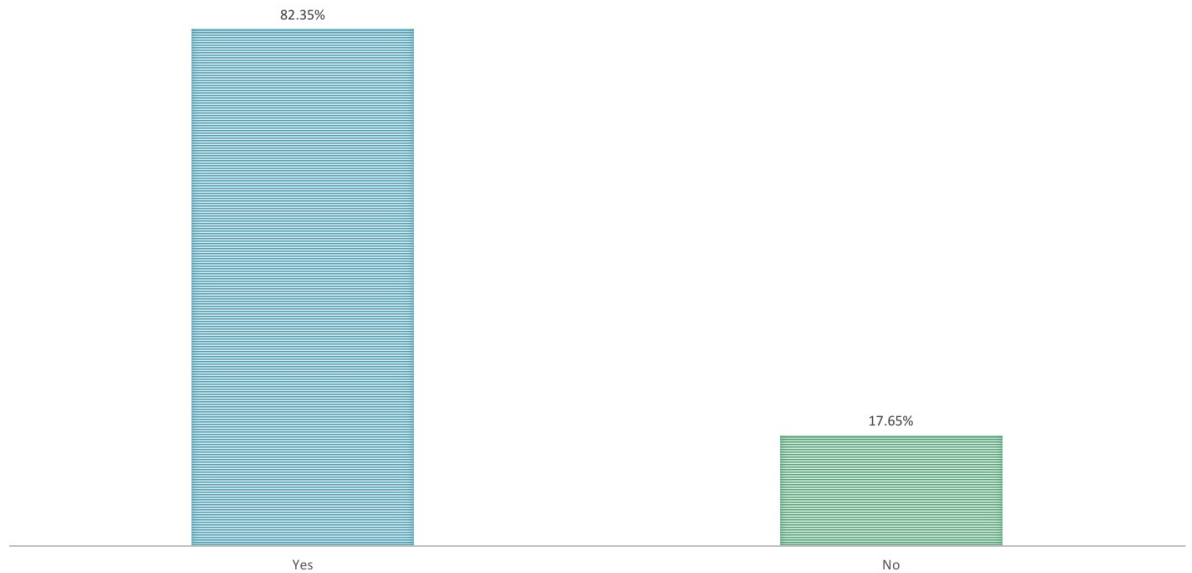
27. What they considered these differences to be (e.g. young less interested in land, young less interested in environmental issues, young lack practical knowledge) [Multiple]:



These were all scored equally and relatively highly.

28. Whether they thought that there are significant differences between land owners who live in urban areas in comparison to those living in rural [Single]:

Perceptions regarding whether there are significant differences between land owners who live in urban areas in comparison to those living in rural (n=17)

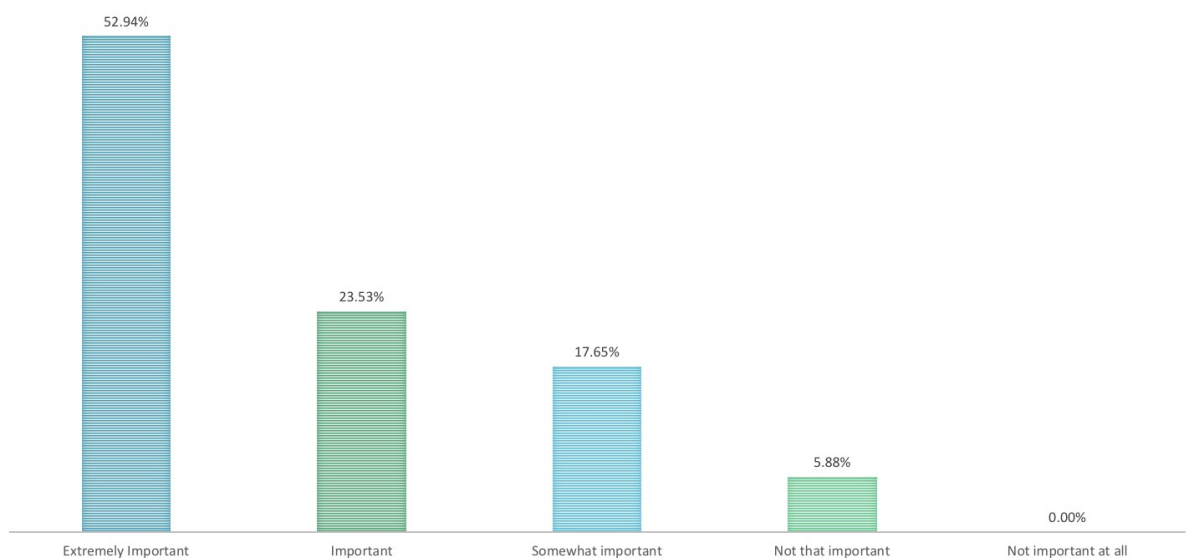


The majority of respondents indicated 'yes' there were significant differences.

The next section was focused on a set of questions on the influence of Māori culture. The questions asked were:

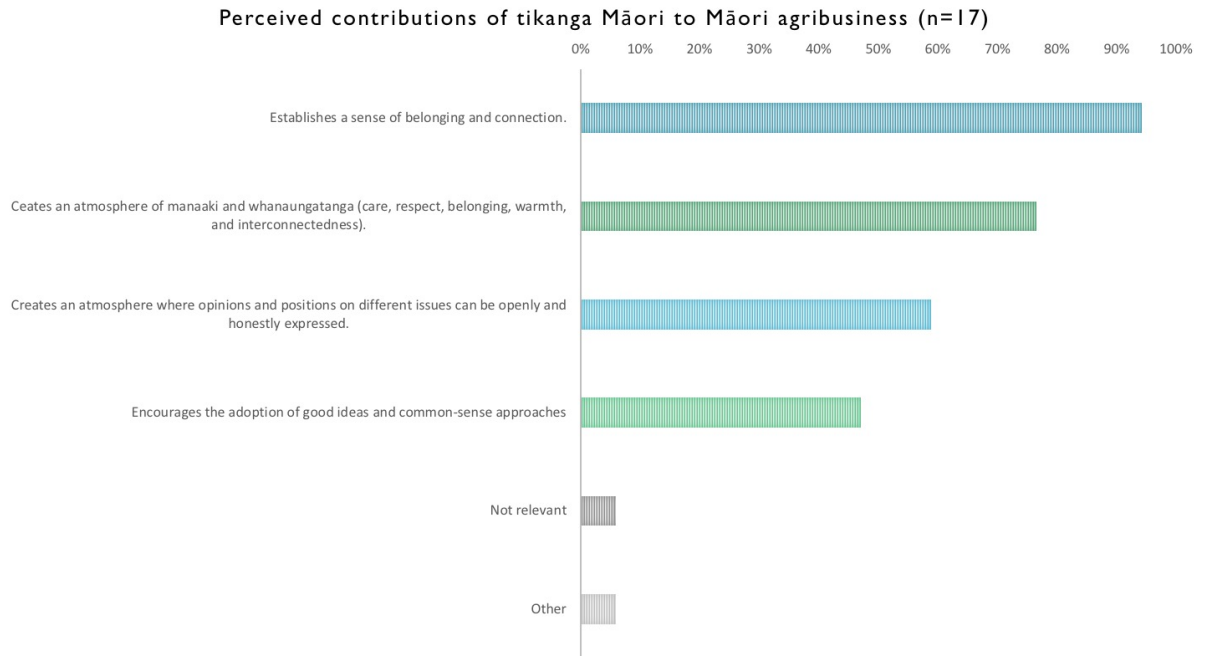
29. Whether tikanga was important in their business [Single]:

Perceived importance of tikanga Māori (Māori culture) to business success as percentage (n=17)



Almost half the responses ranked tikanga as 'extremely important', giving it a 5 out of 5, with a quarter giving it a 4.

