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Chasing the honey money: Transparency, trust, and identity crafting in the Aotearoa New Zealand mānuka honey sector

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ABSTRACT

Advances in digital technology are altering the methods through which trust is established and maintained within value chain relationships, including those within the Aotearoa New Zealand mānuka honey sector, where the increasing value of the honey and the increasing threat of food fraud have impacted power dynamics between value chain actors. This paper explores how three Aotearoa New Zealand mānuka honey companies have responded to these changes, focusing on their efforts to craft and convey images of themselves as trustworthy producers and partners. To this end the companies are seen to use digital technologies in their attempts to establish character-based, institution-based, and process-based trust with those in their value chains by displaying their ability, integrity, and benevolence.

1. Introduction

Recent advances in digital technology are well-documented, altering not just how we communicate, consume, and conduct business, but also how we craft our identities (Pagani and Pardo 2017). This broad societal shift has affected many sectors, including agriculture, where digitalisation is deemed essential to improving the sustainability of the agri-food sector (Shepherd, 2020). Such digitalisation can be understood as a sociotechnical transition (Klerkx et al., 2019; Klerkx and Rose 2020; Rijswijk, 2021; Tilson et al., 2010), one that not only includes a shift in technologies and the related infrastructure that surround them, but also acts to transform markets, businesses, and relationships (Nambisan, 2017). Thus, as agri-food value chains have begun to digitalise, they have needed to develop new digital technologies, data management strategies, and business practices (Dufva and Dufva 2019). Furthermore, as Blöbaum (2016) writes, "digitalisation has created new actors, new organisations, and new ways of communicating, as well as new possibilities for gaining access to people and institutions. In so doing, it poses problems for trustors and trustees" (2016: 8).

Trust is a key element in the functioning of value chains (Falkenreck and Wagner 2021) and of the digital economy (Cazier and Joseph, 2007) for, as Cazier writes, "[w]ithout trust, few transactions would take place" (2007: 45). However, new modes of connection created by digitalisation have disrupted the avenues through which relationships of trust have traditionally been developed and maintained (Carolan 2017; Jakku, 2019; Wiseman, 2019) and the methods through which 'trustworthiness' has traditionally been displayed and assessed. Trust has traditionally been created and maintained through interpersonal contact between actors, built upon the observation of shared values and repeated positive moral interactions (Chen et al., 2013; McEvily et al., 2003; Milford 2002). However, in the case of modern value chains such interpersonal contact may be non-existent. In such cases, digital technologies can act as the medium of communication between actors in the chain. Yet, the display and assessment of trust is far from simple. In her seminal work, Zucker (1986) identified three kinds of trust that can be produced within relationships between organisations and customers: process-based trust, reflecting trust in the processes of organisations and institutions created through social exchange and past experiences; institution-based trust, created through a trusted third party who assures the trustworthiness of the target organisation; and character-based trust, created through a sense of shared communality of, as Murphy and Blessinger (2003) and Cazier and Joseph (2007) stress, value and goal congruence.

However, for trust to develop, organisations must be perceived as trustworthy (Schoorman et al., 2007). According to Schoorman et al. (2007) such trustworthiness is constructed from multiple dimensions,

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including *ability,* the trustor's perceptions of the trustee's ability to perform specific tasks in a specific context (Lance Frazier, 2010); *benevolence*, the extent to which the trustee wants to do good in regard to the trustor (Barclay 2004); and *integrity*, the extent to which the trustor expects that the trustee holds acceptable standards or norms (Greenwood et al., 2010). Such perceptions, and their alignment with the priorities of the trustor, are key to the formation of interpersonal trust (McKnight et al., 2002).

Digital technology opens new possibilities in conveying trustworthiness and transparency within value chains, two values that underpin cohesion and collaboration. These values are not only communicated through actors' behaviours towards each other in the personal and digital space but also through storytelling, as actors work to craft and convey their identities as trustworthy producers and partners within their value chains (Adams 2015; Strähle et al., 2015; Vijayan and Kamarulzaman 2020). Furthermore, another key factor influencing organisations' efforts to convey themselves as trustworthy is power. Shifts in the power dynamics within value chains ultimately affect the trust relations between value chain actors (Farrell and Knight 2003). However, like trust relations, the introduction of digital technologies can also affect the power relations within value chains (López, 2022; Mosch et al., 2021).

