

Copyright is owned by the Author of the thesis. Permission is given for a copy to be downloaded by an individual for the purpose of research and private study only. The thesis may not be reproduced elsewhere without the permission of the Author.

How Farm Input Sales Representatives Inform their Advice and Interactions with
Farmers

A thesis presented in partial fulfilment of the requirements for the degree of

Master of Science
in
Agricultural Science

at Massey University, Manawatū, New Zealand.

Laura Simpson

2025

ABSTRACT

Embedded advisors, such as farm input sales representatives (FISRs), are part of a network of rural professionals who have a fundamental role in supporting on-farm decision making and innovation. The role of the embedded advisor is to provide advice on products and services the company they work for provides. Research into agricultural advisory has identified the knowledge gap in how embedded advisors gain their knowledge and expertise through their interactions. This study aims to fill this gap by exploring the interactions within embedded advisor networks, the information which these advisors seek, and the actors who provide this information to the embedded advisor.

Using two case studies, data is gathered through semi-structured interviews of two FISRs who work for the same input supply company. Interview questions enquired about how these FISRs build their networks, the actors they interact with, the knowledge shared through their networks, and their opinions on the important factors of the role.

The results confirm the importance of networks to an advisor. These networks are a combination of actors who are either internal or external to the company which employs them and provide knowledge that is relevant to the products the FISR sells to farmers. The internal actors include their FISR colleagues and members from the inhouse agronomy team. External actors include farmers, and actors from supplier companies, market supply companies, local agricultural contractors, and from industry good organisations.

FISRs will go to different actors within their network to gain technical product knowledge, information on practical use of products, and for a sounding board on advice, interactions, and emotional support. The focus of the FISRs is to provide relevant advice to farmers, which challenges the view from previous studies that implies embedded advisors show sale target bias. FISRs are in a constant state of learning through non-formal learning practices with other actors in their networks. This study contributes to the knowledge in the interactions within agricultural advisory networks by focusing on the role of the embedded advisor.

ACKNOWLEDGEMENTS

This thesis has challenged me academically, professionally, and personally, and I am lucky to have been supported by many people throughout this adventure.

Many thanks to my supervisor Dr. Janet Reid, who has supported my research and has challenged my thought processes, thank you for all the coffees, understanding, and general conversation. I would also like to thank Dr. Lucy Burkett for input at the beginning of this thesis. A special thanks to late Dr. David Gray who was involved in the beginning of this thesis and whose lectures and research has had influence on my own work.

Thank you to my past colleagues whose dedication to be a trusted advisor to farmers was part of the inspiration behind this topic of research. A special mention to my mentor Brian Richards who was a provider of knowledge, guidance, and friendship which has continued since I've left the company.

I am grateful for Tom and Helen Chisholm who employed me into their farm consulting business during the final stages of this thesis. Not only is your kindness and understanding hugely appreciated, but I am honoured for the opportunity to be part of the company, and to be able to continue to share information with farmers and expand my knowledge.

And of course, to my family and friends who have been an incredible moral support and provider of laughter and love during the entirety of my study. To Mum who inspires and encourages with love for me to continue my education and personal growth, to Dad for passing on his passion for farming, which has led me down the path of agricultural advisory, and to my friends, who have been an endless chorus of support and encouragement. Thank you all, you have all made navigating this challenge much easier and enjoyable.

TABLE OF CONTENTS

Abstract..... 1

Acknowledgements 2

Table Of Contents 3

1 Introduction 5

 1.1 Research Background 5

 1.2 Research Question 6

 1.3 Objective..... 6

 1.4 Researcher Positioning 6

 1.5 Chapter Outline 6

2 Literature Review 8

 2.1 A Brief History of Agricultural Advisory in New Zealand 8

 2.2 Agricultural Advisory Services & Systems 9

 2.2.1 Advisors Supporting On-farm Innovation 10

 2.2.2 Skill set required 11

 2.3 Networks..... 12

 2.3.1 Networks & Communities of Practice..... 13

 2.4 Social Capital..... 13

 2.5 Trust 14

 2.6 Learning & Knowledge 15

 2.6.1 Types of Knowledge and Knowledge Relationships 16

 2.7 Literature Review Summary 18

3 Research Design..... 21

 3.1 Qualitative Case Study 21

 3.2 Case Selection 21

 3.3 Data Collection Methods..... 21

 3.3.1 Interviews 21

 3.3.2 Analysis 22

 3.4 Ethics..... 22

4 Case Description 23

 4.1.1 Case 1 23

 4.1.2 Case 2 24

 4.1.3 Description of the In-House Agronomy Team..... 25

 4.1.4 Summary 25

5 Results..... 26

 5.1 Overview 26

 5.2 Case 1..... 27

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

5.2.1	Building networks	27
5.2.2	Case 1’s networks	27
5.2.3	Gaining different types of information.	29
5.2.4	Support to overcome adversity	29
5.2.5	Drivers of success in the FISR role	30
5.2.6	On the job training and essential skills	31
5.3	Case 2.....	33
5.3.1	Building networks	33
5.3.2	Case 2’s networks	34
5.3.3	Gaining different types of information	37
5.3.4	Support to overcome adversity	37
5.3.5	Drivers of success in the FISR role	37
5.3.1	On the job training and essential skills	38
5.4	Actors in the FISRs Network.....	40
5.4.1	Internal Actors.....	40
5.4.2	External Actors	41
5.5	Network Tables.....	43
5.5.1	Practical Networks	44
5.5.2	Technical Networks	45
5.5.3	Interactions.....	46
6	Discussion	47
6.1	The Role of the FISR Within the Wider Agricultural Advisory System	47
6.2	Networks.....	49
6.3	Interactions within the FISRs Network	51
6.4	Learning and Knowledge	53
6.4.1	Learning methods.....	53
6.4.2	Knowledge types	53
6.4.3	Essential skills and training	54
7	Conclusions	56
7.1	Areas of future research	58
7.2	Practical Implications	59
8	References.....	60
9	Appendices	63
9.1	Appendix 1- Information Sheet.....	63
9.2	Appendix 2 – Participant Consent Form – Individual	65
9.3	Appendix 3 – Interview Guidelines.....	66

1 INTRODUCTION

1.1 RESEARCH BACKGROUND

Agricultural advisory systems and the rural professionals in which it includes, have been identified as having a fundamental role in supporting farmers with their on-farm decision making and implementing innovation (Lowe et al., 2019; Sutherland et al., 2022; and Prager et al., 2017). There are a range of rural professionals available to the farmer including: extension officers, advisors from farmer levy organisations, private fee-for-service consultants, and embedded advisors (Eastwood et al., 2019), which have been described by Oreszczyn et al. (2010, pg. 408) as a farmer's "web of influencers on practice" who play an important role to increase farming production (Botha et al., 2008). Embedded advisors are rural professionals who work for a company that sells or provides a service, and whose advice on the products or services the company they work for provides (Klerkx and Jansen 2010). Farm input sale representatives (FISRs) can be described as embedded advisors as a significant part of their role is to sell and advise on farm input supplies. However, there is little known about the way these field sales representatives gather their knowledge and expertise, and how they use this information to influence the interactions with the farmers they support.

In New Zealand, agricultural advisory systems have gone through a transition which stems from the privatisation of the previously government funded extension services in the 1980s (Kuiper & Hall, 1997). The system that once was a linear service of knowledge transfer from research and industry to the farmer, now incorporates a co-learning environment where the farmer is seen as a creator of knowledge (Sewell et al., 2017; Vereijssen et al., 2017). Turner et al. (2014) identifies farmer experiences, alongside own experience and farm publications as the information sources used by rural professionals. This reinforces that although farmers see rural advisors as a valuable source of information, the advisor relies on the experiences of the farmers they work with to inform their knowledge.

Studies have identified a need for further explorations into how professionals within advisory obtain their knowledge (Klerkx & Proctor, 2013), how rural professionals gain their expertise through their interactions (Phillipson et al., 2016) and how information and knowledge is shared between organisations within agricultural knowledge and innovation systems (AKIS) (Prager et al., 2017). Studies have also identified the need to further explore the interactions between farmers and the different advisors within their web of influence, and the role they play in farmer learning and agricultural innovation (Sutherland et al., 2022; Oreszczyn et al., 2010).

This thesis aims to build on the extensive research conducted to date on knowledge exchange and advisor learning by focusing on embedded advisors, in particular role of the farm input sale representative, and exploring how they inform their advice and interactions with farmers. There will be semi-structured

interviews completed of two case studies who will be asked about their background, experiences in the role, and how they build their expertise.

1.2 RESEARCH QUESTION

As outlined above, there is limited understanding of how embedded advisors interact within their networks, and how these networks inform an advisor's advice. To explore this, I ask the question: How do Farm Input Sale Representatives Inform their Advice and Interactions with Farmers?

1.3 OBJECTIVE

The objective of this thesis is to add to existing agricultural advisory research by investigating the knowledge building techniques of embedded advisors, focussing on how field input sale representatives (FISRs) inform their advice and interactions with farmers. The purpose of this is to understand what information is available to these professionals, how they build their professional networks, who is in their networks, and how they use the information they gain to influence and support on-farm decision making.

1.4 RESEARCHER POSITIONING

At the time of commencing this research, I had been in an embedded advisor role for a few years. I had built my own support networks and had experience in the farm systems and networks both FISRs in this research worked within. My experiences contributed to this research by guiding the research question, research process, and helped to inform and give understanding to the data collection. I was strongly aware of the potential bias my own experiences may have through the research process, which could lead to my opinions, or experiences, influencing the findings of this research. I relied on my supervisor to check statements were not my opinion, and to ensure I remained focused on the information provided through the interviews. My experiences in this type of role highlighted the expertise and input that roles such as the FISR play in agriculture, which I felt needed to be documented.

1.5 CHAPTER OUTLINE

The remaining sections of this thesis start with a review of the theories found in current agricultural advisory research. The literature review, Chapter Two, starts with a brief overview of the history of the New Zealand agricultural advisory systems, which explains the evolution of the advisory, extension, and consulting and the importance of these roles to the New Zealand agricultural industry. The different types of advisors who provide agricultural advisory services to farmers are explained and how these actors form a farmers' network, how these roles support agricultural innovation, and the skills an advisory required are identified. Theories that describe the social network of farmers and agricultural farmers are then explained. This Chapter explores the interactions within the networks, and covers the knowledge types involved in agricultural advisory, and the knowledge exchange within the different types of agricultural networks.

Following the Literature review, is Chapter Three which the research design of this thesis. In this Chapter, the research methods are described, where there is an overview given on the structure of the interviews, the selection process of the two FISR who are interviewed, and how the topic of research is explained to each FISR interview. It is then determined how the analysis of data will occur. The final parts of Chapter Three are the ethics and limitations of research, which cover the ethics application process and the evaluation results of this process. The limitations cover where the research is constrained and a brief reasoning to these limitations is given.

The case description chapter, Chapter Four, gives a detailed explanation of the background of each FISR interviewed. This background covers the education the cases have received, their background in the farming sector, and determines the time each FISR has been employed in the role. Within the case description chapter there is a description of the in-house agronomy team.

Chapter Five presents the results of the interviews. The roles and interactions of the actors identified by the case studies are explained in relation to their company, and these interactions are shown in tables that identify the actors who provide technical, practical, and interaction information to the FISR. Following the results, Chapter Six explains the results using the theories from the existing literature, and areas of addition to the current research are then explained. Conclusions and suggestions of areas of future research are in Chapter Seven, followed by References and Appendices.

2 LITERATURE REVIEW

This literature review highlights and explains the interactions occurring within the agricultural advisory system and how advisors inform their advice and interactions with farmers. As the literature on farm input sale representatives is limited, wider research on the agricultural advisory system is used to gain an understanding of how advisors gain information that builds their expertise and capabilities to work with farmers and supports growth and innovation within the agricultural industry. This chapter begins with a brief history of agricultural advisory in New Zealand before going on to explain the systems and rural professionals within agricultural advisory services. The literature review will explore the networks found in agricultural advisory and the interactions, social capital, and trust within these networks. Finally, this literature review will look at rural professional learning, the types of knowledge, and the knowledge relationships which support rural professional learning.

2.1 A BRIEF HISTORY OF AGRICULTURAL ADVISORY IN NEW ZEALAND

In the early 1980s, agricultural advisory systems in New Zealand were predominately provided by government funded programmes (Sewell et al., 2017). The privatisation and commercialisation of these extension services began in the late 1980s (Kuiper & Hall, 1997), which created a gap in on-farm support supplied to farmers. The gap was filled by private fee-for-service consultants and non-governmental organisations (Journeaux & Stephens, 1997). The fee-for-service system was largely focused on farmers' economic and productivity goals, and non-governmental organisations funded by farmer levies focused on extension services through discussion groups and development courses (Sewell et al., 2017). Advisory services which remain are required to support farmers in the increasing environmental, economic, and sustainability challenges faced by the agricultural sector (Coutts et al., 2019). It has been identified that the traditional approach to extension services, which involved a top-down approach of knowledge creation by science, which is passed on to stakeholders, is not always fit for purpose to encourage innovation (Sewell et al., 2017; Vereijssen et al., 2017). Studies have shown that farmer learning is increased when co-learning or co-innovation occurs, and further implementation is supported by rural professionals who can make sense of the technical information for the farmer (Sewell et al., 2017; Eastwood et al., 2019). Recent studies have identified that rural decision makers rely on their peers as well as a range of rural professionals and organisations, including vets, supplier representatives, independent rural professionals, banks, regional councils, and the Ministry of Primary Industries (MPI) on-farm support team, to inform on-farm decisions (Stahlmann-Brown, 2023). The next section of the literature review explores rural professionals, such as those mentioned above, and how they are included in agricultural advisory services.

2.2 AGRICULTURAL ADVISORY SERVICES & SYSTEMS

Agricultural advisory services is a term used to describe the rural professionals and advisors who support farmers in innovation and their on-farm decisions (Lowe et al., 2019; Sutherland et al., 2022). Prager et al. (2017) describes the major function of agricultural advisory as supporting farmers by providing relevant advice.