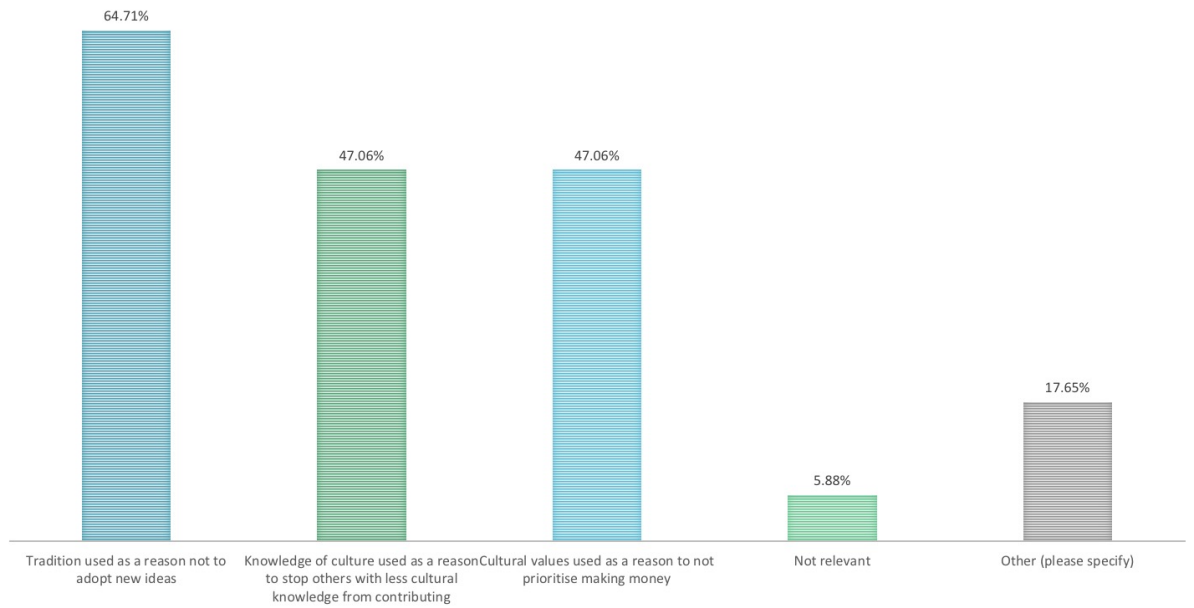
30. Any ways that tikanga can be used positively in their business (e.g. creates atmosphere of manaaki and whanaungatanga, creates candid atmosphere, establishes sense of belonging, encourages good ideas, not relevant) [Multiple]:



The most frequent response was that it establishes a sense of belonging, next was that it creates atmosphere of manaaki and whanaungatanga, next was that it creates candid atmosphere, with only a couple of respondents noting it was not relevant.

31. Any ways that tikanga can be used negatively in their business (e.g. tradition used to justify not adopting new ideas, knowledge of culture used to prevent less knowledgeable participating, used to justify not making money, not relevant) [Multiple]:

Perceived negative impacts of tikanga Māori on Māori agribusiness (n=17)

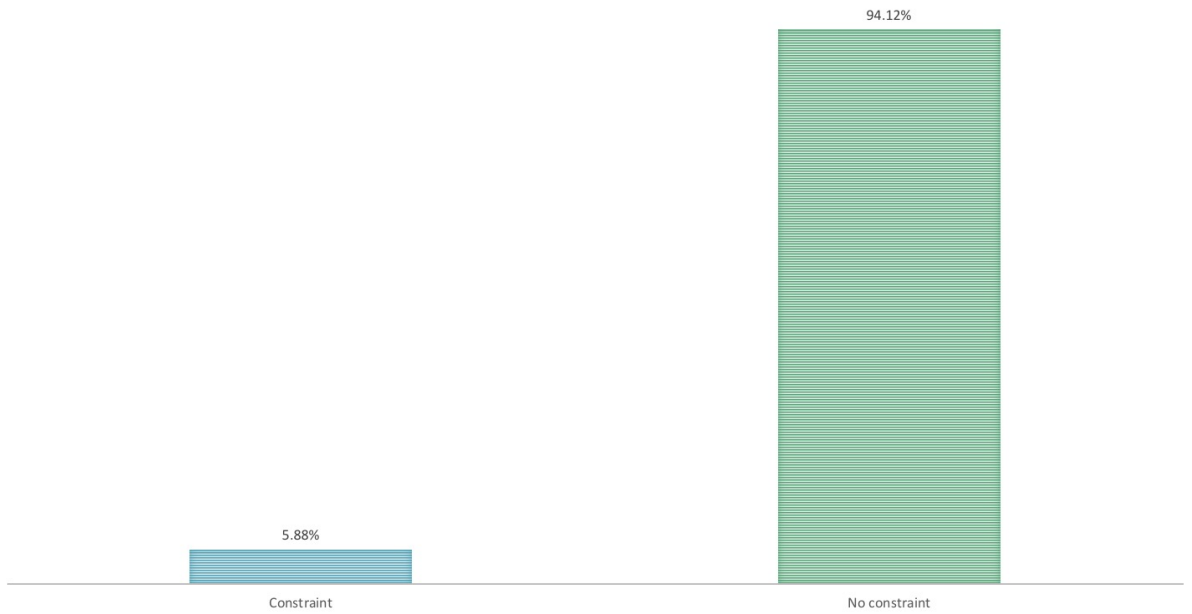


The most frequent response was that tradition was used to justify not adopting new ideas, with knowledge of culture used to prevent less knowledgeable participating and Māori values used to justify not making money both equal at around two thirds of the highest ranked.