Therefore, changes in power relations within value chains and the shift towards digitalisation creates both opportunities and challenges regarding trust relationships. Trust has been examined within a wide range of agri-food value chains, however honey value chains have not been a significant feature of this literature (de Vries et al., 2022). Therefore, drawing on the findings of a qualitative case study of the Aotearoa New Zealand mānuka honey sector, this paper attempts to address this gap in the literature, while exploring changes in the relationships of trust and power within this sector and how these changes are shaping the identity-crafting of mānuka honey companies who are seeking to build and maintain trusting relationships within their value chains.

2. The global honey crisis: challenges for the mānuka honey value chains

Honey is one of the world's oldest food products, consumed widely for its taste, nutritional value, and health benefits (Soares, 2017). Predominantly comprised of water and sugars, honey contains compounds that vary with its botanical origin, geographical provenance, season of production, extraction, and storage (Schievano, 2013; Soares, 2017; L. Wu, 2017), which can impart medicinal properties to the honey (Soares, 2017).

For some, the appeal of honey is linked to such medicinal benefits (YeowChiang et al., 2013) while others desire it as a natural sweetener (Phipps 2017), free from technological food processing (Cosmina, 2016; Ghorbani and Khajehroshanaee 2009; Pocol and Teselios 2012). The geographical provenance of honey influences its flavour profile, and honey from a single pollen source (monofloral) is perceived to be higher quality than one with multiple pollen sources. As such, the honey industry has increasingly sought to produce large quantities of monofloral honey from desirable locations with desirable properties, to meet consumer demand (Soares, 2017).

As a result of this growing global demand for honey (Vapa-Tankosić et al., 2020) worldwide production has continuously increased (Pippinato et al., 2020; Popescu et al., 2021). In 2016, global honey production amounted to 1704 thousand tonnes, with global honey exports accounting for 569 thousand tonnes (Popp et al., 2018). While the key countries currently involved in the production and export of honey are Asian, notably China and India, the biggest consumers of honey are European (Popescu et al., 2021) and the biggest importers are the USA and the EU. As a result, the global honey market involves a high level of connectedness and collaboration (García and Norberto, 2018; Popp et al., 2018), with a web of relationships between both individuals and entities, both local and international. Based on value chain analysis by Bhandari & Kattel (2020), the honey value chain can be segmented into three functions: 1) the owners of the raw product; 2) the regulatory bodies; and 3) the supporters or consumers. Within these three segments sit a diverse cast of characters involved in the flow of honey within and across borders. A cast that includes landowners on whose land beehives are placed, beekeepers who care for the bees and harvest the honey, honey companies who process, package, and store the honey, regulators who test the honey for quality, authenticity, and safety, quality assurance companies who certify the honey, retailers who stock and sell the honey, and consumers who buy and consume the honey. And in recent years, as is discussed herein, digital technology developers have been added to this already sizeable cast.