Literature (Nettle et al., 2018; Eastwood et al., 2019) refers to five categories of advisors: 1. Commercial advisors who provide advice as part of farm input sales; 2. Farm management consultants, 3. Veterinary surgeons and agronomists, 4. Farm advisors who are part of the supply chain; and 5. farm advisors who are employed in advisor or extension roles within farmer owned and operated or sector and industry organisations. Oreszczyn et al., (2010. pg.408) described the range of individuals that contribute to farmer's knowledge and learning as a "web of influencers on practice". These advisors have an important role in supporting farmers by providing specialist support, exposing farmers to local and international research (Norton & Alwang, 2020), providing policy advice, and acting as farmer group facilitators (Thomas et al., 2020). Advisors are recognised as being a significant factor in increasing productivity and income, and supporting agricultural innovation (Laurent et al., 2022; Norton & Alwang, 2020). Rural professionals who link knowledge producers with users and translate science into usable knowledge are referred to as intermediaries (Duncan et al., 2020) and knowledge brokers (Klerkx & Leeuwis, 2008). Knowledge brokers not only translate knowledge, but they can generate their own knowledge from interactions with other advisors and through their practical field experiences (Fazey et al., 2012).

Labarthe et al., (2022) describes two types of advisors who are either linked to, or independent of products and technologies. Independent advisors such as private fee-for-service advisors have become more common since the privatisation and decentralisation of agricultural advisory services (Klerkx et al., 2017). Linked advisors, also known as embedded advisors, sell agricultural inputs as well as provide advice on the commodities sold by the commercial company, or cooperative, they work for (Klerkx & Jansen 2010; Klerkx et al., 2017; Compagnone & Simon, 2018). There is no direct charge for their advice, which gives the impression of free service to the farmer (Laurent et al., 2022). These linked advisors provide service specific advice on products and technologies, for example fertiliser company representatives (Eastwood, 2019) and are seen as being vital in on-farm innovation (Sutherland et al., 2022). The term linked advisor (also known as embedded advisors) aligns with commercial advisor (Nettle, et al., 2018.) mentioned earlier. Some scholars voice concerns about the independence of embedded advisor's advice to farmers given the commercial imperative associated with their roles (Klerkx & Jansen 2010). It is speculated that their advice will potentially be biased towards selling more of their products rather than what might be best for the farmer, however this to date has received little research attention.

Agricultural advisory services encompass the wide range of advisors who are available to support farmers in their on-farm decisions and innovation, including those who are employed by agricultural input providers to advise on products or services (Klerkx & Proctor, 2013). It is these embedded advisors, who

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

give advice on the products that the company they work for sells, which describes the farm input sales representative who are the focus of this research study. Agricultural advisory services are part of what is described as the AKIS which recognises all actors involved in agricultural research, education, and innovation as assisting advisors to support the farmer (Klerkx et al., 2017).

The broader agricultural advisory systems referred to as AKIS, agricultural knowledge system (AKS) (Materia et al, 2015) and agricultural innovation systems (AIS) (King et al., 2019), incorporates agricultural advisory services, the knowledge transfer between these services, and the institutions that support the interactions and information flows (Laurent et al, 2022). AKIS accepts the network of public and private organisations that are involved in agricultural research, education, and advisory system interactions with farmers (Materia et al., 2015). Actors within AKIS are recognised as diverse and include farmers, consumers, NGOs, and policy makers (Moschitz et al., 2015), research organisations and universities, advisory service providers, agribusiness consultancies, and technology providers (Rijswick et al., 2019). Prager et al. (2017) describes AKIS as the systems of organisations and advisors available to support farmers in the co-production of knowledge and expertise. Innovation relies on trust and interactions within social networks which enable groups of people to work together to explore new opportunities (Kind et al., 2019). These social networks are important conduits of knowledge exchange (Skaalsveen et al., 2020). Within any AKIS, there will be subsystems of specialised information and expertise that Sutherland et al. (2022) describes as MircoAKIS. These may be at farm level, where a bottom up, farmer centric system enables innovation at a local farm level (Sutherland, et al., 2022). This provides an opportunity for an advisor to seek the information required by the farmer to support the innovation occurring on farm.

2.2.1 Advisors Supporting On-farm Innovation

The agricultural industry requires innovation and transition of practices to meet society demands on ecological, social, and environmental factors (Ingram, 2015). Innovation that is required to solve the complex challenges faced in the agricultural industry requires the combination of explicit scientific knowledge and the practical tacit knowledge provided by farmers and rural professionals (Turner et al., 2014). Cerf et al., (2013) discuss three main factors that are crucial to change: 1. The location of the advisor in the farmers' network; 2. The interactions between the farmer and the advisor promoting change; and 3. The combination of scientific and technical knowledge with farmer practical knowledge. Local knowledge, expert knowledge, and well-functioning social network technologies are key factors for innovation in rural development (King et al., 2019). It is argued that agricultural industries can support farmers and rural professionals to build knowledge networks that focus on supporting innovation (Eastwood et al., 2012). Advisors who interact with farmers add value by supporting innovation (Eastwood et al., 2012). Likewise, rural professionals that have greater access to farmers are speculated to have greater influence on uptake of technologies and new ideas (Compagnone & Simon, 2018). However, farm change ultimately depends on individual farmers' objectives, local conditions, and the support and knowledge available to the farmer (Compagnone & Hellec 2015), some of which may come through an advisor.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

Farmers are involved in the creation of advice and information, and they determine what role the advisors play in their network (Kirk et al., 2022). This may be the facilitation of networks which support implementation of innovation (Ingram 2015) or aiding in the development of mixed knowledge and learning networks required to support farmers in the ever-changing agriculture sector (Šūmane et al., 2018). These networks create an environment where co-learning can occur, which if they have institutional level programme support, can be termed as innovation systems (Eastwood et al., 2012).

Due to time constraints, farmers do not generally focus on their own professional development, they rely on their web of influencers to access a wealth of knowledge and to learn about new technologies (Oreszczyń et al., 2010). Similarly, Phillipson et al. (2016) states that farmers rely on a range of rural professionals to help them navigate challenges or changes in farm practice, and these rural professionals can introduce innovation to farmers (Cofre et al., 2019).

The following section explores the skill set identified in the literature as required by agricultural advisors

2.2.2 Skill set required

Many farm advisors in New Zealand have typically focused on on-farm practices to increase farm profitability and production. However, it is acknowledged that their expertise also supports farmers in other areas such as environmental sustainability, health and safety, and animal welfare (Eastwood et al 2019). When farmers are faced with new challenges, such as regulation changes, changes in weather patterns, or market fluctuations, it is argued that in response advisors need to develop their own knowledge (Nettle et al., 2018).

Research has identified three skillset areas advisors require: interaction skills, advisory technique, and subject matter expertise (Klerkx & Proctor, 2013). In addition, advisors need to combine both tacit and explicit knowledge to effectively support their clients (Klerkx and Proctor, 2013).

Studies show that interpersonal skills are the most important skill of an advisor, and also the most difficult skill to learn (Gray et al., 2014). Gray et al. (2014) argues that the interpersonal skills of the advisor enable them to build their support networks. It has been identified that to continue to be able to provide relevant advice, advisors require adequate training and continued support (Klerkx and Jansen 2010). Gray, et al., (2014) highlights how experienced advisors have a role in mentoring trainee advisors. This is supported by Lanidini (2022), who states that learning can take place when others are available to show and give guidance on how to operate. Although the skill set required by advisors has been identified in this section, the method of gaining such skills, or knowledge, has not been explored to date but is a focus of this research.

Farm advisors draw on networks to support their interactions with farmers. The next section expands on the different types of networks and the interactions within these networks.

2.3 NETWORKS

Relationships and resources are fundamental to the strength of an actor within an individual's network (Moschitz et al., 2015). Studies have shown that by being part of an inter-professional network, the rural professional is able to identify their own limitations, understand the value of others, and enables them to build their own expertise (Phillipson et al., 2016). Rural professionals use their local networks to increase their knowledge and are a vital part within their networks as they enable the connection of people and knowledge (Turner et al., 2014). Individuals may operate within and across multiple networks (Oreszczyn et al., 2010). These networks may be informal networks, which Laurent et al. (2022) has mentioned are a crucial source of knowledge and advice. Recent studies have shown that farm advisors are building networks within their profession enabling relevant advice to be available to farmers (Compagnone & Simon, 2018),

Networks enable an individual to access resources and information to support innovation (Moschitz et al., 2015) through programmes that enable knowledge exchange between actors (King et al., 2019). Shared practice leading to shared know-how is what connects the network, although some of the know-how can come from outside of the direct network (Oreszczyn et al., 2010). Know-how, and the other forms of knowledge relationships are further explained in section 2.6.1 of this thesis.

Social interactions within networks have been described as critical in knowledge exchange within agricultural advisory systems and AKIS. In the literature, three categories of networks that support social interactions are outlined identified: centralised, distributed and decentralised. Centralised networks are based on a central actor or database which enables explicit knowledge exchange of know-what and know why knowledge (Gray et al., 2014). These centralised networks can focus on routine problem solving, where advisors update their knowledge within their area of expertise with information gathered from empirical sources such as books and journals (Klerkx & Proctor, 2013). Distributed networks include professional and cross-professional networks (Gray et al., 2014), which can involve the exchange of tacit knowledge through community of practice (COP), and networks of practice (NOP), which are described in the next section, containing colleagues and clients (Klerkx & Proctor, 2013). Farmers and their businesses can be described as distributed networks due to their lack of face-to-face interactions and lack of organizational structure in their farm business (Oreszczyn et al., 2010). Decentralised networks are made of people outside what are referred to as COP and/or networks of practice NOP. Advisors use decentralised networks to develop and increase their knowledge and expertise (Klerkx & Proctor, 2013; Gray et al., 2014).

2.3.1 Networks & Communities of Practice

A network of practice (NOP) is described as a group of individuals that are involved in the same profession or practice (Eastwood, Chapman, Paine 2012), such as a network of rural professionals (Gray et al., 2014). A community of practice COP is a network of individuals who interact to share and develop with a common goal or activity (Eastwood, Chapman, Paine, 2012; Oreszczyn et al., 2010), such as farm management consultants working for the same company (Gray et al., 2014).

The COP theory was introduced by Wenger (1998) to describe social learning within communities. Wenger (1998) refers to COPs as “essential to learning”, and as the “building blocks” in social learning systems. These building blocks consist of three key elements, joint enterprise, mutual engagement, and the development of shared resources. Other literature refers to the work conducted by Wenger to define and explain the relationships between actors in their research. Landini et al. (2022) uses COP to describe the interactions of peers learning together and has been described as an “interactive vision on communication” by Materia et al., (2015 pp206). This can be between those in the same profession who are building their own values over time where tacit knowledge exchange can occur (Klerkx & Proctor, 2013). Practice based learning, resulting in tacit knowledge can be generated through participation in COPs, and COPs can use explicit knowledge to generate change (Oreszczyn et al., 2010). Therefore, both tacit and explicit knowledge are incorporated in a community of practice (Oreszczyn et al., 2010; Eastwood et al., 2012).

NOPs describe the relationship between people outside of the organisation in which the professional works for, who either have similar expertise or can influence the expertise of the professional (Oreszczyn et al., 2010). This can include farmers, rural professionals, software developers, and farming system specialists (Eastwood et al., 2017). Both COP and NOP capture similar ideas on the interactions within networks where actors learn and gain knowledge. The next section further examines the interactions within networks, and describes the relationship types involved in social capital theory,

2.4 SOCIAL CAPITAL

Social capital “refers to features of social organization, such as networks, norms, and trust, that facilitate coordination and cooperation for mutual benefit” (Putnam, 1995 pp 6,7). By building social capital and being a member of different communities of practice the advisor can source information that is sought by farmers (Compagnone & Simon, 2018). Literature identifies three types of social capital, bonding, bridging, and linking (Gray et al., 2014; Collins et al., 2018; Compagnone & Hellec, 2015).

Bonding social capital describes relationships that have strong ties within a tight, closed, and dense network of people (Fisher, 2013). King et al. (2019) complements this definition by stating that bonded social capital is involved in closed, dense networks that involve people with a strong mutual connection, and Gray et al. (2014) mentioned relationships between those with similar backgrounds. Fisher (2013),

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

Gray et al. (2014), and King et al. (2014) state that bonding develops trust, and there is a high level of trust between relationships within these networks.

Bridging social capital is the link between separate tight networks (Gray et al., 2014) which enables access to a range of resources by bringing together separate networks (Fisher, 2013), such as the interactions described within a network of practice (Klerkx & Proctor, 2013). Bridging describes horizontal connections between similar social groups, and looser relational connections compared to bonding (King et al., 2019). Bridging is essential to promote collective action.

Linking social capital enables an individual access to information or knowledge that they may not be able to gain within their peer network, linking social capital is often associated between those of separate hierarchical relationships (Fisher, 2013). Linking connections are weaker compared to bonding and bridging and tend to be vertical connections. Linking social capital can create opportunities to access resources from outside a close network (King et al., 2019). An example of this is the relationship between a farmer and their advisors (Compagone & Hellec, 2015). Linking social capital can create opportunities for rural professionals to meet individuals who they can build relationships with and develop their own COPs with bonded social capital (Gray et al., 2014; Klerkx and Proctor., 2013). Gray et al. (2014) describes linking social capital as part of decentralised networks, where potential knowledge exchange can occur.

2.5 TRUST

Trust is a fundamental factor of effective networking and enables knowledge growth and innovation creation and implementation (King et al., 2019). Trust can be based on hierarchy, such as the interactions between actors in centralised social networks (Gray et al., 2014). King et al. (2019) defines three categories of trust as companion, competence, and commitment, which are embedded in the three factors of social capital (bonding, bridging, and linking). Companion trust is associated with bonding social capital, or unconditional trust. This can develop over time through informal social interactions; competence trust enables Bridging capital, that develops relationships and interactions between individuals within similar backgrounds; and commitment trust is associated with linking social capital, often seen in formal situations such as contractual agreements.

Thomas et al. (2020) refers to trust within three modes: Institutional-based which is trust gained from a formal setting; Characteristic-based, trust resulting from a group or social setting who have similar interests or joint activity; and Processed-based, which refers to the trust built between individuals after repeated interactions.