The next set of questions focused on the legislative framework, specifically the Te Ture Whenua Māori Act and the RMA:

32. Whether the Te Ture Whenua Māori Act a constraint on your farming business reaching its goals [Single]:

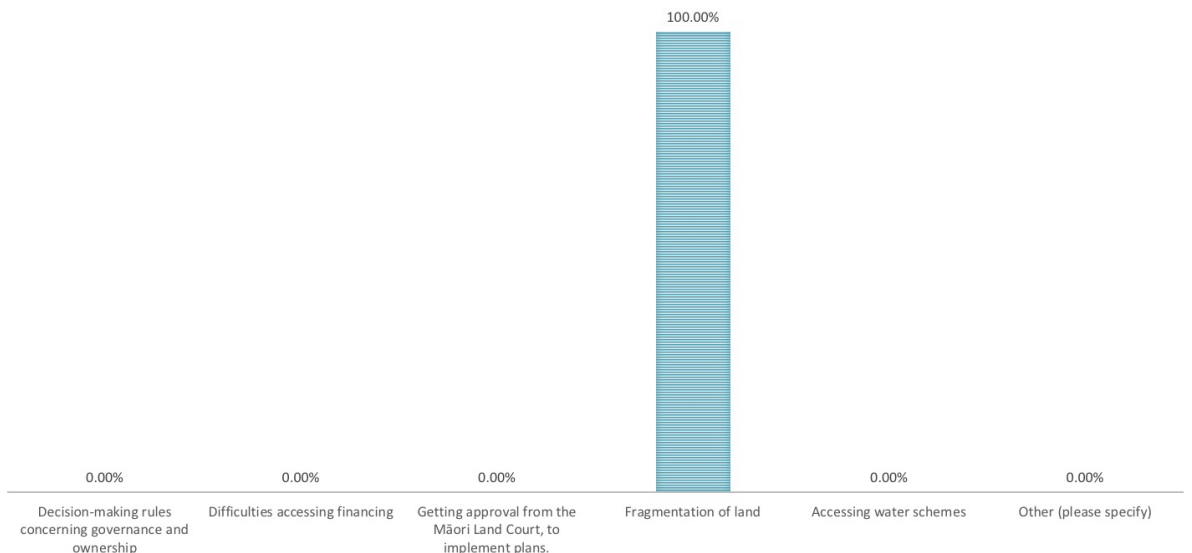
Perceived constraints of Te Ture Whenua Māori Act on Māori agribusiness activity (n=17)



Virtually every response indicated that the Te Ture Whenua Māori Act was not a constraint.

33. What ways does the Te Ture Whenua Māori Act constrain your business (decision-making, accessing finance, Māori Land Court approval, land fragmentation, accessing water schemes):

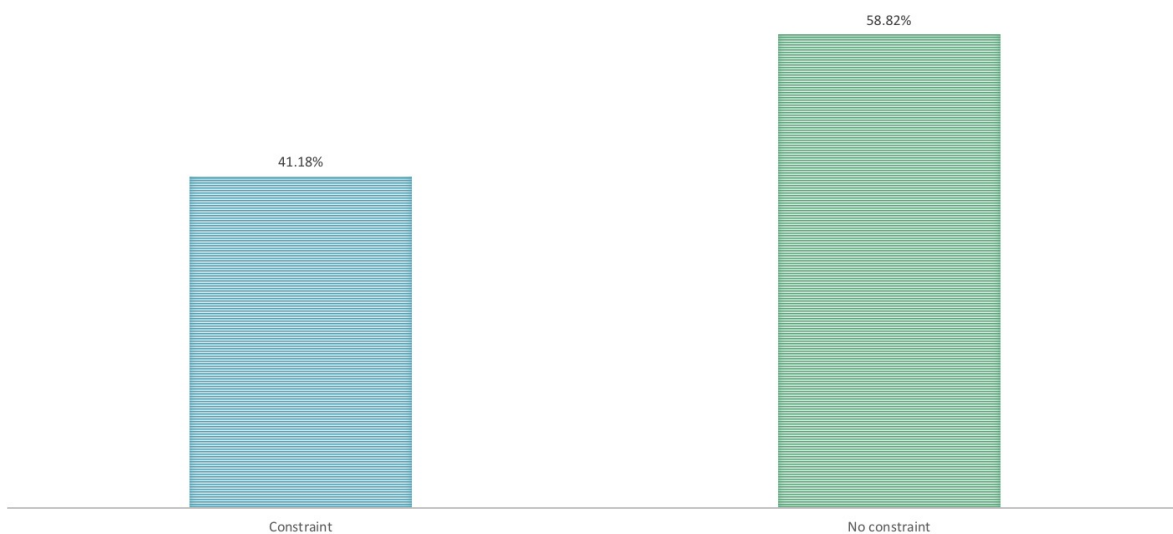
In what ways does the Te Ture Whenua Māori Act constrain your business (n=1)



Only two respondents answered this, both noted fragmentation as an issue.

34. Are environmental regulations (e.g. council regulations) a constraint on your business activities [Single]:

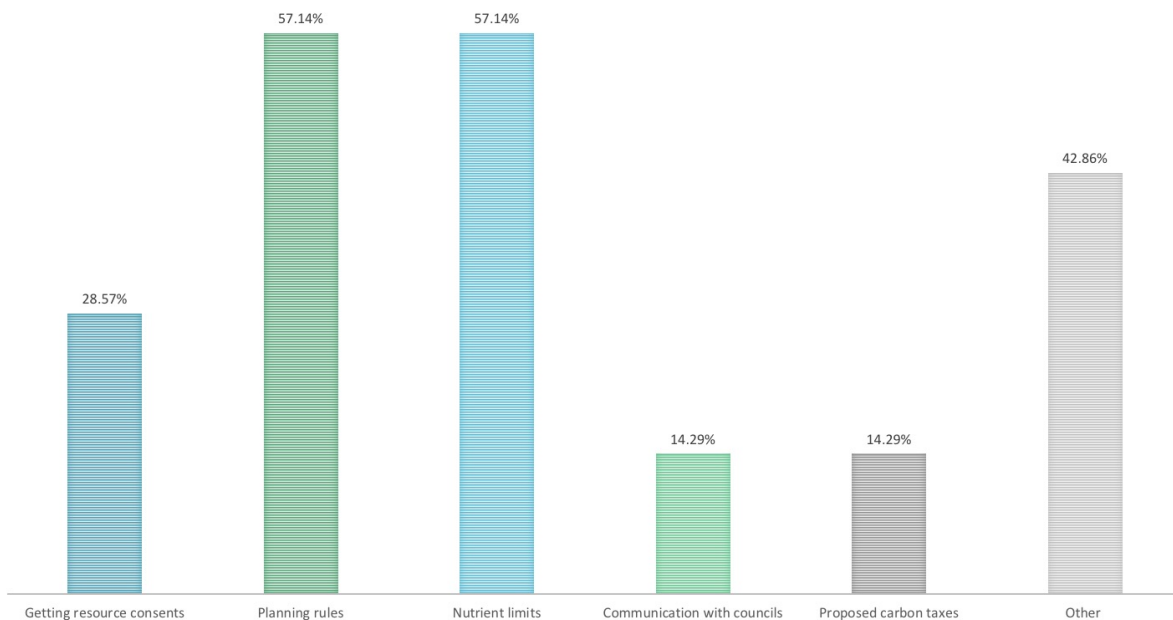
Respondents perceptions on whether environmental regulations are a constraint on Māori agribusiness (n=17)



Roughly three fifths answered no, while two fifths said yes to this question.