With this complex web of diverse and changing characters, all of whom hold some degree of power over others within the web, comes challenges for establishing and maintaining relationships and trust. Challenges that have been exacerbated in recent years by a series of controversies surrounding the honey sector. While some of these controversies have centred on the welfare of honey bees, such as that surrounding the role of insecticide in colony collapse disorder (Suryanarayanan et al., 2013) many others have centred on instances of food fraud (see for example Leeder, 2011 and Ritten et al., 2019's discussions of the multinational investigation that surrounded the illegal importation of more than $80 million USD worth of honey from China to the United States in 2011, considered one of the biggest food fraud scandals in history). The increase in consumer demand for local and specialty honey (Feldmann and Hamm, 2015; Murphy et al., 2000) discussed above has coincided with issues of environmental degradation and the spread of diseases (S. Wu, 2015) which have drastically reduced the global bee population (Klein, 2017), leaving honey a vulnerable target for adulteration (Fakhlaei, 2020). As a result, recent years have seen a dramatic rise in adulterated and fraudulent honey (Brodie 2017; García and Norberto, 2018) which has resulted in honey becoming one of the most frequently adulterated food products (Moore et al., 2012), subject to bulking agents (Mehryar and Esmaiili 2011; Strayer et al., 2014), incorrect labelling, and the masking of provenance (Soares, 2017; Strayer et al., 2014). Aotearoa New Zealand's mānuka honey has been the target of such practices. Since the scientific discovery of its unique antibacterial properties (Molan and Russell 1988), the value of mānuka honey has increased significantly, with a kilogram of bulk mānuka honey fetching up to $130NZD in 2020, compared to a top price of $37.50NZD in 2010 (Ministry for Primary Industries, 2016; 2020). However, with this increase in value, has come a rise in food fraud (Leake 2013). In 2014, for example, an estimated 10,000 metric tonnes of mānuka honey were consumed globally, while the approximate amount produced in Aotearoa New Zealand was, reportedly, 1700 metric tonnes (Creasey 2014; Usborne 2014).

While fraudulent honey is not generally injurious to health, it negatively impacts the honey industry, influencing market values through illicit profits and unfair competition (Fairchild et al., 2003; Mehryar and Esmaiili 2011; Strayer et al., 2014; S. Wu, 2015). Furthermore, the controversies that surround instances of fraudulent honey erode consumer trust in honey products and their labelling, leading to an increased demand for transparency around honey companies' ethical practices and product authenticity. As Bitzios et al. write, "consumer trust and loyalty can only be enhanced further if they are offered access to information detailing the underpinning standards of the labelling, including traceability information" (2017: 9). However, the desire for transparency from honey companies not only comes from consumers but also from landowners, who are increasingly demanding a fair return for the honey produced on their land (Lloyd, 2017). These shifts in the power relations within mānuka honey value chains towards consumers and landowners, and the resultant requirement for producers to display and convey their trustworthiness through crafting their identities as trustworthy producers and partners, are discussed herein.

3. Methodology

A single industry case study design was employed to explore changing trust relationships in the Aotearoa New Zealand mānuka honey sector. Such an approach allows for the study of a phenomenon in its specific context while supporting theoretical generalisability (Yin 2011). Following ethical approval [anonymised] and an exploration of literature and documents concerning the Aotearoa New Zealand and international honey sector and the role of trust in value chains, empirical research was undertaken. This consisted of semi-structured interviews with eleven individuals (nine males, two females) involved in the Aotearoa New Zealand mānuka honey sector including two representatives from each of three honey companies (a small boutique company, a mid-sized company, and a large company), two representatives from independent digital technology companies (with products designed for the honey sector), two landowners (one connected to the boutique honey company, one connected to the large honey company), and one representative of a quality assurance organisation. Two of the companies (the boutique company and the large company) had developed their own digital technology in-house.

Following the theoretical notions on trust, trustworthiness, and digitalisation, the interviews were structured along a list of topics exploring the interviewees' value chains, digitalisation journeys, perspectives on regulation, uncertainties, risks, openness, transparency, and the power dynamics within their value chains and sector. The interview transcripts were then coded and thematically analysed (Clarke and Braun 2013) within NVivo12. Quotes used within this paper are anonymised.

4. Limitations

While mānuka honey value chains, like the global honey sector, includes a wide range of actors and entities, both local and international, and thus a complex web of relational dynamics, this paper focuses on the ways in which digital technologies are being used to facilitate trust relationship between honey companies and the landowners, beekeepers, and consumers within their value chains. It was within these relationships that the interviewees were focused on building trust. The lack of focus on the wider complex web of relational dynamics within the Aotearoa New Zealand and the global honey sector, and the role of trust within these dynamics is therefore a limitation of this study, which would benefit from future research.