King et al (2019) likens trust to the glue that builds social interactions and enables (or constrains) the knowledge sharing and innovation process. Factors that support the development of trust are longevity, consistency, and regularity of the interactions between the individuals (Thomas et al., 2020). Studies have shown that farmers are more likely to implement knowledge that has come from a source they trust

(Thomas et al., 2020). Studies have shown that farmers value credibility, trust, and positive interactions with their advisor to be more important than the source of the information (Sutherland et al., 2017).

In a recent survey completed by Stahlmann-Brown (2023) on sources of trusted advice, farmers identified their peers as the most relevant and trusted advice, with their veterinarians and supplier representatives (like FISRs) as second and third respectively. Supplier representatives were shown to provide more trusted and relevant advice compared to accountants, rural specialists, industry and levy bodies, research organisations, and regional council advisors.

Rural professionals, including those who provide advice to farmers, are perceived by farmers to have a high level of expertise and trust (Turner et al., 2014). However, it is also acknowledged that providing biased advice is likely to lead to a loss of trust which may be difficult to regain (Sutherland et al., 2017). This study aims to discover the avenues of advice a particular advisory field uses to inform their interactions and advise to farmers.

2.6 LEARNING & KNOWLEDGE

Rural professionals source information from their own experiences, farmer experiences, and farm publications (Turner et al., 2014), through informal interviews, and through observation such as soil tests results and financial accounts (Gray et al., 2014). Knowledge has been described as “the fourth factor of production” in farming by Ingram et al. (2008 pp214), along with land, capital, and labour. Landini (2022) categorises three main sources of knowledge and learning as formal, non-formal, and informal. Formal is learning that is planned and intentional, such as an academic degree; non-formal is also intentional and planned, however has no certification associated to it; and informal is learning that occurs through experiential learning not associated to structured learning (Landini, 2022). Šūmane et al. (2018) described informal knowledge as the knowledge generated outside of the formal AKIS through the farmers experience and practice. Both Šūmane et al. (2018) and Landini (2022) have found that best results of learning occur when there is a combination of informal, non-formal, and informal knowledge

Research argues for the need for constant learning and innovation within the agricultural sector (Phillipson et al., 2016) but tends to focus on farmers with little focus going on how advisors learn to support farmers. Learning occurs through informal practices created through social interactions that are supported by the relationships they have built within their Networks of Practice or Web of Influencers (Oreszczyn et al., 2010; Skaalsveen et al., 2020; Moschitz et al., 2015). Landini (2022), explains the term Theory of Action (TOA) which is when people learn within their profession. The development of practical knowledge can occur through local experiential learning (Šūmane et al., 2018). Experiential learning is associated with Communities of Practice (COP) and Zones of Proximal Development (ZPD), where COP is the horizontal learning between peers, and ZPD is growth from the person’s current knowledge set and what they can accomplish with added support, knowledge, and guidance (Landini, 2022).

Rural professionals are part of the farmers' network of practice / web of influence and support farmers. Ingram (2015) identifies self-emerging bottom-up networks facilitated by rural actors supporting the adaptation of sustainable agricultural regimes. Thomas et al. (2020) argued that advisors were able to increase the credibility of their knowledge when they were able to learn information relevant to the landscape and context in which they were operating in.

2.6.1 Types of Knowledge and Knowledge Relationships

The role of the farm advisors is highlighted as including translating knowledge for farmers and being required to have a mixture of these learning types, which are defined below. Four types of knowledge are distinguished in the agricultural advisory literature – explicit, tacit, scientific and hybrid knowledge.

Explicit (also referred to as codified) knowledge is a knowledge that can be written, stored, categorised, and transferred (Gray et al., 2014). Tacit knowledge is gained through talent, experience, and abilities in a certain field of activity like farming (Gray et al., 2014; Ingram, 2008). Scientific knowledge is that which has been developed using scientific methods, with a focus on validity and reliability (Thomas et al., 2020). Finally, hybrid knowledge is developed through a combination of tacit and scientific methods, this knowledge draws from multiple sources (Thomas et al., 2020).

Studies have identified there is a range of knowledge networks used by farmers, this includes “Hybrid actors” who are identified as those who have both codified and tacit knowledge, these advisors have received scientific training, and have gained practical experience (Sutherland et al., 2017). This is supported by Lowe et al., (2019) who states expertise in the advisory role is a mix of technical information, experimental knowledge, and learning from their farmer clients. This shows that farmers value advice that is from combination of evidence based, practical knowledge and experience (Duncan et al., 2021).

Several studies have used know-what, know-why, know-how, and know-who to categorise the knowledge relationships in agricultural systems (Thomas et al., 2020; Gray et al., 2014; Klerkx & Proctor, 2013; Sutherland et al., 2017; Ingram, 2008). Explicit knowledge can constitute know-what and know-why knowledge, and tacit knowledge can constitute know-how knowledge (Klerkx and Proctor, 2013).

Know-what knowledge is empirical knowledge (Thomas et al., 2020), knowledge about objective information (Gray et al., 2014; Klerkx & Proctor, 2013), linked to codified knowledge (Sutherland et al., 2017). Know-why knowledge is about the principles of how things work (Sutherland, et al., 2017) this can be gained through scientific knowledge such as laws and principles (Gray et al., 2014), scientific principles, rules and theories (Thomas et al., 2020; Klerkx & Proctor, 2013; Ingram, 2008). Know-why knowledge can be linked to codified knowledge theory (Sutherland, et al., 2017). Know-how relates to knowledge on the skills and capability required for practical tasks and skills (Gray et al., 2014; Ingram, 2008; Klerkx & Proctor, 2013; Thomas et al., 2020). Know-how knowledge linked with tacit knowledge (Sutherland et al., 2017). Know-who knowledge provides understanding of who to access for knowledge (Thomas et al., 2020),

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

knowledge on social aspects (Gray et al., 2014), obtaining knowledge through networks (Klerkx & Proctor, 2013). Know-who knowledge links with tacit knowledge theory (Sutherland et al., 2017).

Knowledge exchange occurs when know-what, know-why, know-how, and know-who types of knowledge are shared between farmers, their advisors, and the wider agricultural industry. Knowledge exchange captures how expertise is gained, validated, and exchanged between groups of individuals or organisations (Lowe et al., 2019) Two types of knowledge are generally identified within knowledge exchange, Tacit (implicit) and Codified (explicit) (Sutherland et al., 2017), and Ingram et al., (2008) argues that farmers need a mixture of tacit and scientific knowledge, for on farm decision making.

Knowledge exchange can occur via vertical, horizontal, or bottom-up relationships. Vertical transfer such as the expert to novice interaction where one instructs the other, compared to horizontal or bottom-up approaches that can result in the co-production of expertise (Lowe et al., 2019). The linear approach of top-down knowledge transfer is increasingly being replaced by approaches that incorporate farmers as knowledge generators rather than consumers of knowledge that has been developed by research and transferred through extension services (Moschitz et al., 2015).

Kirk et al. (2022) discusses four different ways farmers interact with scientists and advisors: top-down, bottom up, one-to-one, and formal education and training. Top-down approach is where knowledge is created by science then transferred directly to the farmer, which are becoming increasingly proven to be ineffective (Norton & Alwang, 2020) as they lack local level connection (Chopin et al., 2011); a bottom up approach encourages the advisor to listen to the farmer, and for the farmer to use their local knowledge; a one-to-one approach is where the farmer receives information from either a paid consultant or group based extension programmes and can then decide whether they would like to change farm practices as a result of the information; formal education and training provides an additional information source for some farmers.

Important factors to increase knowledge uptake are identified by Thomas et al. (2020) as credibility, salience, and legitimacy. Credibility is where the information provided is accurate, valid, and of high quality, this is where the person receiving the information can trust the information given. Salience refers to the relevance the information is to the individual receiving the information, this is where the information or knowledge can be implemented within the processes the information receiver operates. Legitimacy refers to the production of knowledge via methods that are unbiased, and have been respectful and inclusive of values, beliefs, and individuals involved. Co-innovation models between farmers and rural professionals can increase the legitimacy of the knowledge created.

Advisors can build their expertise and skills through knowledge exchange with colleagues and with farmers, through interactions with advisors from other firms/companies/suppliers, and through interaction with researchers (Klerkx & Proctor, 2013). It has been identified that advisors require adequate training and continued support (Klerkx and Jansen 2010). Rural professional role within a network of

practice goes beyond knowledge exchange, it is also to enable the translation of explicit knowledge to tacit knowledge (Eastwood et al., 2012).

2.7 LITERATURE REVIEW SUMMARY

As there is little literature on how farm input sale representatives inform their advice and interactions with farmers, existing literature was used to define the main theories in agricultural knowledge exchange. The agricultural advisory system is part of the wider Agricultural knowledge and innovation system (AKIS). AKIS is a term used to describe the combination of farmers, advisory and research, the interactions between these, and the institutions and companies involved in information transfer within the wider agriculture industry. Within AKIS, farmers are seen as an integral part to agricultural knowledge production, rather than recipients of the information given to them. Due to time constraints, the farmer is not always able to focus on their own development, policy changes, and technology developments. They rely on their web of influencers to help them access knowledge and keep them informed. The network includes a range of advisors, either paid directly by the farmer, from a farmer-levy funded organisation, or are embedded advisors who advise the farmer on the product or service the farmer has purchased from the company the advisor works for. The farm input sale representative can be defined as an embedded advisor as the role is to support farmers with their on-farm supply inputs and advise them on the products that will best suit the farming operations.

Literature has identified some specific skill sets that would help an advisor succeed in their advisory role. These skills include interaction skills, their advisory technique, and subject matter expertise. Subject matter expertise can range from techniques on how to increase profitability and production, animal welfare, health and safety, and environmental sustainability. In response to continuous fluctuations in the agricultural industry, whether that be climate patterns, regulation changes, or market challenges, the advisor is expected to continue to develop their own knowledge and expertise. To do this, advisors require relevant training and continuous support. Experienced advisors should be available to mentor less experienced advisors, and through building their networks and social capital, an advisor is able to expand their expertise and find information required by the farmer.

Networks are fundamental for a rural professional enabling them to increase their knowledge and enterprise through connections with people. By building strong networks within their profession, rural advisors gain relevant information and provide this to the farmers they work with. Within the literature, there has been classification of these networks that help to describe how the social interactions occur, and how those operating within these networks use their interactions to support knowledge exchange.

Centralised, distributed, and decentralised networks describe how close the relationships are and the type of knowledge that is exchanged between the actors within a network. Centralised networks describe the close interaction of actors within the same field sharing detailed knowledge on a specific topic related to their expertise. Distributed networks describe the relationship between actors who work in separate

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

areas within the same industry who share practical knowledge in their area, for an example a group of farmers and advisors sharing knowledge on their expertise of a specific on farm practice. Decentralised networks describe the interactions between actors who are working outside of their general day to day expertise topic, for example, this would be an advisor contacting person outside of their current network to gain knowledge on a topic they have not been exposed to before.

Other terminology in the literature describes the interactions between actors within Community of Practice and Networks of Practice. The interactions within COP and NOP have similarities to centralised and distributed networks as described above. Interactions within COP are closer and are focused on a common field, domain or knowledge, and interactions within a NOP are wider and cover actors from wider companies and professions. Relationships outside of COP and NOP, such as those described by Decentralised networks can support an advisor extend their existing knowledge and expertise.

Social Capital theory described the value of an individual's connections, and how they can leverage off their connections to seek information sought by their farmer clients. Three categories within the Social Capital Theory have been described within the literature; Bonding, Bridging, and Linking. Bonding related to strong relationships within a closed network of actors, bonding social capital occurs within centralised community of practise networks. Bridging Social Capital links separate closed networks, enabling access to wider resources, such as the interactions described within distributed networks of practice. Linking Social Capital occurs when connections are created outside of an actor's peer network, and as in distributed networks, an advisor is able to increase their expertise using interactions outside of their close profession networks.

Underpinning the relationships and interactions within networks is the development of trust between actors. Trust is developed through continued, consistent, and regular interactions that can span through multi layers of networks and social capital. Farmers see advisors as a trusted source of information, providing there are positive interactions between the advisor and farmer, and the advice given is relevant and accurate. Three trust categorises have been described within the literature, companion, competence, and commitment to support the descriptions of interactions within networks, with companion trust occurring within bonding social capital, Competence trust within bridging social capital, and commitment trust supporting linking social capital. Social capital are the trusted networks, that include relationships rural professionals can build and leverage on to help them develop their own expertise, increase their topic knowledge, and support their interaction skills with the farmers.

Literature has identified that there is a need for constant learning to support innovation in the agricultural sector. Learning can occur through interactions within networks, through different learning methods, and a range of knowledge types can be learned through varying knowledge relationships. Literature has used theories such as zone of proximal development, where an actor's growth is expanded with the support of others, and Theory of action where an actor can learn within their profession to describe how learning occurs within networks. Learning can occur through methods such as formal, non-formal, and informal.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

Formal learning refers to when a qualification is gained through planned, intentional learning, such as an academic degree, non-formal can also be planned and intentional, but no qualification or certification is gained. Informal learning is unstructured experimental learning. Literature identified that a combination of formal, non-formal, and informal learning can result in the best results.

Literature has identified explicit, tacit, scientific, and hybrid knowledge types that are transferred within agricultural advisory networks. Explicit knowledge can be categorised, tacit is knowledge gained through experience, scientific knowledge has been developed through scientific methods, and hybrid is a combination of some or all of these. Advisors who have expertise gained through a combination of scientific training and practical experience are valued by farmers as a source of information.

Additional theory to describe knowledge relationships includes know-what, know-why, know-how, and know-who, which has similarities to explicit, tacit, and scientific knowledge types. Know-what theory can be compared to explicit knowledge as this theory describes knowledge about facts. Know-why theory describe how things work, such as scientific knowledge that can be gained through scientific methods. Know-how knowledge explains the skills and capabilities that are required for a practical task, know-how knowledge can be compared to tacit knowledge. Know-who can also be linked to tacit knowledge, however know-who theory describes how an actor can access knowledge through social interactions and their community.