35. What ways are environmental regulations a constraint (getting resource consent, planning rules, nutrient limits, communication with council, proposed carbon tax) [Multiple]:

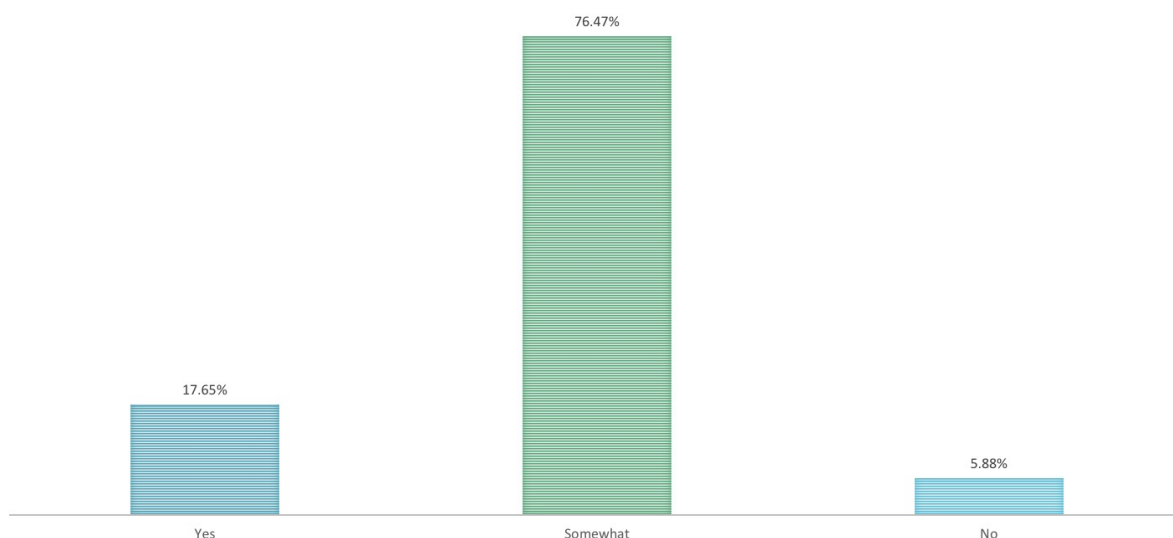
Perceptions on ways that environmental regulations are a constraint on Māori agribusiness (n=7)



The two most frequently indicated were planning rules and nutrient limits, with the other three all receiving several indications each.

36. Whether they consider that environmental regulations and resource consenting process help or support your business [Single]:

Perceptions regarding whether environmental regulations and resource consenting process support Māori agribusiness success



Most answered 'somewhat' to this question, with only a few saying 'yes' or 'no'.

Discussion

There were a number of useful insights determined from the survey, while some of the more interesting, insightful and impactful individual results will be outlined, here the focus will be on examining the interconnections between pillars and with domains. With regards to whai rawa, the drive to profitability was strong amongst most respondents and the majority of the farms were doing well economically. The fact that the biggest constraint to profitability was finding skilled employees was something that was also emphasised in the interviews. That this was seen as twice as big a constraint as any other suggests it is an issue for many.

When the results were filtered for those who scored 2 or 3 for how well their farm was doing, the ratio of those involved in decision-making went from roughly 3:1 to 1:1, likewise, the ratios of those who had strategies or approaches in place to gain a premium went from roughly 1:1 to 1:3. In other words, those who were struggling or not doing as well were less involved in decision-making and did not have practices or processes in place that would gain them a premium for their product. Of course, determining the causal relationship between these is difficult but it seems likely that these factors all influence each other to a degree. Also illuminating is that those who were not doing as well financially were more likely to indicate that the status of their whenua was 'staying the same' than 'doing well', with the ratio shifting from 1:1 to 3:1. Likewise, when asked if they were able to meet their kaitiaki goals, the ratio of yes to no for those who were not doing as well

financially was roughly 1:1 while overall this was closer to 4:1. When asked why they were not meeting their kaitiaki goals, the ratio of those who skipped the question versus those who answered it was 4:1 for the general group while for those who were not doing as well financially it was close to 1:1. Those that answered this indicated that the two biggest constraints to meeting their goals were that the farm would not be profitable and that they did not have the money to do so. Another interrelated insight is that when asked if environmental regulations were a constraint the ratio of those who were not doing as well financially was 1:1 yes and no, while the general ratio was 1:2. These four factors indicate that there is a strong connection between profitability and environmental outcomes. In other words, rather than being in conflict the pillars of whai rawa and kaitiakitanga are in synergy. Practically, this is a logical connection for several reasons, first a more vibrant and healthy farm is a more productive one, and also environmental innovations cost money. This insight is backed up by the interviews, where a number of participants had explained when asked about environmental regulations that they did not find them problematic as they were able to afford the necessary improvements.

Another interesting insight gained through examining those who were not doing as well financially was that they were more likely to have issues with governance. Again this is logical, as governance is essential for the efficient and equitable operation of any business and for Māori trusts and incorporations – who have a far greater burden of governance placed upon them than a comparable farming operation in New Zealand – this is even more important. The two constraints to governance that spiked for these lesser performing farms were skills and knowledge alongside conflict within boards or with shareholders, though all of the constraints were elevated for these farms. The role of governance in profitability is also clear with the change in ratio of those involved in decision-making going from roughly 3:1 to 1:1 for those who were not doing as well financially.

The kaitiakitanga section showed the importance of maintaining and enhance the mauri of the whenua and that the majority of farms were meeting their kaitiaki goals through, in particular, managerial and operational innovation, owner support, skills and knowledge and enough funding. Three quarters of farms had environmental goals and twice as many farms had environmental plans as did not with most of these internally developed, showing that the thriving mauri was part of a devised and implemented strategy and process, showing the importance of good governance and management as well as the necessary relationship with shareholders required to see these plans developed and put in place and the goals targeted and met.

The mana whakahaere questions provided insight into governance, with most seeing good governance as critical. Compared to other farming operations, Māori trusts and incorporations are governance 'heavy', in that they form boards at scales where a comparable operation would often just have an owner-operator because they have a large shareholding group they are responsible to. This means they need to have a strong grip on governance in a way a normal operation would not. Somewhat surprisingly, the biggest constraint to good governance was a focus on the 'day-to-day' issues rather than the 'big picture'. While this was expected to play a role its position as the biggest constraint was unexpected, though it is possibly a product of issues regarding lack of skills and knowledge, which was the second most frequent constraint. Less surprising was that all of the factors of good governance scored roughly the same high amount. This reinforces the understanding that good governance is multifactorial and requires all the components to be in place.