Furthermore, despite the fact that the medicinal properties of mānuka, which have been central to the global rise in popularity and value of mānuka honey, were first discovered and utilised by Māori (the indigenous people of Aotearoa New Zealand), that mānuka honey remains a taonga for Māori (a treasure carrying social and cultural value) (Bil, 2016), and that Māori iwi (tribes) remained significantly involved in the mānuka honey sector, none of the three companies explored herein had iwi involvement. The absence of Māori enterprises, interviewees, and perspectives from this research is a clear limitation on the findings, one that future research exploring digitalisation, and relational and trust dynamics within the mānuka honey sector would do well to address.

5. Results

5.1. Shifting power relations: the need for trusting partnerships

The ease with which beekeepers and honey companies can access mānuka is a clear indicator of the recent shift in power within the honey value chain from beekeepers and honey companies to landowners. As one interviewee explained, *"originally with mānuka it was … relatively straightforward to get a site, you could probably pay the farmer with some jars of honey, and they were happy with that because they were getting a pollination benefit of bees on their land"*. This kind of nominal 'payment' to landowners for the use of their highly valuable mānuka was, reportedly, the norm both before and during the first few years of the 'mānuka boom', a time when the mānuka honey sector in Aotearoa New Zealand was shrouded in secrecy, and the trust between landowners and honey companies was arguably based on a perception of benevolence. However, beekeepers and honey companies were reluctant to share information, let alone profits, with landowners and others in the industry during this time. Thus, as landowners became increasingly aware of the *"honey … gold-rush"* (landowner) and the true monetary value of the honey produced on their land, their trust in the honey companies' benevolence eroded and the power dynamics started to shift as competition for mānuka sites intensified. As a representative of one of the digital technology companies explained, "*landowners basically started giving it up for the highest bidder or the best deal"*. As a result, beekeepers who had been on sites for decades, paying landowners in honey, found themselves being replaced by large corporate honey companies and technologically advanced boutique honey companies who could afford to pay landowners better and/or recognised the need to put more effort into nurturing trusting relationships with landowners. As the founder of one of the digital technology companies put it, regarding the "*old school beekeepers*":

> "Those guys are finding it really hard to stay competitive, they're losing sites because another company that's more transparent, that seems more honest will come along and potentially pay more"

The reluctance within the honey sector to provide information and transparency to landowners was something that the CEO of the small boutique mānuka honey company noted during his first foray into the sector.

> *"when we started it was pretty common that there was no agreement – no paperwork – maybe a bit of a handshake deal … and then basically very little communication at all. The hives would turn up, go on the property, and then one day they'd be gone again, and nobody would hear from anybody around volume or quality or test results or nothing, and then maybe six months later they might get a cheque in the post, or maybe not. So, that was about the extent of the visibility. So, it was very poor, and without … knocking any other operators or anything, I think that there was probably a little bit of purposely trying to keep the landowners in the dark for a period, and I guess when we first launched our company and brand, we wanted to address that immediately. So … with* [our digital technology platform]*, we wanted to provide complete transparency through the value chain"*

The boutique company's approach of providing transparency to build, what the company's head of digital technology called "*good relationship* [s] *from the start"*, can be seen as a response to the erosion of trust between landowners and honey companies during the early years of the mānuka boom, and the subsequent shift in power towards landowners. For, in the wake of these shifts, honey companies have had to seek ways of appealing to landowners by presenting themselves as trustworthy.

As the power relations of the sector have shifted, developing and maintaining good trusting relationships with landowners has thus become an important way of differentiating one's company. Central to such trusting partnerships, as the above quote addresses, is transparency, and the demonstration of ability, benevolence, and integrity. As the head of digital technology at the boutique honey company stressed, digital technology has become an efficient way to demonstrate such qualities, thus they developed the online digital platform described in the following quote.