Knowledge exchange describes how information and expertise are gained and exchanged between networks. This can be through top-down vertical transfer, or horizontal, bottom up, one on one interactions and formal education. Knowledge transfer occurs when there is top-down vertical transfer of information, such as senior to novice instruction, or information passed from science to the farmer. Knowledge exchange occurs when there is an environment created that support co-production of knowledge, such as in bottom up, one on one and horizontal interactions. One of the roles identified of the rural professionals in networks supports knowledge exchange by enabling the translation of explicit to tacit knowledge.

There is a large body of literature that focuses on farmer learning and the relationships between the farmer and their networks, however there is less that focuses on the interactions between advisor-to-advisor interactions. The role of the advisor for the farmer has been identified as an intermediary of knowledge between industry and the farmer, however there is room for further exploration into the processes where the advisor sources their knowledge and how they gain their expertise which is the aim of this research. The next chapter explains the research design used to explore how farm input sales representatives inform their advice with farmers.

3 RESEARCH DESIGN

3.1 QUALITATIVE CASE STUDY

A qualitative case study design was used to answer the research question. The research aimed at gaining an in-depth understanding of how embedded agricultural advisors (FISRs) build their knowledge networks to support their advice and interactions with farmers. As case studies have been used to investigate farm consultant problem solving processes (Gray et al., 2014), to gather understanding on interorganisational, geographically dispersed networks (Agerberg et al., 2010), and to inform on professional relationships, the nature of advisory techniques, and products used by agricultural advisors (Compagone & Simon, 2012), the case study approach for this research will enable in-depth understanding of the relationships, networks, and information gathering processes the two case study FISRs were operate.

3.2 CASE SELECTION

Two FISRs employed by the same agricultural service company were selected as the focus of two case studies. Within the scope of the study only two case studies were able to be completed. To enrich the data a FISR who had been working for the company for more than five years and a FISR who had been working for the company less than five years were selected. It was intended that the different time in the role will show the different stages of learning and networks used to assess how FISRs inform their advice and interactions with farmers. The two FISRs were from separate regions of the North Island in New Zealand and operated in areas which were predominantly sheep and beef cattle farming, which required expertise in animal health, agronomy, and farm systems.

Each FISR had the research question explained to them and were both given an information sheet that outlined the research, and explained the research had been assessed by the human ethics committee (Appendix 1). Both FISRs signed an individual participant consent form (Appendix 2).

3.3 DATA COLLECTION METHODS

3.3.1 Interviews

This qualitative case study used semi-structured interviews of two FISRs to gather information on how they interact with farmers and the people who they work with. They will be asked about their education background, their time in the role, and the methods they use to inform their advice and interactions with farmers.

The semi structured interviews were each an hour long and conducted at the location of each FISRs workplace during work hours. A list of information required from the interviews was used to help guide the questions and conversation between the interviewer and each FISR (Appendix 3). The two interviews were

recorded using a voice recorder on an iPhone, as well as some notes being taken. The interviews were then saved and backed up on to a laptop for analysis.

3.3.2 Analysis

The recordings of each interview were transformed into transcripts by using AI transcribe software (Otter.ai, 2025). Analysis and the highlighting of key points were completed by reading through each interview and the main points were drawn out. Tables and word diagrams were used to identify key points from interviews, and these tables were then reviewed against the interview transcripts to ensure the main points were captured. The information gained through interviews compared to current literature theory in the discussion section of the thesis.

3.4 ETHICS

An ethics risk assessment was conducted through Massey University's Research Information Management System. This covered the project detail, which explained this study was for post graduate research, covered the aim of the project and gave a project summary.

To protect the identity of each FISR interviewed, data was anonymised by removing the name of the two FISRs, the company they work for, and the title of the role was changed. Data on the information sheet and consent form which could have led to identification of the FISRs has been blanked out.

4 CASE DESCRIPTION

The people interviewed as part of this study work for a company which is an input supplier for farmers, has branches across New Zealand, and has competitors who operate in similar ways. The branches are rural supply stores which are distributed across the country and located in rural towns. The branch provides a location for the local farmers to collect the items they require for daily farm operations. The branch is also a base location for the FISR, who works closely with the branch manager and the customer service team based in the branch. Although the branch is a base for the FISR, their role is to support farmers on their farms which requires them to travel across the region that the branch is located in. The FISRs interviewed work in separate regions of the North Island, New Zealand. Although in different regions, both FISRs operate in similar farming systems which are dominated by sheep and cattle farming with agronomy advice a portion of the advice they give. The role is to provide core technical on farm support to the farmers who are customers of the company. There is no fee for this advice, however the advice is available to only those who purchase or may potentially purchase goods from the company.

The two people interviewed about the role as a farm input sale representative have spent different lengths of time in the role and have taken different channels on getting into the role. Both have strong ties within the community that they operate in.

Case 1 comes from a farming background, has had formal education and research experience, they were employed by the company into the technical officer role, and have been in the role for over five years. Their knowledge on farm products and systems has been gained through their farming background, their formal education, the research they have undertaken, and on the job training and experience. Case 2 is a local who is embedded in the community. They have entered employment within the company by taking on a branch management role and then moving into the technical field role. They have been in the FISR role for less than five years. Their knowledge of farm products and systems has been gained from on-the-job training and experience. Below are sections which describe each FISR interviewed as Case 1 and Case 2. The quotes within each section are from the FISR described in each case.

4.1.1 Case 1

The FISR represented as Case 1 was brought up on a family-owned sheep and beef farm. They have completed a Bachelor of Science at a New Zealand University, worked in a research-based role for a private laboratory, and have spent three years working on a sheep and beef farm. They've been working for the company for eight years, with the majority of this time spent in the FISR role.

During the interview, they identified their own background as where they gained knowledge to help them in their FISR role, however they identified their farming background as the largest influence on the knowledge:

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

“I think actually, living or working on a farm is probably a fundamental part of our role in terms of landing, understanding a standard farming practice.”

To illustrate their understanding of farming practices, the Case 1 gave examples about knowing when “the ram goes out at the start of March, you're going to lamb at the start of September”, or statements such as “no dirt and spring” when talking about pasture management, which according to the FISR helped to guide their discussions with their farmer clients.

The FISR gave their research background in animal health products as an area that also helped to inform the advice that they gave to the farmers they worked with

“I know that background because I've done R&D on all those products so again, it's really good 'cause you can relate to them to the farm conversations”.

When first starting in the FISR role, according to Case1 there was very little support or on-the-job training given. *“So basically, [given a] set of keys, and [told to] go for it and do sales, and no training, no nothing, nothing at all. Just make it as you go”.* They pointed out that in their opinion there had been an increase of expertise and support for new starters since then, but at the time there *“wasn't that much expertise as it was quite a new group”* of team members in the region.

This lack of training and support when they started meant that Case 1 reached out to people both within and beyond the company to build their own expertise and networks.

4.1.2 Case 2

Case 2 had been working for the company for close to ten years, three of these years as a FISR. They did not grow up on a farm, nor have they worked on a farm. However, they are qualified in a trade related to the farming industry and have sales and business management experience. This is a person who is ingrained in the small community that they operate in, and highlights that the relationships they have are more likely to be the reason they got the job compared to role specific expertise.

“My local knowledge... reasonably well known being born and bred here. So yeah, that's, that's sort of probably has a lot to do with it. And more relationships, probably than what my experience was”.

Before working for the company, they worked for another rural supplies company in the same town. They commented that when there was a job opening in the current company, they *“took the opportunity to jump on board. And learn my way through it”.*

Case 2 indicated that their experience in rural supplies gave them a good understanding of the equipment and supplies needed by farmers. *“So I had a bit of a fairly good background on rural supplies such as fencing, staples, stapleguns, nails, all the rest of it”,* but needed extra knowledge once they started in the FISR role.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

Once started in the role, they indicated that they relied on those around them for support, and when they moved from their initial role into the new FISR role, they also relied on those within the company, external technical experts, and the farmers they worked with.

“But I had plenty of good managers once I started here that I could actually lean on, and they helped me out”.

Case 2 has a grounded understanding of the local area, is known by the local farmers, but needed to learn detailed information on farming practices to enable them to support the farmers they work with. The following section outlines how they built their network, and the people within their network who helped them in their role.

4.1.3 Description of the In-House Agronomy Team

The inhouse agronomy team includes a range of individuals from across the country who have a range of expertise gained through local farming practices and the time these agronomists have had in the industry and or company. The agronomy team (that supports the FISRs) was identified by both cases as a team of specialised people in their areas. This agronomy team is comprised of people who have significant experience and longevity in the role, often specialising in one cropping type, with understanding of the majority of farming types and cropping methods.

“With the agronomists. I mean, some of those guys have got 30 years on just cereal. [...and..] You've got guys that their whole life is maize”.

Case 1 goes on to explain that the agronomists have their own network to help them support the FISRs. The agronomists have their own forum that they can ask any question into, and one of the 8 agronomists across the country is likely able to answer. Adding to the agronomist network, is the head of agronomy who has recently come into the company from an academic and research background. They provide additional support to the interviewees and the FISRs they support by being part of the academic network.

“[The Head of Agronomy] has come through and [they] have a highly academic background, highly academic. And because of that, [they] have a whole group of academic people that [they] can pick the brains of. So, I pick [their] brains on quite a few things. And [they] fire that out to people that [they] know.”

4.1.4 Summary

The two FISRs interviewed for this study have different backgrounds and have spent a different amount of time in the role, although they both advise on similar farming systems. Part of their networks are the in-house agronomy team whose role is to support the FISRs. Both FISRs have indicated they seek knowledge from the people around them and use the information they have learned through their own experiences to inform their advice and interactions with farmers. In the following results section, it is identified how the FISRs build their networks, who the people are within these networks, and what the different types of information and training they gain through their networks.

5 RESULTS

“It's about it's about having enough people with different knowledge sets and experience that we don't have to all learn everything 100%. Because I mean, there's no way you can do it if you don't know”. - Case1 (Line 461-463).

5.1 OVERVIEW

This study shows that both FISRs operate within a range of networks through which they gain knowledge that inform their advice and interactions with the farmers. The networks include people that are within the company they work for, people that work for external companies, and the farmer(s) who either owns or manages the farming enterprise they are working with. Technical and practical knowledge is gained from interacting with actors within the FISRs network. Internal company people are often the first person that the FISRs go to for information due to the close relationship they have with the person. The FISRs source information from external people for specialist information on the product or practice that these people are seen as experts in. Farmers are a source of practical and local information, and both FISRs go to farmers to get information on whether a product or practice would suit the local environment.

Although the FISRs act as an intermediary between technical information and the farmer, the FISRs also learn from farmers that they interact with. These interactions are in majority on farm where the FISRs advise farmers on the products required while assessing paddocks with them. These in-person visits are supported by follow up emails, texts, or calls. Although most of the time is field based, where the FISR is on farm supporting the farm with crop and pasture monitoring, a lot of interactions also occur over the phone where the FISRs advise on products or methods to help on farm decision making. The FISRs are intertwined in the local community they operate in, and they both have strong connections with the farmers they work with and some of whom are part of the FISR's social networks. Other interactions with farmers occur at workshops run by industry good organisations where industry updates are given to all workshop attendees.

The FISRs interviewed have varied educational and experiential backgrounds that include formal, non-formal and informal learnings that has provided theoretical and practical knowledge. The study showed the importance of the FISR maintaining and building trust within the networks they operate while ensuring that the farmers they work with have the right product at the right time to meet on-farm demands.

The FISRs interviewed use a combination of information drawn from their own experiences, and subject matter [or sector] experts who are within their networks. Sector experts mentioned are farmers, agronomists, animal health experts, and representatives from supplier companies e.g. employees from seed and chemical companies. Knowledge gained from their own experiences ranged from on farm experience, academic education, local knowledge, and learning by working with those around them to create solutions.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

This results section presents the results from the two cases separately. The quotes in the separate sections are from the FISR represented in each section. The result show examples of how each case builds their networks, the actors within their networks, how each case gains information, the support they receive in the role, what their drivers of success are for each case, and essential skills and on the job training the cases have.

5.2 CASE 1

5.2.1 Building networks

When the FISR began in the role, they indicated that they talked to a lot of people about multiple aspects of the job and farming. As they became more experienced in the role, they found that the people in roles that they originally reached out to have less knowledge on some subjects than they had developed:

“When you first start off, you can have quite a few people, like you pick people's brains, because they know more than you. Now, most of the chemical reps don't know much” [in comparison to their own knowledge].

The network they built was based on the knowledge they identified they required for the role at the time. Although they had their own experience to draw from, when they first started in the FISR role they indicated that they needed a lot of information about a lot of different topics:

“When you first start off, you can you get a little bit of information from everyone to build up a big picture. [...] Then as you're getting more higher up, you're actually cherry picking on who is the experts in that single field.”

The FISR said that they built relationships with people in the company, and external supplier representatives, specifically chemical representatives and the local agronomist. They stated that these relationships were built on trust, knowing that the external supplier was not only pushing the supplier's own products, but helping the FISR supply the product that is the best fit for the farmer:

“It's more about getting that trust, where instead of them just trying to push the products. It's the right product for the right place at the right time, which is the key. Yeah.”

5.2.2 Case 1's networks

When asked who they reached out to when they first started, Case 2 identified two main people, one external representative from a chemical supplier for chemical knowledge, and an internal agronomist for the agronomy knowledge.

The internal agronomist, was identified as someone FISR 1 could use as a sounding board on agronomy related details:

“He didn't really come out in the car with me as much, it was just someone that I could call and talk it over.”

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

They identified the importance of the support that these people gave them to back up the information they were able to find themselves:

“You read the back of the [chemical] label [that] doesn't really help you.”

The local chemical representative was described as “one of the best reps on the chemical side around” by FISR 1 due to their ability to help the FISR solve issues even if it meant recommending a product that was from a competing supplier to that of the chemical representative. Providing relevant product information supported the FISR to build trust with the farmer:

“It's more about getting that trust, where instead of them just trying to push the products. It's the right product for the right place at the right time, which is the key.”

The interviewee indicated that over time as they became more confident in their own knowledge, and they built a supportive team around them that remains in place now. They gave examples of how they would still call their network to talk things over, and how others in their network would call them to confirm information.