The results for whānaungatanga show the importance of connections to whenua, with trusts and incorporations using field days/on-farm wananga to maintain those connections most frequently, though board meetings, gifts from farm and access the farm for recreation also scored quite highly. The perception of generational differences was interesting as this can create friction, especially as the board will generally be older than the average shareholder. When filtering the responses by age, the youngest cohort who had answered the survey – 35-45 – all indicated they thought there were differences, suggesting this is not just the older generation's perspective. Also, while the most common answer as to what the difference is was young people lacking practical knowledge, for the youngest cohort the most common was that young people were not as interested in land. The differences between generations have implications for governance, the third most frequent constraint was interpersonal conflict and problems (raruraru) on boards, or amongst owners, and the generational differences could exacerbate these issues. Likewise, the perceived difference between rural and urban land owners was interesting as this could also indicate governance issues, especially as land owners are likely becoming more urban. Unlike the other pillars, there was little difference to whānaungatanga when filtered by those 'getting by'.

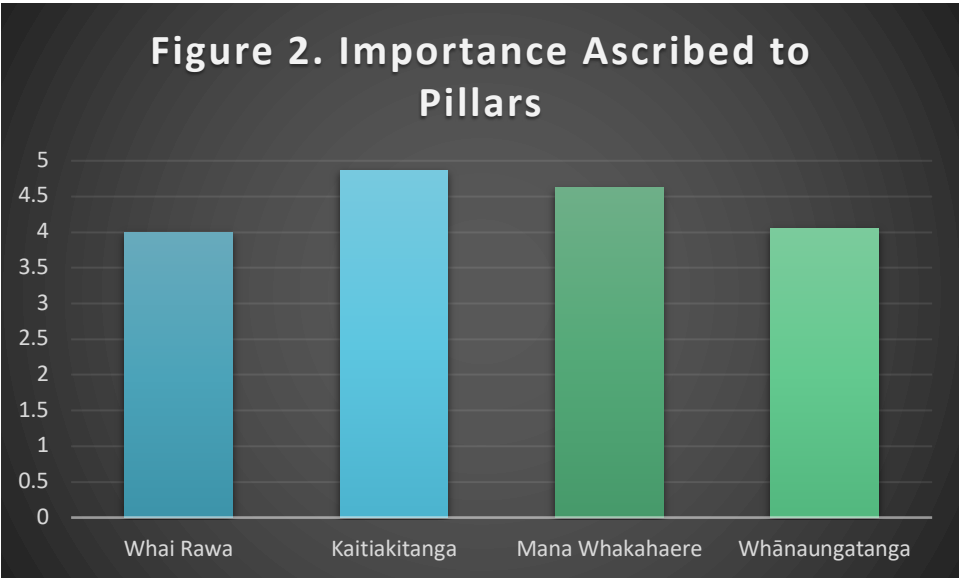
The questions about the role of Māori culture were also insightful. While the answers regarding its positive functions were expected, the responses to how it can constrain were more illuminating. More than half those that answered this question believed that tradition was used as a reason not to adopt new ideas. This is particularly problematic for farming operations as the need to innovate and stay at the forefront of current and future practices and processes is essential for retaining the

competitive edge. This is particularly true for many Māori trust and incorporation farms who may be working on marginal and isolated land and have a strong focus on kaitiakitanga as well as profitability.

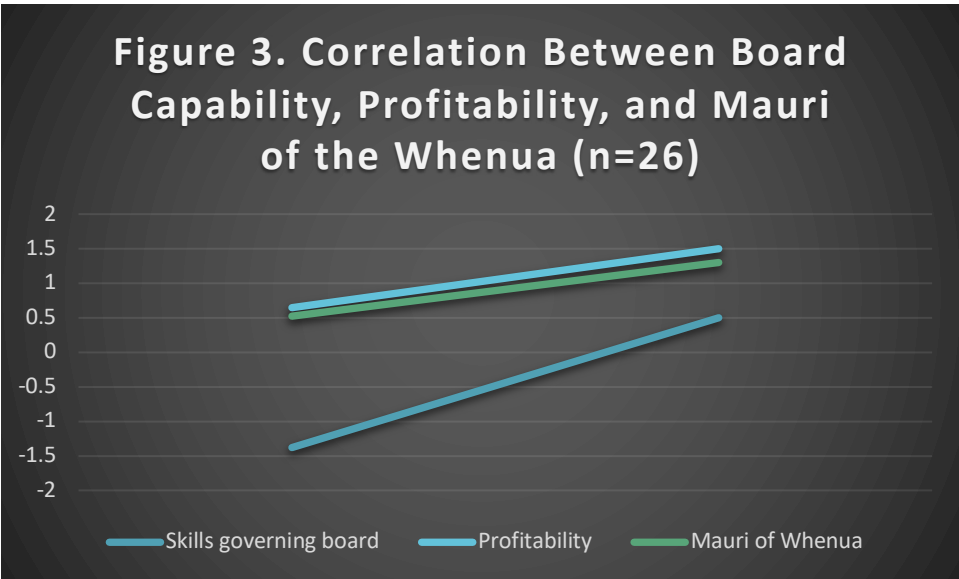
The final set of questions were focused on the regulatory environment. The Te Ture Whenua Māori Act has frequently been noted as a constraint in the literature, but here it was not indicated as such, making this a surprising but positive result. Likewise, while environmental regulations have been slated as constraining farming operations most of the respondents indicated that they were not a problem for them. When the results were filtered for those who answered ‘yes’ to environmental regulations constraining their business, the ratio of those whose farm was ‘getting by’ to ‘doing well’ (the two most common answers for the overall survey) went from 2:3 to 1:1. In other words, those who found the regulations constraining were also more likely to only be getting by rather than doing well. This connects with the findings noted above regarding the connection between farm profitability and achieving kaitiaki goals, showing that these constraints may work both ways. Interestingly, almost all the group who found the regulations constraining saw maintaining the mauri of the whenua as ‘extremely important’ – largely the same as the overall survey response – but when they responded to the question of what best describes the status of their whenua the ratio between ‘staying the same’ and ‘doing well’ went from almost 1:1 for the overall group to zero responses of ‘doing well’.

Relevance of Pillars and Indicators

We found through the above research process that the pillars we identified were all relevant and considered either very important, or extremely important. This is outlined in Figure 2 below.