> *"what we did is we took on board all of* [the landowners'] *points and then we … set about developing a software program …, which is really like an online software platform, that's developed for essentially storying, viewing, tracking, analysing all information relative to honey produced from each property that we work from … we provided landowners … their*

own login, and they could log-in and view where all of the hives were going to be placed, and when they were placed, they could see where they were, and the date they were placed, who placed them, any comments around it, right through to on each property we set up what we call a monitoring station, so a set of scales with a heat unit on it, which works via satellite and it records the weight each day, and also the maximum and minimum temperature, and then transmits that back … and then the landowner can see the increase in weight of each hive each day, to give them a bit of a sense – an indication of how the season is going, and then as hives are removed, that information is captured through to harvest declaration, through to extraction data when the honey's been extracted, through to test results, and then all that information is stored and filed within their section [of the digital] *system."*

One of the landowners interviewed, who hosts some of the boutique honey companies' hives on his farm, spoke of how much he valued having access to this information, saying:

"So, you're looking at changes in weight or the yield in the honey boxes, on a day to day basis, and quite often we'll get up and look in the morning – see how it's tracking, and stuff, and relate it back to what's been going on in the weather conditions."

As the founder of one of the digital technology companies noted, bigger honey companies have watched such boutique companies provide greater transparency to landowners and, having noted its positive reception amongst landowners, are increasingly following in their footsteps as they too seek to demonstrate their ability, benevolence, and integrity, and thus present themselves as trustworthy partners. To this end, they are either developing digital technology for transparency purposes in-house or approaching companies like his own for assistance. The large honey company was a case of the former, having developed its own digital technology platform to provide information to landowners and demonstrate their trustworthiness:

"so we provide them with reporting out of [our digital platform] *that says this is what we took off your site and that has been a change. So, as the industry has grown up, as it's gotten more valuable, landowners are asking for more traceability, more transparency, more information on it to make sure that you're not taking this off and just paying them a little bit".* (Head of digital innovation, large honey company)

Alongside its use for providing landowners with transparency and demonstrating trustworthiness, a further key use to which digital technology has been put within the honey sector is the digitalisation of records. Such records are required for compliance with regulation but are also a necessary foundation for process-based trust as they meet the needs of, and demands for, traceability from landowners, offshore importers receiving honey, and customers who wish to be able to differentiate authentic mānuka honey from the counterfeit products on the market.

6. Building and maintaining trust: the role of digital technologies

Many of the requirements to comply with regulation, and serve the traceability and transparency needs across the value chain, rely on beekeepers' actions. Therefore, while the mid-sized and large honey companies' representatives primarily spoke of sharing information with beekeepers to improve efficiency, they also acknowledged the need to build trusting relationships with "their" contract beekeepers and foster a sense of partnership based on character-based trust. To this end, the head of digital innovation at the large honey company spoke of their willingness to develop whatever digital tools were needed by beekeepers so that they, as a honey company, could be good partners to them:

"we'll build more and more tools for providing traceability, visibility and for partnering with … beekeepers – how do we make it as easy as possible to partner with us? What is it we can do for them to enable them to spend time beekeeping and so we can take care of that for you as a good partner?"

Throughout our interviews, we encountered many such descriptions of the honey companies using digital technology to both capture and share digital data and to build trusting relationships with the beekeepers and landowners in their value chains through demonstrations of their ability and integrity. However, these are not the only groups within the mānuka honey value chain whose power and sway over practices within the sector have increased in recent years. The other significant 'winners' have been consumers.

With their growing awareness of food fraud in the global honey market, consumers are becoming increasingly aware that behind the bucolic image of beekeeping there is a darker side to the industry. Thus, they are increasingly demanding robust evidence of traceability. As one of the landowners noted, despite the positive messages being put out about mānuka honey, its image is being tainted by:

"all the talk about the disease stuff, the varroa, the American Foulbrood, the boundary stacking, the thieving, the general cut-throat nature of the industry, the contamination of honey to try and up levels … the mis-labelling of New Zealand honey in China."