“[colleague name] has been a FISR for four or five years, he still rings up and ask really silly questions, but it's just like, I know the answer. But I'm just making sure.”

When it came to finding answers to questions that were asked by farmers and they did not know the answer, they reached out to those who specialised in that area of expertise. This wider support network that involved the agronomists and the head of agronomy helped the FISR with their knowledge.

“Yeah, I mean, there's some stuff that people ask me, and I hit up the agronomists [...] So, when we talk about supporting the FISRs, our agronomists, and [the head of agronomy] are supporting us at the same time. So, it is a big support system right through”.

“But I mean, that's, that's what we've got the agronomist for. I mean, it's just the wealth of knowledge of those guys. I pick their brains three, four times a week [...] Farmers ask you, you ask someone else, and you find information that way”.

As well as the agronomists, it was identified that in some cases the store staff are able to support the FISR. It was highlighted that there were a range of people working within the store who were able to support the FISR.

“The foundation of us being the FISR is the branch [...] The store acts as a base point of where we structure ourselves [...] Whether it's the Branch Manager, Assistant Branch Manager or staff that just rely on”

Farmers were identified as being part of the FISRs support network for both personal support and professional knowledge. They give examples of learning from farmers who are changing their farming system, and how the FISR can use their cropping knowledge to support these system changes.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

“... Instead of 8-, 9-, or 10-year rotation over a large area, pushing that back into a four or five-, six- or eight-year rotation, so a lot more intensive in the better areas.”

They use the information from farmers who are increasing their production, and the systems they've put in place to support other farmers in the area with their production gains.

“If you don't use that information from that farm, and what they've done to achieve that on their farm, I mean, you're just silly, you've missed the point of actually being a FISR.”

5.2.3 Gaining different types of information.

Advice given by the FISR changes depending on the current pressures that a farmer is facing, or wider farming practice changes. The farming changes could be in response to weather condition changes, and/or aimed to create a gain in on farm production. The change in cropping practice requires the FISR to be informed on the aspects of the systems currently in place on farm:

“[It] was all Brassica over summer, right, and then back in to [permanent] grass. Whereas now it's a lot more chicory, high production type plants, and then go back into the hybrid rye grasses.”

In terms of current environmental regulation change they were asked how they support farmers in this space. This is an area that is not currently required as part of the FISR role; however, if a farmer was to ask the FISR what they know about an environmental situation while they were on farm, how would they approach gaining the relevant information for the farmer:

“Yeah, but by far knowing those understanding and knowing those rules and regulations will always be changing every time you go and sit in front of MPI [...] it's not so much knowing every single rule. It's knowing what they're trying to achieve, as long as we're going forwards and momentum in terms of environmental footprint and getting better and better.”

The FISR relied on industry experts to find information not typically used daily. The FISR used information gained to provide advice to farmers, or to refer a farmer to the topic expert. The FISR identified the importance of understanding farming practices, understanding the farming operation the farmer undertakes, and the goals the farmer:

“The more you can understand about the whole farming system, the whole farming operation and what they are trying to achieve, the better.”

5.2.4 Support to overcome adversity

While learning the FISR role, FISR 1 talked about the role itself and the adversity the people in the role need to overcome. They stated that the role can have times when things are going well, and then other times when things get quite difficult. The FISR talked about the lack of support when they first started, which made the role hard as they had to learn things quickly.:

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

“you think the job is really easy, you go out there, and I can guarantee within that first year to a second year, the rug is gonna be pulled from underneath your feet [...]. And you crash. And I mean, you bloody crash pretty hard”.

The interviewee identified that people in the FISR role need to have people they can rely on, not only for technical expertise to support their farmers, but having the support network in place when the job gets really difficult. To prevent crashing in the role the FISR discussed the importance of having a personal and professional support network available to them, the FISR identified the importance of having a strong supportive network.:

“.. every rep needs to have someone that they can lean on to say, I'm feeling like shit, whether it be a farmer that you know really well, that you have a shit day you can ring up and say mate I'm coming in for a beer, I feel like shit. You need someone like that to be able to lean on”

5.2.5 Drivers of success in the FISR role

“So, it's always adding the best product on farm at the right time for the right price. And it's about adding that value. So that's something that's really cool, because we can have any conversation on farm”.

When talking about KPIs and what people in the FISR role focus on, the interviewee explained the diverse role, and how some people focus on agronomy, others on dairy shed chemicals and detergents, whereas others are able to do a little bit of everything that the role offers.

“Well, the thing about being a FISR is not one way fits everyone. So, some people come in and they want to go down an academic side. Some people go and they want to be a people pleaser. And deal and make sure that they've got all their chemicals and detergents and everything like that. Some people just do seed, and that's what they do as a FISR do seed and don't want to do anything else. Some people try to do the full package. The cool thing is how diverse you want to be.”

Although this role, like any other role has KPIs set, the interviewee discusses the importance of having the people doing the role that is needed for the local and team situation, rather than solely being driven by KPIs

“It's more trying to identify what the person is like and how they slot in versus Yeah, the company going this is your KPIs.”

5.2.6 On the job training and essential skills

The FISR identifies four main areas of fundamental knowledge and skills required for the role. “What we need to learn (is) farm systems [...] people's personalities (and) how to talk to them, [...] picking up body language, [...] and public speaking.

FISR 1 indicated that they had received some training from a body language and communication coach who went out on the road with them for two days and observed how they interacted with their farmers. They recounted this experience:

“And that was the most intimidating thing I have done in my life she went around, she told us, she literally sat next to you. And you're driving, and she's just staring at you. And she's putting it's all about body language and picking it up [...] I've kind of learned to be more casual as well. Like, just have yarns and stuff where it probably comes across like that.”

They received presentation training as part of a wider internal training programme implemented by the company. They explained how this was a safe place to learn and build confidence in the skill set.

“I'm going to present to a lot of people and train a lot of people. And it's going to get over my any fear that I've got, which was fantastic. Because I now don't give a crap about talking in front of people at all”

When asked about essential skills for the role the interviewee responded with a range of skills including personal skills and technical on farm knowledge.

“Well, if I was gonna say, like, what we need to learn, as we're first being FISRs, one will be farm systems hands down. Second, it would be people's personalities, how to talk to them, that kind of thing. Third, would be picking up body language, which I did. And fourth would be forcing us to talk publicly in front of our groups all the time. And the other one is just structured learning.”

When it comes to structured learning, they refer to in-house training programmes that have been implemented recently by the head of technical training in the company.

“Everything is in-house. Definitely not out-of-house. With [Head of Technical Training] coming on board. That's changing quite a lot. [...] Getting that information in a structured manner, which is what she's doing.”

The information referred to is role specific technical information, mixed with opportunities to learn in the field, and visiting trial sites run external companies.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

Figure 1 shows the sources that Case One used to gain information to inform their advice and interactions with farmers. There is a mixture of colleagues within the company and external subject matter specialists who they go to for information. They rely on the expertise they have gained through their formal education, and informal education, some of which has been supplied to them by the company they are employed by. They explained that the knowledge they have gained through their practical on farm work experience has been fundamental to support them in their technical field role.

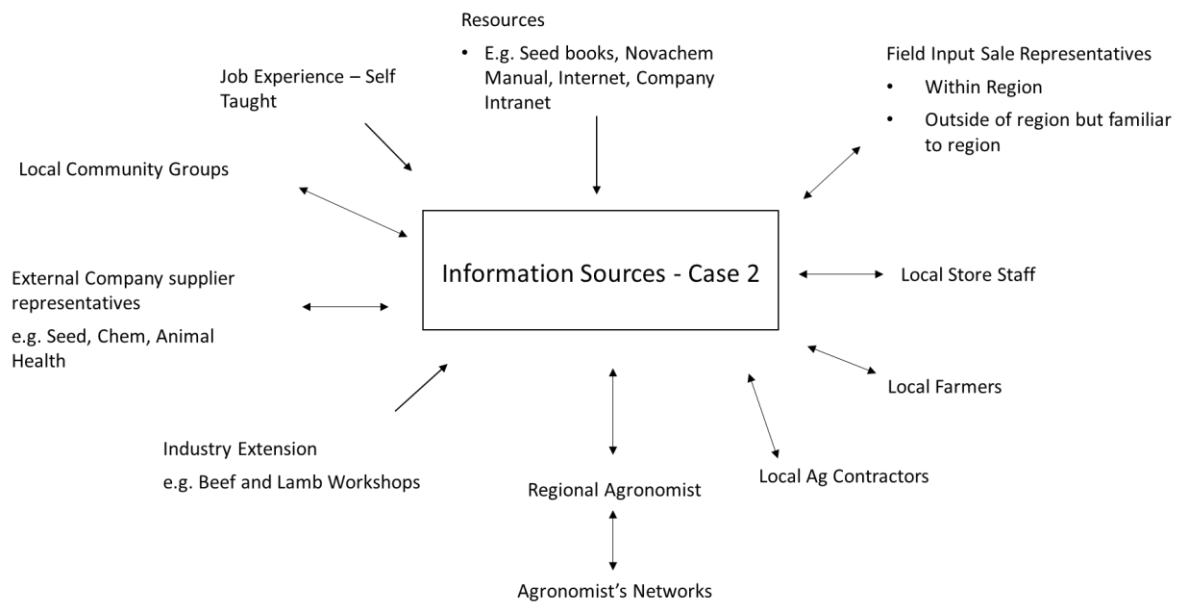


Figure 1. Information sources used by Case 1

5.3 CASE 2

5.3.1 Building networks

From their experience working in the store, they indicated that they gained understanding of where to find specific information. They built working relationships with people with specific skill sets outside of the business, as well as those within the business. They were aware of the products sold in store, and what they were used for. For example, the types of chemicals that were available, the amount of chemical needed, and the type of weeds, disease, or pest that the specific chemical could control:

“I knew the chemicals in what they did and rates of bits and pieces [for example] label claims”

In addition to this existing knowledge, they relied on other FISRs within the company, that were more experienced to increase their technical knowledge. They identified three specific FISRs that they talked to when they first started in the role, who were more established in the role. Two of those were in the same region, and one was outside of the region they operate in.

It is through the repeated talking to and asking information from the people in roles around them, that they felt they increased their own knowledge. They were successful in doing this in their previous role, and that gave them the confidence to continue to ask for support from the team around them.

“When I first started as the FISR I was pretty much same again picking other people's brains”

Case 2 stated that it was a different type of knowledge set that was required in the FISR role compared to their previous in-branch role. They acknowledged their lack of on-farm experience made it difficult to understand all farming practices:

“One of my weaknesses is actually probably understanding the exact way that farms actually 100% work”

To overcome this, they reached out to the regional agronomist who had experience in the FISR role as well as running their own farming operation.

“They obviously have a lot of knowledge in sheep and beef with running their own farm and their business. So yeah, they were a good person to pick the brains of”.

They described the network of other FISRs in close regions as “we have a pretty tight crew” that they can reach out to for local details, or just to catch up with and talk things over if they are going through a difficult time.

They grew their network while being in the role, and this expanded to people outside of the company that had specific knowledge in an area that the farmer required.

The network of support that the FISR built while in the role included people from outside of the company such as individuals working for chemical companies, seed companies, animal health/drench companies, farmers, local contractors (those who cultivated and drilled crops, and those who sprayed chemical on

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

crops). These people have specific knowledge of the product their company sells, or in the case of the contractors and farmers, have local knowledge of what works well in the region. This FISR used a combination of these people to build their own expertise, and the details of these people and interactions are outlined below.

5.3.2 Case 2's networks

The people in the FISR's network are from a mixture of places. Some are from within the company, others are rural professionals outside of the company, and Case 2 also relied on local farmers and agricultural contractors, *"I used a lot of the reps, and also a lot of the farmers."*

When asking for advice, Case 2 was drawn to people who were knowledgeable in their field, and were available to help them with their questions *"You always tend to migrate to those guys that give you a bit of a hand and help you out"*. They refer to help not only with product knowledge, but also support and guidance with tailoring solutions suited to a particular farmer:

"You build those relationships, and they definitely help you do your job."

External - Company representatives – Seed, chemical and animal health

People working as sales managers for companies that supply seed and chemical were a source of product specific information that Case 2 was able to use to help inform farmers on products. These sale managers often spent time in the field with the FISR, were available to call on the phone, and sometimes ran training sessions on their particular products:

"[I ask] the seed reps definitely, you use their knowledge, and the likes of [regional sales manager from chemical supply company] with chemicals. So yeah, we do rely on those guys you actually get a lot of information out of them".

"Information the seed reps give us which is quite handy".

The people within the FISR's network have access to a wider network of knowledge that can be accessed to further support the FISR in their farmer interactions.

"Yeah, you know, and that's the thing, you build the build those relationships, and they definitely help you do your job."

They help the FISR do their job by connecting the farmer with the company representatives who have the information on the products the farmer is using:

"I know the farmers go away feeling a lot better, because you know, they've had a lot of questions answered and sometimes I don't know every question but that's why I bring those guys along to try and help me along".

By helping to get the right information to the farmers, the additional support given to the FISR means that the farmers have their questions answered and the FISR has support to work towards their sale targets *"We end up selling a lot more products"*.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

It was identified that the local territory manager for one of the drench companies was also helpful, and was considered knowledgeable and supportive by Case 2, and if the manager was unsure on any information he would seek input from their company's technical advisory vet team for the FISR:

"He's quite knowledgeable. And if he doesn't know, he goes to [the company Vet]".

External - Meat company

Case 2 also accessed wider industry contacts such as one of the local meat company representatives: "I talk to him quite a bit just about what's going on in the in the sector"

External - Contractors

Case 2 also talked to local agricultural contractors, such as spray and tractor contractors, with specific local knowledge helpful for informing their advice. The FISR stated that they trusted the advice that these contractors gave them as they had been operating in the area for a long time, had participated in on-farm trials, and were good operators based on the work that the FISR had observed.

The FISR talked about how they work with the local contractors. This ranged from asking advice on a particular chemical before they recommended it for use on farm. The FISR provided a specific example of advice from a contractor: *"the contractor doesn't want to use [the chemical] because he thinks it's going to block [the spray] nozzles [on his sprayer]."*

The FISR also relied on the contractor for information on crops in which the FISR lacked experience:

".. lots of fodder beet, he's been doing it for years and years knows what, what works, what doesn't. He's been through all the trials, they did lots of kale trials, so brassicas, all that stuff".