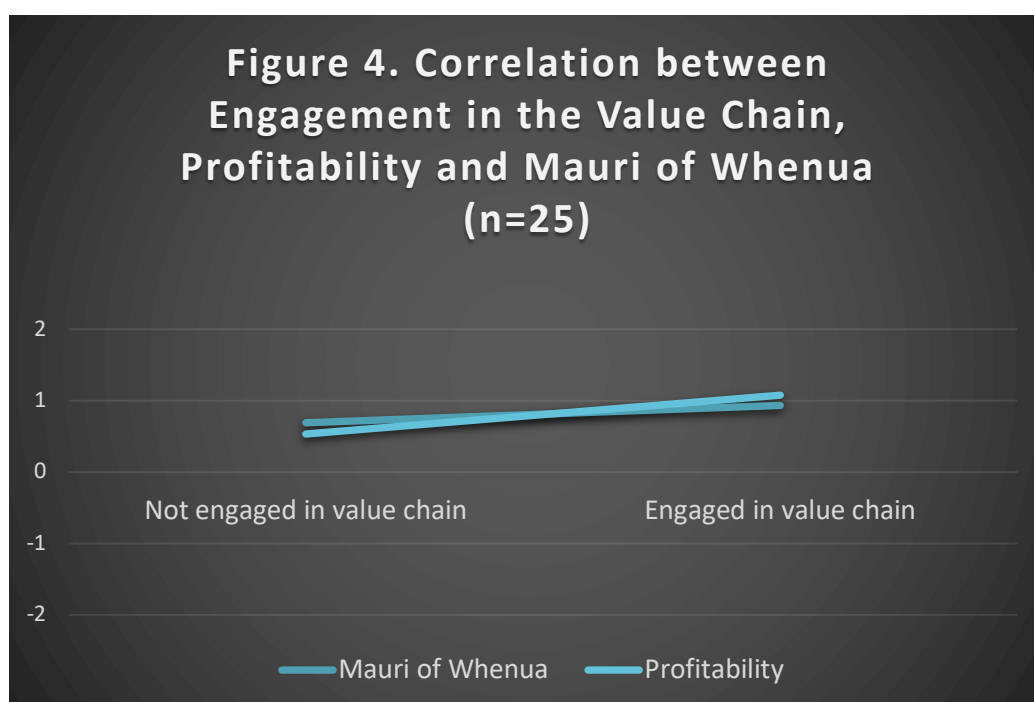


Furthermore, we determined that the domains we identified were all relevant for identifying constraints or enablers on Māori agribusiness. Firstly, as outlined in the previous section many Maori agribusinesses identified access to capabilities as a constraint and enabler on various pillars including: whai rawa, kaitiakitanga, mana whakahaere, and whānaungatanga. An example of these findings¹ is illustrated in the graph below, where the correlations between board capabilities, and the pillars of whai rawa (profitability), and kaitiakitanga (mauri of the whenua) are demonstrated. The x axis is a scale indicating whether respondents categorised their capability levels negatively or positively. A highly positive score is 2 while a highly negative score is -2. Figure 3 below shows that those who categorised their skills negatively also indicated that their environmental and economic performance was lower than those that attributed to themselves more capability.



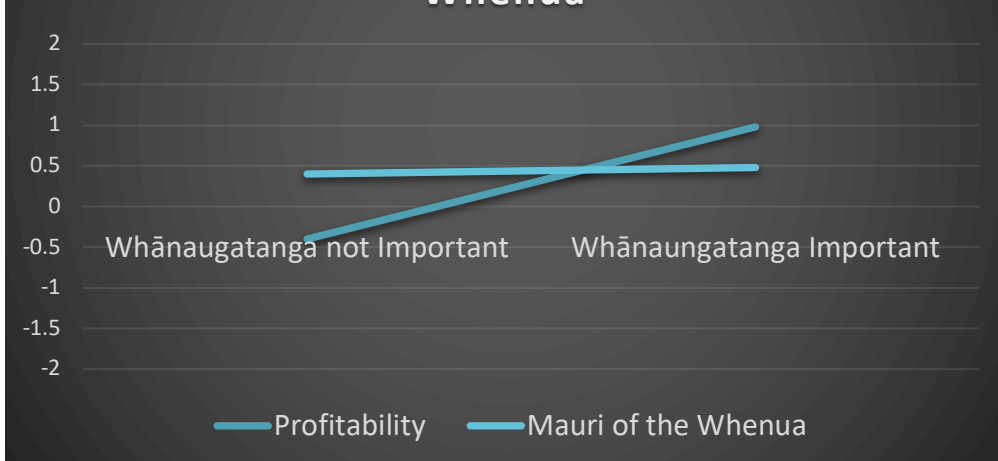
¹ We do not yet have enough data to identify correlations across all dimension-pillar variables.

Similarly, the financial capacity pillar (or access to working capital) was identified as both a constraint and enabler of business’s economic performance, environmental performance, governance performance and whanau activities. As most of the graphs in this section demonstrate, there are linear correlations between profitability (and by default available working capital) and performance across whai rawa, kaitiakitanga, mana whakahaere, and whānaunangatanga dimensions. Many of the Māori agribusinesses surveyed also demonstrated strong connections between the pillar of path to market and the domains. This is demonstrated in that agribusinesses reporting greater access to premium markets also indicated higher whai rawa and kaitiakitanga performance. This is illustrated in Figure 4 below, where the correlations between engagement in the value chain, and the pillars of whai rawa (profitability), and kaitiakitanga (mauri of the whenua) are demonstrated. The graph shows that those who categorised their engagement in the value chain negatively (that is they had more difficulty accessing premium value chains) also categorised their kaitiaki and whai rawa performance more negatively than those engaged in premium value chains.



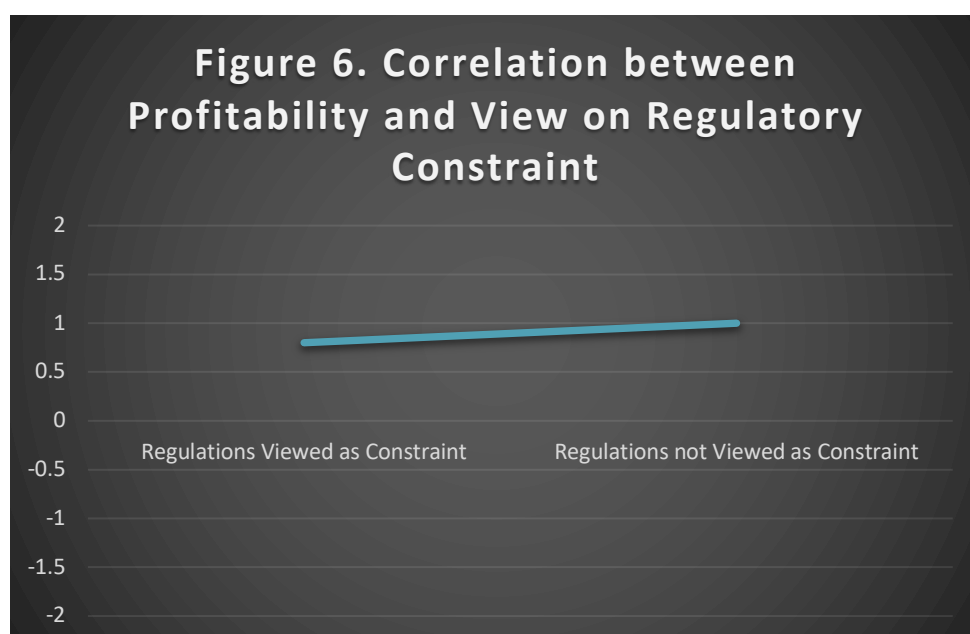
In regard to the pillar of relationships, the survey also confirmed the importance of this pillar across dimensions. An example of this illustrated in Figure 5 below whereby agribusinesses reporting to embrace connections and relationships, also reporting higher whai rawa and kaitiakitanga performances.