It is this image of disease and deceit that honey companies are trying to counter as they seek to give consumers the information they increasingly demand regarding traceability, authenticity, and ethics. Consumers' concerns around potential food fraud, and the consequent desire for assurances regarding the origin and authenticity of foods through traceability, have been widely addressed within the literature (e.g. Bitzios, 2017; Premanandh 2013; Spink, 2016) and these same issues were raised by the interviewees concerning honey. As a manager at the mid-sized honey company noted:

"people want traceability, sustainability, ethical practices, all those sorts of things … people want trust in food sources … from a traceability sustainability positioning … right back to the beehive … I just think that is part of the value that people are expecting to see on the brand now … they expect more information with what they're purchasing".

As is evident below, such consumer demand not only prompted the companies towards transparency but also offered opportunities to use digital technology to tell their own stories, crafting and communicating their identities as able, honest, trustworthy producers, who treat their bees, beekeepers, and landowners well.

"An informed consumer … who is now actually asking those questions around 'what goes into my product? Where are you sourcing this product from?' is shifting companies to think more about that, …'how am I doing this, and where am I doing this, and how do I display that to the consumer?' … if we're a good company out there who is doing this, we want to tell that story" (head of digital innovation, large honey company)

"I guess it's the Kiwi story … two guys coming together, forming a honey company because they love natural health and they want people to be healthy … we're a New Zealand company, …We also have our own beekeepers so we do the whole thing" (IT manager, large honey company)

Where the large honey company's story sought to highlight their brand's origins, ethical practices, and support of beekeepers, the mid-sized honey company's story emphasised their production of ethical, safe food, and their happy, well treated bees.

"it sort of goes back to the ethical safe food idea that being able to prove that you've treated your hive with the correct treatments and you haven't let [the bees] *starve"* (R&D representative, mid-sized honey company)

Whereas the boutique honey company's story centred around their unique practices and their relationships with landowners.

> "*the story is around how we got that honey, the practices we used to get it that were quite unique, the traceability that we provide to our landowners … the story's really nice to tell … and that the landowners involved are being treated fairly"* (head of digital technology, boutique honey company)

Crafting such stories that attempt to highlight areas of value congruence can be seen as an attempt by honey companies to build character-based trust with consumers. Indeed, telling such stories to consumers in order "*to build that trust*" (head of digital technology, boutique honey company) had become a key focus for all three honey companies, and the main vehicle for doing so was their packaging. However, given the inherent lack of space on a label, they, like many companies, had incorporated digital technology links to develop a post-purchase relationship with consumers.

> "[through] *things like QR codes and traceability, authenticity, NFC chips on the products. Having a relationship with the consumer post-purchase so enabling them to scan it and say, 'this is where your product has come from,' or at point of purchase to say, 'yes this is authentic product, and this is what went into it'"* (head of digital innovation, large honey company)

However, it became clear that the honey companies were not crafting a single story for all their consumers, but rather were contending with cultural variations in the information desired by their international consumers (such variations have been identified by Dalziel, 2018). For example, the interviewees perceived Chinese consumers to desire information about the honey's authenticity, safety, and quality. By contrast, US and British consumers were believed to be more readily enticed by information about animal welfare, sustainability, and ethical community engagement.

As Nielsen et al. (1998) and Prescott (2002) note, such variations in the factors influencing food choice "have important implications for the export and marketing of foods" (Prescott, 2002: 490). Thus, as a significant player in the global mānuka honey sector, the large honey company spoke of tailoring their products' labelling and the information digitally linked to their products through QR codes, to these varying consumer demands. As their head of digital technology noted, they also tailored their social media presence in each country to reflect the company's values that best aligned with each export market.

> *"so our US content … on our social media is much more around things like … 'bee aware month' … and* [as] *part of that we donate some of the proceeds to a charity in the US that helps bees … that will work well in the US. China, nah, …*[for them] *it's more of an authenticity of product. So, we're going to be talking about the quality of it, we're going to be talking about 'we've got a lab here with all of our testing', we're going to be talking about the purity of where we get it from. So quite a different marketing message that we'll be putting across in each of those two markets"*