The FISR indicated the information gained from the contractor was technical crop aspects, and how the crop performs in the local environment:

"Yeah, probably more technical side of things. What's working here with drilling was depth and you know, just in general really."

Internal - Agronomists

The FISR identified three agronomists within their own company on whom they relied. One within their own region, one in the neighbouring region, and one in the South Island.

The local agronomist was relied upon *"because he knows that farm system side of things. You know, obviously, his previous roles as a fertiliser rep and then getting into seed. Shit yeh he's ideal, bang on for what we need for sort of asking him and having someone to go to."* In addition to their farm system knowledge, the local agronomist was available to visit farmers with the FISR and provide in the field advice and support. The neighbouring agronomist was described as *"bloody good"*, and someone that was available to be contacted on specific crops. The FISR talked to the South Island agronomist *"because he*

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

used to actually be here and used to work for [local competitor] for a bit too, so I know him, and I'll talk to him quite a bit quite often, I'll ring him as well and catch up with him".

Internal – Other FISRS

The FISR identified a “pretty tight crew” of other FISRs within their own team who operated in regions close to their own region. They outlined how helpful it was that this small group of FISRs met regularly. Other FISRs that were relied now lived outside of the region, but who had worked in the region before with whom they had an existing relationship:

“So, I know him, and I'll talk to him quite a bit quite often, I'll ring him as well and catch up with him [...] He's grown cereal here in [town] with his previous role.”

External - Industry good organisation representatives

Representatives from industry good organisations such as Beef and Lamb NZ, as well as advisors from the regional council, often ran workshops in the area to inform rural professionals and farmers about industry changes such as environmental regulations. The FISR identified the advisors and representatives from these organisations as a source of knowledge:

“So yeah, those are sort of experts that we have used in that field to try and get a bit of an idea what's going on.”

Case 2 highlighted how these types of events were an opportunity to learn alongside and to further develop their relationships and business with local farmers.:

“So, it's just good, good integrity for us, because we get seen that we're actually trying to learn as well. [...] So, they're all relying on us to help sort their paddocks out now.”

External - Farmers

Case 2 gained information of value to his interactions with farmers through talking to farmers about crops they were growing, and how each crop performed. The FISR tended to seek information from farmers that had been operating in the local area for a long time including many from multi-generational family farms: *“Most of the farmers around here been doing it for years and years. So, they know, they know what they want. And they know what works and what doesn't.”*

The FISR indicated that they use the experience that farmers have gained to inform their knowledge: *“quite good to pick their brains along with getting a lot of stuff, and knowledge on the stuff and how it works.”*

They also used farmers to bounce ideas off, or to validate information they had gained from another source: *“I'll run it past a farmer to see what he thinks. Ask what would you do? Would you do this? And they say yeh I'd so that same, or no, I'll do it this way it gives you good idea [...] You know, they've all got different ideas of how they're going to do stuff. Yeah. And it's like, no, that's not really gonna work or shit. Yeah, that's good idea. Yeah, so you pick and choose some of the information that you get out of it.”*

5.3.3 Gaining different types of information

When situations arose where new information about an aspect of farming relevant to the products they supply was needed the FISR indicated that they sought out people with knowledge in that area, and this included people from beyond their normal networks. For example, new environmental regulations with implications for on farm practices, the FISR reached out to people working for the local regional council, and attended industry run workshops.

Although the FISR role covers cropping type and technique, the changes in policy and regulations are not always part of the on-farm discussions. When asked how the FISR finds information in this area, they responded by going to industry workshops, and meeting the local people who have expertise in that topic.

“We’ve had the likes of [the regional council rural advisor] out with some of our farmers. And also, Beef and Lamb [NZ] have always had him along speaking [...] Those are sort of experts that we have used in that field to try and get a bit of an idea what's going on”.

5.3.4 Support to overcome adversity

The farmers that the FISR supports, also provide support to the FISR. The FISR’s role as indicated is to provide products and advice to farmers but Case 2 also indicated that they learn from and gain support from farmers, including personal support. Case 2 explained how it worked for them: *“...if you get knocked back or something [...] it's quite good actually to go and see someone that you know you've helped or someone that's keen on having you. That's what I find you go see a good customer you actually come away from them feeling really well”.*

The network Case 2 has built includes people that help them with their knowledge growth, but also people who provide personal support and comradery. This includes farmers, contractors and work colleagues, The FISR explains the importance of his work colleagues: *“It works really, really good having us four, sort of work together as such, because especially in those little groups that we do, because, you know, sometimes you don't want to share stuff with the whole area. So, it's quite good to have just to catch up with it's just a few of you and you're not having to talk to everyone.”*

The FISR so relied on the individuals that were working in the same role, but within the wider region “The [region] guys are really really good to talk to as well. You know, I find them really really good.”

5.3.5 Drivers of success in the FISR role

The FISR role sits within the sales team of the company, and they have set sales budgets they are required to meet. These KPIs in sales, gross margin, and the number of farmer visits they do weekly does require the FISR to have a focus on their sales:

“Obviously getting KPIs and keeping it in the green that's always good. So, as a good success. Because you know, if you're doing well, shop's doing well, and yeah, normally farms are doing well, because you know, it all rotates around the farmers.”

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

Although the FISR is aware of the need to meet company KPI's for the role they are in they indicated that this is not the primary focus of their interactions with farmers: *"I don't really focus too much on the others, I just get out there and do the work [...] Not many clients that spend with [the company for whom the FISR works] only, in a small town like this [...] I don't run my life on being competitive. But you always want to do a good job"*.

5.3.1 On the job training and essential skills

The skills identified as required by the FISR are an understanding of farming operations and systems. The technical and specific requirements, such as the knowledge of sowing rates, or what crops work well in their area, and to know where and how to find information:

"Yeah, pretty much just knowing how things grow. That's the biggest thing, and what works, and what doesn't. And we've got that pretty well nailed at the moment, like, most of stuff is pretty good on the intranet. And, you know, what they don't know there Uncle Google knows. And, if the internet doesn't know normally reps have got an idea of what's going on anyway. So, I think a pretty well, right first of all using those you can get by."

They went on to add:

"Having good knowledge as well, you don't have to be perfect as long as you have a reasonable knowledge of how everything goes".

The understanding of what works in the area comes from asking others but also working through it and seeing the practice in place for themselves. *"Otherwise, yeah experience is just getting out there using it."*

The role required the FISR to be able to interact with a wide range of personalities with a range of backgrounds and experiences. When asked what skills are important for the role, the FISR responded *"personality is one, that you'll get along with lot of different people"*.

When asked if the FISR has received any formal training, they replied *"Basically it's all been self-taught, on the job experience and you can't really beat that [...] [previous colleague] said they learned more on the job doing it and that's exactly right, that's what I find. You can stick your nose in a book, and you can read everything under the sun, but unless you're actually out there doing it. That's the best way, get out there. Identifying bugs. Get there and walk the paddocks. It's The best way of learning"*.

They had received practical crop specific in the field training run by the local agronomist and the regional chemical company representative that specialises in chemical for that crop. *"So, we're actually going right through from the word go working out growth stages, when to spray it. [...] that's good chance to learn, that's the best thing, is going on farm and actually learning and actually seeing it"*.

The FISR values learning through hands on experience, *"That's the best way [to learn], get out there identifying bugs. Get there and walk the paddocks"* and seeking advice from those around them to fill knowledge gaps.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

Case 2 goes on to explain that they are constantly learning in their role:

“Just mainly with experience. You just sort of see what works and what doesn't. There's always something to learn with this job. You think you know you got it sorted and then it's like yeh nah. It's you're always learning so and picking up on different bits and pieces of what works what doesn't.”

In addition to the on-the-job training they've received, there is a large catalogue of information stored on the company's intranet. The FISR accesses this information when they require *“other resources or use it use the [company] resource stuff yeah resource stuff some of the stuff on the intranet is quite good”*

Figure 2 below shows the information sources Case 2 uses to help them inform their advice and interactions. This is a mixture of people and resources, as well as their own learned expertise. They relied on people who work within the company who are either other FISRs, staff based in the branch are part of, or who are in technical support roles such as the agronomy team. People who work outside of the company support the FISR in their role by adding knowledge about the specifics of the product they are selling. In field, local knowledge was gained through discussions with local farmers and contractors and by working with these contractors and farmers the FISR was able to find what worked in their area, so they can pass that information on to other farmers. Other information sources identified by Case 2 were industry good bodies, and manuals and internet. These were often used as a starting point to which they would seek further detailed information from the experts they have in their networks.

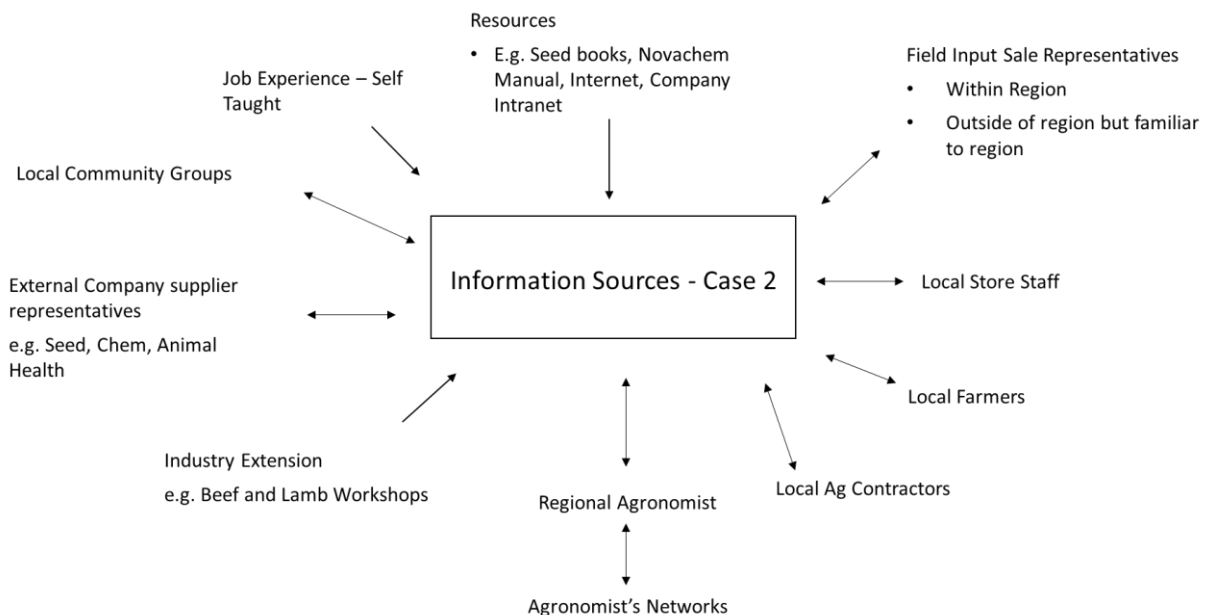


Figure 2. Information sources used by Case 2

5.4 ACTORS IN THE FISRs NETWORK

Case 2 identified actors from within and external to the company which they work for as part of their network. Those within their company are other FISRs, regional agronomists and the agronomy team, line managers, branch managers, and other branch staff. External actors are supplier representatives, farmers, market supply representatives, agricultural spray and cropping contractors, extension officers, MPI advisors, and the regional council advisors.

5.4.1 Internal Actors

Both Case 1 and Case 2 identified other FISRs as being part of their network. Case 1 gave examples of the close working relationship they have with other FISRs and explained that even when one of their close FISRs had a change in roles within the company, they remained in regular contact to double check a piece of information, or to remind each other of a piece of information they have not discussed for a while. Case 2 referred to the FISRs who they worked closely with as a “pretty tight crew”. These are the FISRs that are working in their neighbouring region and have similar farming and crop types to work with, who they would meet face-to-face and discuss current activities. Case 2 also had interactions with a FISR working in a different region, who used to work in the same region as Case 2, but as a rep for one of the competition companies. As they worked in the same region, and at a time before Case 2 was in the FISR role, Case 2 would call this FISR to discuss local cropping, or other regionally specific information.

Agronomists, and the agronomy team, were identified by both cases as being a major source of information. Case 1 explained how if a FISR was to ask their regional agronomist a question, that agronomist would either provide the information to answer the question or would source the information from one of the other agronomists. Within the agronomy team, there are agronomists who are seen as specialists for different crops, such as barley or maize, due to their time in the role, and extensive experience with their specialised crop. Case 1 also explained that the head of the agronomy team came from an academic background, who has completed their own research in an agronomy related field and has connections to agricultural research institutions, this gives potential for the FISR to interact and make connections with actors who are outside of their current network. Case 2 would source agronomy and farm systems knowledge from the regional agronomist. They explained that as they did not have their own practical farming experience, they relied on the regional agronomist in this area of expertise, as both the regional agronomists they worked with had worked and lived on farms. Case 2 would also work with the regional agronomist when they required crop specific information, and these agronomists were able to support the FISR by either visiting the crop with them or talking through the solution over the phone.

Further internal actors in the FISRs networks are those based at the branches, such as the branch manager and the branch staff. These actors support the FISRs in their day-to-day activities, such as ordering and delivering the goods for the farmers or supporting them with general customer service.

5.4.2 External Actors

The FISRs role is to provide products and information to farmers, but FISRs also gain practical, local knowledge from farmers that informs their overall role. Case 1 gains information on crop rotations and how the farmers are adapting their crops to the local climate or to suit their farming practice. Case 1 discusses how they will work with the farmer to meet their on-farm production goals, they will ask the farmer how they are meeting their targets and then use that information to increase their own expertise on the subject. They state that if you don't use the information that you gain by working with farmers, you have missed the point of being a FISR. Case 2 gains information on crop performance in the area, and they often run an idea past the farmer for their opinion before they implement, or to validate the information. The farmers who provide practical information to the FISRs are farmers who have been operating in the area for some time and have often been part of field trials of crop types, giving them both technical and practical understand of practices. Farmers are a valuable source of how technical information can be implemented into practical on farm use. The FISR can then use this knowledge they have gained through their interactions with these local expert farmers to inform their advice with other farmers and the rest of their networks.