Figure 5. Correlation between how much Whānaungatanga is valued, profitability, and the mauri of the Whenua



Finally, in regard to the pillar of legislative framework, the survey also confirmed the importance of this pillar across most dimensions. An example of this illustrated in Figure 6 below whereby agribusinesses reporting regulations as an encumbrance on their operations were also likely to indicate that they were less profitable, this is in contrast to those that did not consider regulations as an encumbrance on their operations. This demonstrates how regulation can be viewed as both a constraint and an enabler in relation to profit.

Figure 6. Correlation between Profitability and View on Regulatory Constraint



The Development of the Prioritisation Tool

The Māori agribusiness survey provided some statistical validation of clear correlations between pillars as constraints and enablers of each domain. However, due to the relatively small number of responses to the survey it has not been possible to quantify the magnitude of relationships/correlations between every indicator and its corresponding domain. The survey is, however, open and it is hoped that it will reach the number of responses required for these calculations. Despite this limitation we are confident in the pillar, domain, indicator matrix design from the initial statistical results and from the evidence from the qualitative interviews undertaken in stage one of the research.

The prioritisation tool will determine the current status of a Māori agribusiness in relationship to the domain-pillar matrix. Basically this involves determining the extent to which the agribusiness is negative or positive in relationship to each indicator. This is illustrated in the Figure 7 below, where the greens mean positive, yellow neutral, and orange and red negative.

Figure 7. Performance of an Māori Agribusiness across Indicators

PILLARS DOMAINS	PILLARS			
	WHAI RAWA	KAITIAKITANGA	MANA WHAKAHAERE	WHANAUNGATANGA
LEGISLATIVE FRAMEWORK	Orange	Green	Yellow	Orange
FINANCE	Green	Green	Orange	Red
CAPABILITIES	Green	Light Green	Green	Light Green
RELATIONSHIPS	Orange	Yellow	Light Green	Yellow
PATHS TO MARKET	Light Green	Orange	Yellow	Orange

However, in order to fill the matrix an agribusiness must first enter data. Consequently, a number of questions have been developed to elicit data. The first set of questions (performance-based questions) determine the current status of the agribusiness against each pillar, while the second set

of questions (the value-based question) determine the level of importance each agribusiness attributes to each pillar. The questions are outlined below:

Performance-Based Questions (Current State)

1. How profitable is your business?
2. How would you describe the mauri (health) of you whenua (land)?
3. How would you describe the performance of you governance?
4. To what extend do you think the whenua provides a place of connection, belonging, and identity for whānau and owners?

Values-Based Questions (Ideal Future State)

1. How important do you think it is to make as much money as possible from farming?
2. How important do you think it is to maintain, or enhance, the mauri/health of the whenua/land?
3. How important do you think good governance is to the success of your farm?
4. How important is the whenua as a place of connection, belonging, and identity?

The performance-based questions provide a means to determine pillars where there is low performance being recorded, which in turn become highlighted as priority areas for intervention (given that improvements are needed). Answers to the performance-based questions are however weighed against the values-based questions. The values-based questions ask how important a particular pillar is to an agribusiness. For example, kaitiakitanga, or pursuing environmental goals, may be viewed as more important as whai rawa, or economic orientated goals. Answers to these questions follow the same formula as outlined above whereby a response from 1 to 5, following a Likert scale, may be offered for each question. An answer of 1 indicates a highly negative response and a 5 indicating a highly positive for a performance based question. Conversely, an answer of 1 indicates a highly positive response and 5 indicating a highly negative response for a values-based question. for a performance based question with 0 entailing an neutral response. This scoring methods allows answers to the values-based questions and the performance-based questions to be weighed against each other. This is illustrated in the Table 3 below where for example the pillar of whai rawa scores a neutral economic score and a high values score. When added together and averaged this gives the total score for each pillar. The lower the score of the pillar the higher its priority in terms of need for an intervention to improve performance and fulfil value drivers of the agribusiness.

Table 3. Weighting Scores Across Pillars				
	Whai Rawa	Kaitiakitanga	Mana Whakahaere	Whānaungatanga
Performance	3	3	5	2
Value	1	2	2	2
Total Score	2	2.5	3.5	2

The pillars in order of priority from the above table are illustrated in the graph below.

Figure 8. Priority Pillars Post Weighting

The next category of question is designed to elicit responses in terms of the status of the organisation in relationship to each indicator across each pillar. The indicators and questions for each indicator are outlined in the table below. Once again answers to these questions follow a 1 to 5 Likert scale for each question. However, the scores given against each indicator are weighted (either reduced or increased) based upon priority of the pillar in which it falls. For example if question 1A below in the Whai Rawa pillar is given a score of 3, and based on the graph above this pillar is at priority level 2, then the score will be adjusted to an average of the 2.5. Through this process all indicators can be ranked in terms of their priority. The questions to elicit data for each indicator under each pillar are outlined in Table 4 below.

Table 4. Indicators and Indicator Questions		
Indicator		Question
WHAI RAWA		
1A	Skills and knowledge in agribusiness and agricultural production	In terms of farm production do you think that your business has all of the skills and knowledge needed to run a good operation?
1B	Expenditure on farm efficiency and product quality	Do you think enough is spent on continually improving the efficiency and diversifying farming operations?

1C	Open channels to premium markets	When selling your products do you have access to processors and/or markets that will pay more if you produce to a high standard (e.g. environmentally, animal welfare)?*
1D	Staff relationships	Are there positive connections, relationships, and trust across farming staff?
1E	TTWMA/RMA impacts on farm profitability	To what extent do you find complying with regulations such as the RMA and the Te Ture Whenua Māori Act impact profitability?
KAITIAKITANGA		
2A	Knowledge and capabilities in sustainable land management	Do you think that your trust/incorporation has all of the knowledge it needs to farm in a way that maintains the mauri of the whenua?
2B	Investment finance to support sustainability initiatives	Do you think that enough is invested on improving the environmental performance of the farm?
2C	Opportunity to self-brand	To what extent do you have a brand presence with processors and/or markets that communicate your environmental credentials?
2D	Collaboration across catchments for environmental outcomes	To what extent do you work with other farmers and groups in your catchment, and beyond, to manage the whenua in a way that maintains and increases its mauri and that of awa (waterways)?
2E	RMA impact on environmental performance	To what extent do you find complying with the RMA and regional plans, or resource consents, improves the environmental performance of your business?
MANA WHAKAHAERE		
3A	Knowledge, leadership, and skills in governance	To what extent do you think that your Trusts/Board has all of the knowledge, leadership, and skills needed to govern effectively?
3B	Resources to contract specialists to inform governance decisions	Do you have the resources required to consultants to provide knowledge and skills where there are gaps on the board?
3C	Leadership focused on adding value	To what extent does your board have policies and practices in place to add value to your products?
3D	Connections, relationships, and trust among governors	Are there positive connections, relationships, and trust across governors in your trust and incorporation?
3E	Te Ture Whenua Māori Act impact on governance	To what extent do you think Te Ture Whenua Māori Act and Māori Land Court negatively impacts your ability to govern?
WHĀNAUNGATANGA		
4A	Connections, relationships, and trust across whanau/owners	To what extent are attempts made to train and/or employ whanau through the business?