Factors such as food safety, environmental impact, and animal welfare are referred to as credence attributes or qualities of a product (Lassoued and Hobbs 2015; Marques Vieira et al., 2008). As addressed above, such credence attributes are not only valued differently by different consumers, but there can be significant differences in the prioritisation of different credence attributes across different cultural contexts. The drivers for these differences are varied (Yang and Renwick 2019), but in the case of honey, one of the interviewees (the representative of a quality assurance organisation) attributed the prioritisation of health and safety amongst Chinese consumers to the greater vulnerability of their national food system, when compared to the US market. However, given that credence attributes "cannot be evaluated in normal use" (Darby and Karni 1973: 69) or "verified by the consumer even after purchase and consumption" (Nuttavuthisit and Thøgersen 2015: 323) consumers often rely on third-party certifications for the assurances that form the basis of institution-based trust. Such assurances are often displayed as digital technology-linked 'badges' from independent quality assurance organisations on product packaging.

> "[the US consumers] *very much care about … what are we doing in terms of the community, what are we doing in terms of sustainability … they want all the badges – is it organic, and it just runs through all the badges that you can stick on a product. So, they're much more interested in that whereas the Chinese consumer is more interested in* [badges confirming] *it's from New Zealand, …it's pure, it's not adulterated"* (head of digital innovation, large honey company)

Digital technologies, such as the QR codes that lead to quality assurance webpages evidencing a product's credentials, or to a company's social media pages, are thus designed to inform and engage with unseen consumers "*post purchase*", providing assurances of the authenticity and quality of the product they have purchased, and of the ethics and trustworthiness of the company they have bought from. Thus, alongside the apps and digital platforms designed to showcase stories, and those designed to provide transparency and tools to landowners and beekeepers, such uses of digital technology for quality assurance can be seen as mechanisms through which the honey companies attempt to convey their trustworthiness as both partners and producers, as they strive to build character-based, institution-based, and process-based trust within their value chains.

7. Discussion

As detailed above, the three honey companies were using digital technology to build a combination of all three of Zucker's kinds of trust (process-based trust, institution-based trust, and character-based trust) with consumers, beekeepers, and landowners. Furthermore, in line with Schoorman et al.'s (2007) dimensions of trustworthiness, all three honey companies were found to be making use of their digital platforms and tailored digital tools to craft their images and convey stories about themselves that highlighted their ability and integrity, whilst presenting themselves as benevolent, in order to frame themselves as trustworthy partners and producers. Through apps specially designed to provide transparency to landowners, and digital tools developed to assist beekeepers, the honey companies were treating both groups as partners, cultivating process-based and character-based trust while highlighting their ability to produce high-tech systems and high-quality honey. In this way, they can also be understood to be displaying their benevolence and integrity, ultimately crafting their images as trustworthy partners. Furthermore, this use of digital technology provides insight into how digitalisation and trust relations can impact each other (Fielke et al., 2020) while also affecting land use and power relations in rural areas.

With consumers the honey companies were using digital technologies as tools for image crafting and storytelling about their ability, benevolence, and integrity as trustworthy producers. Efforts to verify their honey's provenance, authenticity, and quality through digital links on their products to independent quality assurance companies can be seen as attempts to foment institution-based trust, painting a picture of their companies' abilities and integrity. While highlighting their humble origin stories and their altruistic treatment of landowners, beekeepers, and bees, the companies communicated an image of themselves as benevolent and ethical as they sought to build character-based trust. As such, these findings provide more depth to existing, but general, claims that transparency and certification improve consumer trust (Ruben, 2017; Tamm et al., 2016). As Flanagin and Metzger (2000) highlight, presenting oneself as a socially responsible producer motivated by a desire to 'do good' engenders more trust than presenting oneself as driven by commercial interests. Indeed, approaches to agri-food business practices, such as those of the mānuka honey companies, which emphasise transparency, social responsibility, altruism, and beneficence, arguably share commonalities with those promoted under responsible innovation (Eastwood et al., 2019; Jakku et al., 2023; Rijswijk, 2021). The growing literature around which explores the

challenges and opportunities presented by such socio-technical transitions. Furthermore, such applications of digital technology can arguably be seen as a way in which the honey companies are drawing on the advancements in digitalisation in order to respond to the shift towards a "stakeholders paradigm" (Rahdari 2016: 3). This paradigm shift is seeing companies move from "translucent and opaque business practices" towards "fully transparent ones under which lasting trust can be built" (Rahdari 2016: 3) and arguably, under which better commercial performance can also be achieved.