Agricultural spray and cropping contractors also provide a technical and practical information to the FISR. Case 2 explains that they gain practical information on if the crop would survive in the local environment, and technical information is the depth to sow the seeds of different crop types. Case 2 explains how they would gather information on a crop that they have had little experience with from the local contractor. These contractors have been working in the area for some time and have been part of crop trials in the area on a range of different crop types. The FISR sees the work they complete, can then trust that the crops grow well in the area and have confidence to suggest these crops to farmers.

Market supply representatives in this study refer to the agents who work for companies that purchase products off the farmer. Case 2 uses examples of how they gain market information from the local meat supply agent. Case 1 did not mention these types of representatives as part of their main network. This could be due to this type of information not being part of the main information required of the FISR as it does not relate to the products they sell. However, it does provide the information that is relevant to the agricultural industry and could help them with their on-farm advice.

Actors who work as MPI advisors were identified by both FISRs as providing information on farm management and regulation changes. These interactions were either at industry events, or the FISR was able to contact these advisors through actors within their network. Similar to the information gained from meat supply companies, the information gained from these actors is not always relatable to the day-to-day advice the FISRs give, however does keep the FISR informed on industry changes or responses to regulations, such as freshwater farm plans. Case 2 also gained information on farm management and regulation through extension officers and regional council advisors who facilitated regionally based workshops for rural professionals and farmers. These workshops provided an environment where co-

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

learning can occur for the FISR and others in their networks, gave opportunities for the FISR to meet new contacts, and gave examples of where they were able to solidify working relationships between them and farmers due to being visible at these types of workshops.

Both Case 1 and Case 2 gave examples of sourcing information about products from external supplier representatives. These representatives worked for chemical, seed, and animal health companies whose products the FISRs sold to farmers. These companies rarely sold direct to the farmer, so relied on the FISR to sell their products on behalf. Supplier company representatives were available via phone calls and regularly visited the farmers with the FISR to discuss their products and how they would suit the farm system. Case 2 described how helpful these representatives were to help them make sales, but also to ensure that the farmer had the information they required about the products. Both cases identified people working from the same chemical company as a source of technical information, these two representatives operated in different regions which shows the company they work for have reliable, knowledgeable people working for them in roles that support advisors such as the FISRs. It is noted that these supplier representatives also support other embedded advisors who work for the FISRs competition companies in the same region, however the FISR and their competition do not interact about products or product information.

There are examples of the FISRs having social interactions with representatives who work for the company's competition, such as both the FISR and their competitor volunteering at the same organisation, however there was no evidence to suggest that knowledge transfer occurs, or information is gained from or shared with the competing representatives. Similarly, there was no evidence to suggest that there were interactions between the FISR and other actors who are part of the farmer's network, such as farm consultants, vets, or the farmers financial advisors.

Although the FISR role differs from the roles of farm consultants, financial advisors, and vets. FISRs do not provide financial advice, are not part of farm management decisions, and they do not provide the service which vets do. The differences in these roles are likely to be the reason farm consultants, financial advisors, and vets are not part of the FISRs network. Vet clinics sell some similar animal health products to what the company that the FISRs work for do, which provides a further complexity to the FISR to Vet interactions. The vets who are selling animal health products, for example drench, are competing with the FISR for sales of these products. It would be unlikely the FISR would source product related information from the vets who they are competing with, however, the interactions with vets who work for the supply companies of the products the FISRs sell are seen as a valuable source of information. The FISR is therefore in competition with some vets, and they operate with and source information from others, depending on product, place, and potentially due to the expertise of the vet compared to the expertise required by the FISR.

5.5 NETWORK TABLES

To inform their interaction and advice, the results have identified that FISRs use a variety of networks. The FISRs source different forms of information (Figure 3) from their networks, including the technical information, practical information, and industry information that enables the FISR to remain informed in areas that may impact their advice, such as seasonal trends and market information.

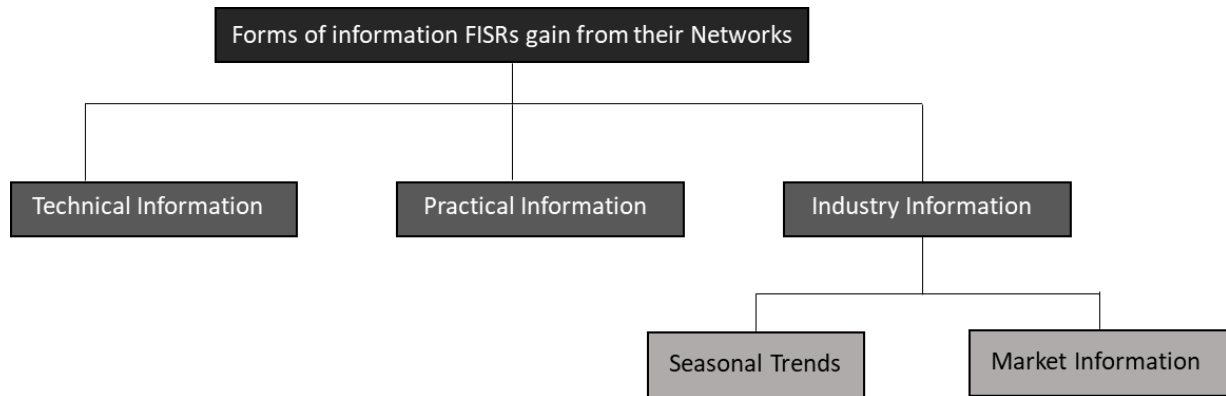


Figure 3. The forms of information FISRs gain from their networks.

There are some actors who provide a mix of information, and are part of more than one category, others have one area of expertise. Technical networks hold know-what and know-why knowledge, enabling the FISR to gain knowledge about facts, and to understand how things work. Practical networks hold information on how the technical knowledge is implemented i.e. Know-how knowledge, which give the FISR the skills required for practical tasks. This can either be crop management knowledge, or sales methods. Interaction networks hold know-who knowledge, as they give the FISR the understanding of who can introduce the FISR to wider networks, are source of knowledge, a source of emotional support, or a mixture of all to the FISR.

5.5.1 Practical Networks

Practical information is local knowledge gained from internal and external networks. These networks enable the FISR to determine if a technical theory learned via their technical networks could work in the area. By relying on their local networks, the FISR can find what works, and how to do it. Figure 4 shows the actors identified by the FISRs who enable them to gain practical information.

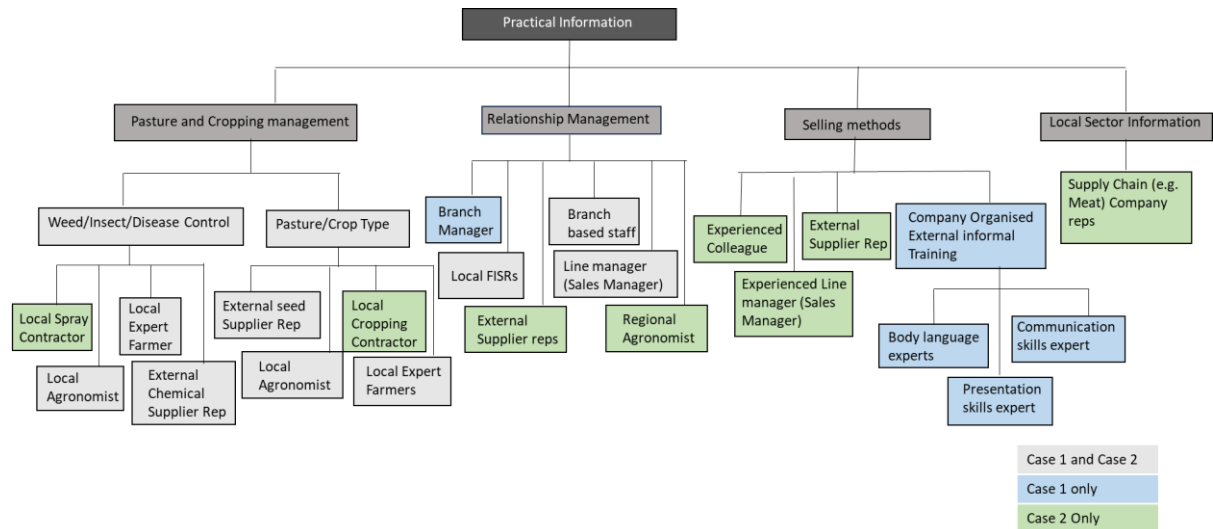


Figure 4. Sources of Practical information.

The practical information required for the role, as identified by the FISRs interviewed can be classified into Pasture and cropping management, relationship management, local sector information, and selling methods. Case 2 identified that they talked to their local meat company representative to gain information on local supply chain, Case 1 did not identify any conversations occurring between them and the local supply chain representatives. Both FISRs identified branch-based staff and their line managers as people that help them to gain practical relationship management information. Case 1 also relied on the branch manager, and their local FISRS, and Case 2 mentioned their regional agronomist, and external supplier representatives as additional people who supported them in relationship management. To gain selling method skills Case 2 gained information form their experienced colleagues and line manager, and external supplier representatives. Case 1 had company organised informal training where external experts were brought in to help with body language, presentation skills, and communication skills. This external training was an opportunity offered to Case 1, which they accepted, rather than the FISR seeking out this information and the external experts. Practical information on pasture and cropping management can be further categorised into weed, insect, disease control information, and pasture and crop type information. Case 1 and Case 2 both relied on the local agronomist, local expert farmers, external supplier representatives (either seed or chemical), and local contractors (either spray or cropping) to gain practical information on pasture and cropping management.

5.5.2 Technical Networks

The FISR gain technical information through their networks on what works in their area of influence. This is specific knowledge on facts and products that relate to farming practices. Figure 5 shows the sources used by Case 1 and Case 2 to gain technical information.

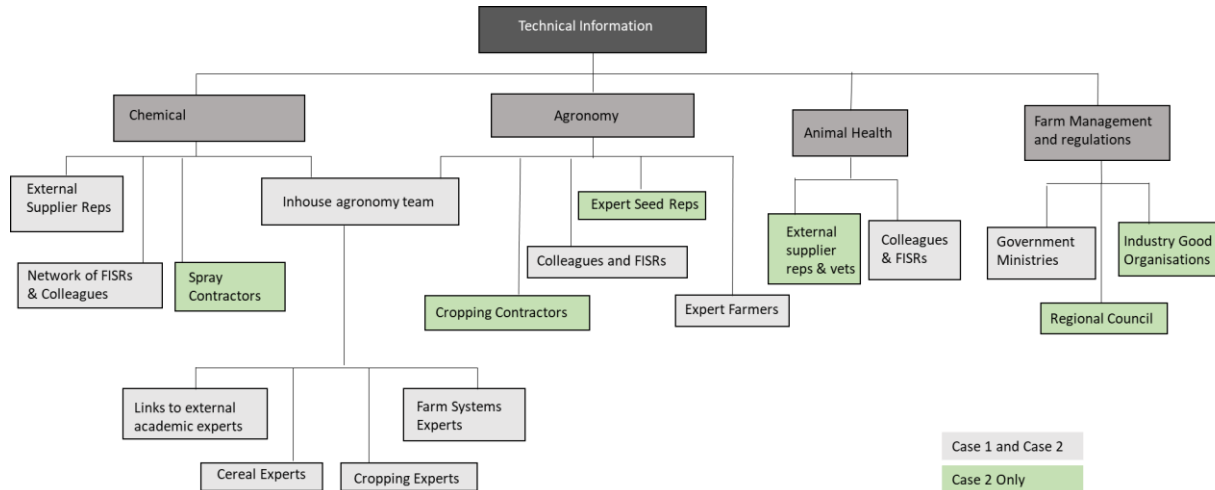


Figure 5. Sources of Technical information.

The technical information required for the role, as identified by the two case studies, can be categorised into chemical, agronomy, animal health, and farm management and regulations. The inhouse agronomy team was identified by both FISRs as a source of Agronomy and Chemical technical Knowledge. Both cases used actors from external supplier companies, their network of other FISRs and Colleagues, and identified local expert farmers as a source of technical agronomy knowledge. Case 2 identified that they gained chemical knowledge from local spray contractors, agronomy knowledge from local cropping contractors, and animal health knowledge from their colleagues, the external supplier representative and the vets who worked for the animal health supply company. Government ministries were identified by both Case 1 and Case 2 as a source of farm management practices and regulations, Case 2 also gained knowledge in the regulatory and farm management area from industry good organisations and the regional council.

The networks available to each FISR are the same, however there is a difference between the range of knowledge sourced from each network. There are sources used by Case 2 that are not used by Case 1. This reflects the different backgrounds the two FISRs have. Case 1 has a farming background and an agricultural related degree, which was said to be fundamental to their knowledge, compared to Case 2 who uses their networks to gain information they may have gained if they had a farming background. Case 2 has a broader technical information network, where they get a range of information from multiple sources, this could be explained by having less time in the role compared to Case 1. Case 1 explained that as they spent more time in the role, they reduced their network to a few experts in each area. This shows that the FISRs had interactions with subject matter specialists, in each of the major areas of technical

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

information, chemical, agronomy, animal health and farm management and regulations. These subject matter specialists ranged from actors within their own company, or external actors who were employed by supply companies, industry good organisations, regional councils, government ministries, and the local expert farmers.

5.5.3 Interactions

Interactions which the FISR have are with people external and internal to the company they work for. These networks support the FISR to increase their networks and provide emotional support to the FISR. These can be through face-to-face interactions, or via phone calls or other remote methods. Figure 6 shows the actors and interaction type specified by Case 1 and Case 2 in their interviews.