4B	Te Ture Whenua Māori Act impact on whanau relationships	To what extent are investments made to support connections and relationships with whanau/owners; including for example knowledge of whakapapa, place, and connections related to the whenua?
4C	Skills and knowledge in agribusiness and agricultural production	How would you rate the level of trust and positive relations among whanau/owners?
4D	Expenditure on farm efficiency and product quality	To what extent do your whanau connections help with access to finishing farms, processors and branding and marketing?
4E	Open channels to premium markets	To what extent do you think Te Ture Whenua Māori Act and Māori Land Court supports and maintains strong relationships and connections between whanau?

However, simply knowing the priority of indicators does not tell us the extent to which an agribusiness has the actual capacity to implement interventions to address a problem indicator. For example, an agribusiness may lack skills and capacity in environmental management (indicator 2A) but lacks the financial resources to invest in this capability. Consequently, capacity to Act to improve negative indicators varies, and may be primarily determined by profit levels, or the ability to invest in the specific area. The more profitable an operation is the greater their Capacity to Act is across virtually every indicator.

The way that profitability levels impact Capacity to Act was determined by the data gained in the survey, specifically the ratios outlined in the discussion section relevant to each pillar. While these are understood to be built on a relatively limited amount of data they are seen as providing a good guide for this function. The Capacity to Act on kaitiaki goals changes from 1:1 for those who score a 4 or 5 to a 3:1 for those below 3, which will be applied to indicators in the kaitiakitanga section. The key governance ratio determined was the shift from 1:1 for those at 4 to 3:1 for those below 3, which is the ratio applied to the governance section questions. There were no significant changes in the whanaungatanga section when filtered for profitability, so the Capacity to Act in this pillar will not change. This matches with other data, as this area is not as dependent on financial investment as an effector. As noted above, the survey remains open and if any significant changes occur in the data the ratios will be re-evaluated.

The second way Capacity to Act is determined is more complex, and looks at the relative impact that profitability can have on each indicator. Some indicators have a high impact as the effectors can be easily purchased, while other indicators can only be indirectly impacted by money. These

have been determined during the literature review, interview and survey process and are ranked between 1-5, with 1 the lowest impact and 5 the highest:

1. Skills and knowledge in agribusiness and agricultural production (3 – higher wages can be paid for more skilled and knowledgeable staff, training can be paid for, and consultants can be hired, but there are limits to finding the right staff and to the effectiveness of training)
2. Expenditure on farm efficiency and product quality (5 – higher profit has direct impact on farm expenditure)
3. Open channels to premium markets (4 – some of the key means to opening channels are directly related to financial input, such as branding and marketing expenditure, while others paths such as ensuring consistent supply, can be indirectly effected through investment)
4. Staff relationships (3 – relations with staff can be improved through both direct and indirect expenditure, including wage increases and management/governance improvements through training, respectively)
5. T*TWMA/RMA impacts on farm profitability (3 – some of the issues created by T*TWMA/RMA can be mitigated through expenditure but not all, with many environmental requirements in the former and problems caused by share fragmentation in the latter)
6. Knowledge and capabilities in sustainable land management (3 – these can be gained through expenditure, through consultants, training or hiring staff though there are some limits to finding the right staff and to the effectiveness of training)
7. Investment finance to support sustainability initiatives (5 – higher profit has direct impact on sustainability expenditure)
8. Opportunity to self-brand (4 – many of the requirements of self-branding can be gained through expenditure though this is limited by other factors such as scale and capability)
9. Collaboration across catchments for environmental outcomes (2 – collaboration requires strong relationships, which are not directly grown through expenditure)
10. RMA impact on environmental performance (4 – most of the RMA constraints can be overcome through expenditure)
11. Knowledge, leadership, and skills in governance (3 – while training can add to governance capability there are inherent personal and group limits)
12. Resources to contract specialists to inform governance decisions (5 – higher profit has direct impact on governance consulting expenditure)

13. Leadership focused on adding value (3 – expenditure can help through training and consultants but leadership on value adding also requires qualities that cannot be purchased)
14. Connections, relationships, and trust among governors (2 – while profitability, and expenditure, can improve relations there are issues that cannot be overcome, including long standing conflicts or different desired outcomes)
15. Te Ture Whenua Māori Act impact on governance (2 – some of the issues caused by T̄TWMA can be mitigated but many cannot be overcome through financial expenditure)
16. Ability to train and/or employ whanau (3 – while money can be spent to train whanau they need to want to learn and work on the farm, which is not always the case)
17. Resources to support engagement and relationships with whanau/owners (5 – higher profit has direct impact on engagement expenditure)
18. Whānau networks across supply chain (3 – profitability does offer great freedom to explore and expand these networks, but expenditure does not provide direct impact on these relationships)
19. Connections, relationships, and trust across whanau/owners (2 – while profitability and expenditure does help build relationships or trust though this will not please all whanau/owners and will be counterproductive in some cases)
20. Te Ture Whenua Māori Act impact on whanau relationships (2 – while profitability and expenditure can help mitigate some of the issues caused by T̄TWMA it cannot help with all of them)

Next Stage – The Prioritisation Tool

In the final stage of this project an online tool will be developed that allows a Māori agribusiness to answer all of the questions outlined in Table 4. From this an infographic will be generated that shows current status and the priority areas of action that require intervention based upon weightings derived from values, performance and capacity to act. While the infographic tool is still being developed, it is likely to use the matrix developed during the project as this is seen as a relatively intuitive visualisation method. As outlined above the matrix will use colour codes to represent the scores for each indicator. The tool would provide strategies to overcome Priority Areas when the relevant segment is hovered over well as explanations of each of the pillars and domains when hovered over. An example of the colour-coding can be seen in Figure 9 below. The final report in this series will outline the results of implementing the agribusiness tool.

Figure 9. Priority Areas for Intervention

PILLARS		WHAI RAWA	KAITIAKITANGA	MANA WHAKAHAERE	WHANAUNGATANGA
DOMAINS					
LEGISLATIVE FRAMEWORK		Orange	Green	Yellow	Light Orange
FINANCE		Green	Green	Orange	Red
CAPABILITIES		Green	Light Green	Green	Light Green
RELATIONSHIPS		Orange	Yellow	Light Green	Yellow
PATHS TO MARKET		Light Green	Orange	Yellow	Light Orange