The three cases explored above show the attempts by these honey companies to use digitalisation as part of their strategies to craft and convey trustworthy identities. Indeed, studies show that transparency through digitalisation can contribute to consumer trust (Tamm et al., 2016), however such supplier steered information flows might not be successful in restoring consumer trust in the aftermath of food scares (Böcker and Hanf, 2000). Adding to the ongoing, and long standing, discussions around how agri-food sectors can and do attempt to re-establish consumer trust in the aftermath of such trust-eroding episodes (see for example Savadori et al., 2007; Wilson et al., 2017), the case of the honey sector shows how digitalisation can be a tool for building process, institution, and character based trust against a backdrop of controversies. However the success of such efforts are not only determined by their execution, but also by the social context within which they are enacted. As Böcker and Hanf (2000) discuss, consumer trust in high trust societies (with high institutional trust), is more likely to be regained after food scares, than in low trust contexts where expert involvement, e.g. through certification (Tamm et al., 2016) or through the establishment of independent rapid alert systems (such as in the EU after BSE, see Macready), is more likely to be required for the development of trust (Mazzocchi et al., 2008).

Ultimately, however, the findings presented above which explore the experiences of three honey companies, and others within their value chains, seeking to build and maintain trusting relationships illustrate the relational nature of trust which, with its contingencies and complexities, is always in the making. A perspective on trust that is often overlooked in studies on consumer trust and trust in value chains (De Vries et al., 2022), as they aim to measure trust levels at specific moments in time, and as such fail to recognise the different forms and dimensions of trust and its development in the complex and dynamic context that characterises value chain collaboration, and more specific supplier – consumer relations.

8. Conclusion

Traditionally, trust has been created and maintained through interpersonal contact between actors, built upon shared values and repeated positive moral interactions. However, in the case of value chains, especially as they extend internationally, and become more complex, interpersonal contact may be non-existent between actors. In such cases, digital technologies can act as the medium of communication between actors in the chain. However, whether in-person or mediated through digital technology, the need for trust within such relationships remains. As such, where relationships are managed through digital technology, new methods for creating and maintaining trust between actors can be seen to emerge. Within Aotearoa New Zealand's mānuka honey sector, a dramatic rise in product value has led to intense competition for access to mānuka and an increased threat of food fraud, resulting in a shift in the power dynamics within the value chain from beekeepers and honey companies to landowners, keen for transparency and fair pay, and consumers, desiring authentic, ethical products. Both groups now arguably hold significant sway over the practices of honey companies eager to portray themselves as trustworthy partners to landowners and as trustworthy producers to consumers.

As a result, mānuka honey companies, such as the three studied herein, have been reaching for digital technologies as tools to communicate their ability, benevolence, and integrity, to craft their identity as trustworthy producers and partners and build process-based trust, institution-based trust, and character-based trust amongst their value chain partners and consumers. Using digital technology to convey this identity and build such trust, the case study companies were able to give consumers, and value chain partners, confidence in the quality, ethics, provenance, and authenticity of their practices and products, a finding that supports the work of Barton et al. (2017). Furthermore, considering the trend towards consumers acting to cultivate their own identity as 'responsible consumers' through their choices around consumption (Papaoikonomou et al., 2016; Portilho 2010; Sexton 2018), this framing of a company's products and practices as trustworthy can be seen as a way of providing a competitive advantage, potentially increasing the economic value of the products themselves.

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Author statement

Susanna Finlay-Smits: conceptualisation, methodology, investigation, data curation, formal analysis, writing - original draft. **Alyssa Ryan:** investigation, formal analysis, writing - review & editing. **Jasper de Vries:** writing - review & editing. **James Turner:** Project administration, writing - review & editing.

Data availability

The data that has been used is confidential.

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