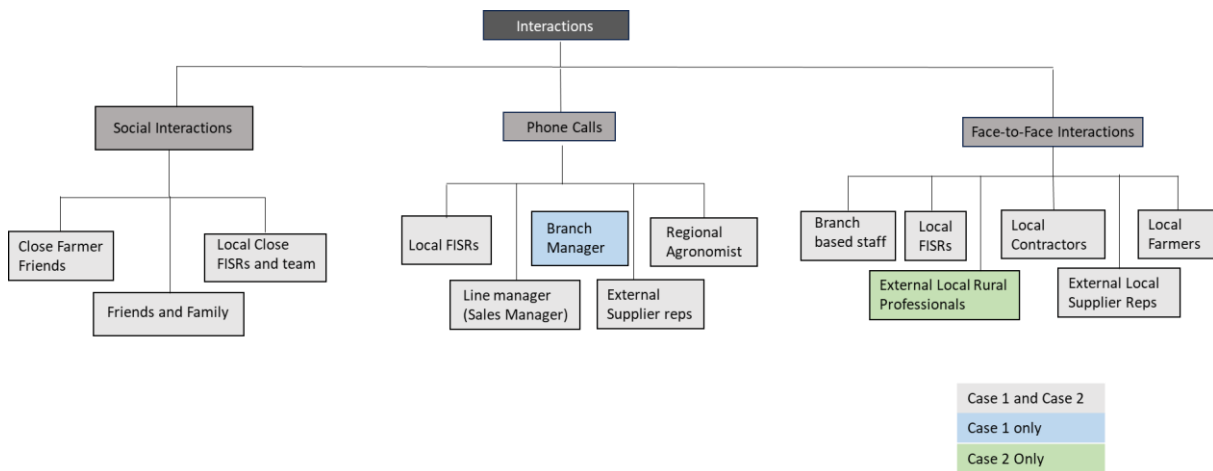


Figure 6. Interaction Types

The interactions that have been identified by Case 1 and Case 2 can be categorised into three main methods, phone calls, face-to-face interactions, and social interactions. Both Case 1 and Case 2 have strong ties within the communities that they operate within, Case 2 specifically mentioned the volunteer work that they do, and how they rely on the people who also volunteer as a support network outside of work hours. After a hard day at work, both Case 1 and Case 2 used examples of visiting or calling the farmers who are clients and can also be considered friends. Both Case 1 and Case 2 identified phone calls as an interaction method between their regional agronomist, line manager, external supplier representatives, and local FISRs. Case 1 also interacted with their local branch manager over the phone. Both cases identified having face-to-face interactions with branch-based staff, local contractors, local farmers, and external supplier representatives. Case 2 also identified that they have face-to-face interactions with local FISRs, and other Local rural professionals who work for an external company.

6 DISCUSSION

Through this study, it has been identified that FISRs are able to inform their interactions with farmers through a variety of methods. To inform their advice, FISRs use knowledge gained from their own practical experience or education, as well as using networks that include actors who work for the same company, who work for external rural professional companies, and local farmers and contractors in the region they operate in. Underpinning these methods is the need for the FISR to have personal skills which enable them to interact and participate within their networks to ensure they can provide relevant, accurate, and trusted advice to farmers.

6.1 THE ROLE OF THE FISR WITHIN THE WIDER AGRICULTURAL ADVISORY SYSTEM

To understand how the farm input sale representatives inform their advice and interactions with farmers, the role of the FISR within the wider agricultural advisory system was explored. Positioning the FISR within their wider network highlights who they interact with to gain knowledge to inform their advice and interactions. In the agricultural advisory system, five categories of advisors have been identified as farm input advisors, supply chain advisors, extension officers, agronomists and veterinary surgeons, and farm management consultants (Nettle et al., 2018; Eastwood et al., 2019). Actors from these rural professions have been described by Oreszczyn et al. (2010, pg. 408) as a farmer's "web of influencers on practice". FISRs, who give advice on farm inputs they sell are within the five categories of advisors and are part of farmers networks. As well as being part of the farmers' web of influence, FISRs rely on farmers and other advisors for information on a range of topics which shows that FISRs have their own web of influence within the agricultural advisory system. The FISR is aware that they are one of many actors providing advice to the farmer, they position themselves within the farmer's network to provide specialist advice showing that the FISR negotiates their place in an environment which has both competition and co-operation as described by Phillipson et al., 2016).

The role of the FISR is to advise the farmer on details of the products purchased by the farmer through the company and support the farmer with their daily on-farm input requirements. Both FISRs identified that their key performance indicators are based on the sales of products the company they work for provides. The FISR in the agriculture advisory system is an embedded advisor. Advisors, such as FISRS, who give advice on the products they sell are identified as linked and embedded advisors in the literature. Their advice can be perceived as complementary advice as there is no direct charge to the farmer (Laurent et al., 2022), and their role has been described as vital to farm innovation (Sutherland et al., 2021; Klerkx et al., 2017). Embedded advisors enable farm innovation as they play an important, trusted role in supporting farmers with their decision making (Eastwood et al., 2019; Sutherland et al., 2019; Stahlmann-Brown, 2023). FISRs show they are inter-connected to the agricultural field, and even more so the agricultural advisory system and agronomy advisory.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

In their embedded advisor role, the FISRs act as intermediaries between supplier companies and the farmer, while relying on their networks to obtain the knowledge required. This study has identified that FISRs work as intermediaries by connecting people, translating scientific information, and sharing practical knowledge. Skaalsveen et al., (2020), reflecting the role of the FISRs in this research, describes intermediaries as connectors who play a role in increasing knowledge flow and exchange. FISRs source information from their networks and pass it on to the farmer. As described by Case 1: “Farmers ask you, you ask someone else, and you find information that way”. To assist them in the different intermediary roles, the FISR uses their networks to source the information required, to gain understanding of farming management practices, or to connect the farmer to another actor who has the specific expertise sought by the farmer. FISRs are part of the rural professional network identified by Pinxterhuis et al. (2018), important intermediaries to share knowledge with farmers.

Case 1 gave examples of how they were able to introduce their farmers to the local animal health sales representative. In the example given, the company representative was able to directly help the farmer with their product requirements, and the FISR went on to talk about a separate example where the company representative was able to source further detailed and specific information from the company vet. This shows that in these interactions, the FISR was able to act as an intermediary by connecting people but also being part of sharing technical information with the farmer. As well as acting as an intermediary for the farmer, there is evidence that shows the FISR is an intermediary between actors within their networks. Case 2 gave examples of where a small group of FISRs from close regions would meet to share information between them, and Case 1 explained the interactions between their agronomy advice team, and the individual FISRs, showing the connections between actors enabled the sharing of both technical and practical information.

Through connections the FISR has with representatives from product supply companies they gain information and learn about the products they sell to farmers. Case 1 explains how they visit scientific trial sites run by their supplier companies, where they learn technical information about the products, information that they can then pass on to farmers. Case 2 also gave examples where they were able to gain technical information from their supplier company representatives, and the company’s research team, which the FISR was able to pass on to the farmer.

The FISRs network includes advisors from primary produce processing and marketing companies, such as meat marketing companies. Case 2 described how they would seek information on market trends from their local meat company representative, which they would use to inform farmers of the advice they gave to farmers. Farm advisors who are part of the supply chain are recognised as being in the five main categories of farmer advisors in the agricultural industry (Nettle et al., 2018; Eastwood et al., 2019). Some of these farmer advisors form part of the network of the FISRs, illustrating cooperation between advisors from different companies. The transfer of both technical and practical information between advisors who

work for different companies has been described through theories such as agricultural knowledge and innovation systems (AKIS) (Materia et al., 2015; King et al., 2019; Laurent et al., 2022).

The practical information shared by the FISR ranges from what chemical solutions would suit the farmers' situation, or what drilling depth is likely to have the greatest success rate. In these examples, the FISR acts as an intermediary between the chemical company and the farmer, and the local contactor and the farmer. The FISR works with both the chemical supply companies and the local contractors to gain information that is relevant to the farmer. The advice FISRs provide is based on the technical details of the products they sell, and how the farmer uses them in their farming practice. The advice provided is not limited to the technical aspects of the products but also covers how the product fits into the farming system.

FISRs are not directly paid by the farmer for their advice, and they do not compete with consultants who are advising the farmer on whole farm business management. However, there is an understanding of how the products the FISR sells and advises on are connected to the farm system. The product advice provided by the FISR is relevant to the farmer as the farmer seeks information on products from the FISR but also relies on the FISR to connect this product to farm system fit. The FISRs have the skills to talk to the farmer and talk about farming practices to connect the farmer with products suited to the farm system.

FISRs have no degree of authority over the farmer, whether that be in how the farmer buys their products, or in areas where audits are required. The FISR role is purely advisory on products, or other information sought by the farmer. Farmers have a choice of embedded advisor, and FISRs want to retain and grow their client base, which is often through word-of-mouth in response to their relevant advice, not on product bias or relying on hard-selling techniques. FISRs pride themselves in supporting the farmer, and the farming business, to succeed, and will therefore take care in ensuring the product they provide is relevant to the farmer.

The FISRs role within the agricultural advisory system is an embedded advisor who provides relevant information on the products they sell to farmers. While operating as an embedded advisor, the FISR introduces farmers to people or information to support farmers' on-farm decisions. FISRs are one of many advisors who are operating within the farmer's network, and they have interactions with some, but not all, of these advisors. In this study, the FISRs source their information from the networks they have developed that include actors who have different areas of expertise.

6.2 NETWORKS

FISRs increase their own knowledge and expertise to support their role and interactions with farmers through the networks that they are part of. The networks include individuals within their own company, and individuals who are external to the company such as farmers, supplier representatives, extension officers, agricultural contractors, and other rural professionals. The examples of interactions with external actors show there is cooperation across company boundaries. These interactions enable the FISR to access information and expertise the FISR otherwise would not be exposed to. FISRs networks did not include

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

representatives from competing companies, private commercial farm management consultants, bank managers, or private veterinarians. FISRs may interact with vets through the sales representatives who work for the companies who provide products to the company the FISRs work for, but there was no evidence of this in the research.

The external and internal actors the FISRs draw on can be compared to communities and networks of Practice (COP and NOP) as mentioned in research by (Gray et al., 2014; Wenger, 1998; Oreszczyn et al., 2010; Eastwood et al., 2012). The close relationship between the FISRs and their colleagues can be described as their COP, and the other internal actors and the external actors are part of the FISR's NOP. A COP is defined as a group of peers from the same profession learning together in an environment which enables tacit knowledge exchange to occur (Klerkx & Proctor, 2013). There are examples given of co-learning opportunities where the FISR learns practical information with other FISRs and their regional agronomist, such as visiting crops together at different stages of growth to follow the progress of the weed and disease spray programme. Gray et al. (2014) explains a COP by using an example of farm management consultants who work for the same company, which in the case of the FISR describes the close interactions between other FISRs and can also describe the FISR to agronomist relationship due to the practice-based co-learning that occurs through their interactions. Whether the regional agronomist sits within the FISRs COP or NOP depends on the closeness of the relationship between the two actors, the expertise of the two, and the learning that occurs between the two. Oreszczyn et al. (2010) explains that a NOP includes actors who work for external companies, have similar expertise, or can have influence on the professional's expertise. Regional agronomists, although internal to the FISR's company, are in a role where they can help inform the FISR which gives them influence on their expertise. However, due to the trust built between the two actors, and closeness of the relationship between the FISR and the regional agronomists described by the two cases, the agronomist in each of these FISRs networks would be more accurately described as being part of the community of practice. FISRs have a range of actors who work in roles that are not the same as the FISR but are in the same agricultural profession to the FISR, which can be described as the FISR's NOP. A network of practice has been used as a theory in the literature to explain the relationship between the actors who are in the same profession as an advisor but are outside of the company the rural professional works for, for example, farmers, farm system professionals, and rural professionals (Eastwood, et al., 2017; Eastwood et al., 2012; and Oreszczyn et al., 2010). These groups of actors as explained by the FISRs as people who were able to provide advice and information to the FISRs. These networks are similar but have differences depending on the advisor's own knowledge and expertise.

The FISRs built their networks from the time they began in the role, and these networks evolved as the FISR spent more time in the role. Case 1 explained that they started with a wide network that covered a range of information, but as they became more experienced in the role, they reduced this network to a few selected actors who were experts in the areas the FISR required. Case 1 asked subject matter experts for support in areas outside of their current knowledge and would call them to confirm or back up the information they could find themselves. This support was both face-to-face and remote through phone

calls. As they spent more time in the role, they built a supportive network that remains in place now. Case 2 was able to build relationships with key internal and external people in the company while they were in their role prior to becoming a FISR, likewise they had an understanding of the key information areas relevant to the role prior to being in the role. Once in the role, they relied on other FISRs within the company, two in the same region to them, and one outside of their region, they also used their local agronomist for information on agronomy products and farm system practices.

6.3 INTERACTIONS WITHIN THE FISRS NETWORK

FISRs draw from centralised, distributed, and decentralised networks to inform their interactions with farmers. To update their technical (centralised) knowledge on products they supply to farmers they connected with topic specialists both within their own company and from the company marketing the products.

The FISRs gave multiple examples of interactions with actors in distributed networks used to increase their knowledge. In the case of the FISRs these distributed interactions were between their regional agronomist, branch staff, their line manager, external sales representatives and rural professionals, all of whom are professionals operating in the same networks but have separate roles. Farmers, although not rural professionals, were part of the FISRs network.

FISRs used decentralised networks to gain information on areas not familiar to them. Case 1 gave examples of interactions with the Ministry of Primary Industries (MPI) to source information about rules and regulations. They explain that they are not required to understand every rule for their role as a FISR, but they needed to understand what the rules are trying to achieve and how those regulations may influence farmer's decisions. Case 2 also described interactions with rural advisors from their regional council, and advisors from industry good organisations as a source of information on topics outside of their current knowledge. They would attend community meetings that were held by these organisations and talk to the advisors directly if they required information.

FISRs have decentralised, centralised and distributed networks. However, distributed networks are the most common.

The FISRs built their networks through interactions to gain information that is sought by farmers. Studies drawing on social capital theory argue that an advisor's productivity is associated to their connections, and the relationships are grouped into three main categories: bonding, bridging, and linking social capital (Gray et al., 2014; Collins et al., 2018; Compagnone & Hellec, 2015). The FISRs Studies used a combination of bonding, bridging, and linking social capital in their support networks, similar to what has been reported about farmers (Cofre-Bravo et al., 2019).

The interviews gave examples of the strong ties they have with their close FISR network. These strong relationships are with other FISRs who work in the same region and work with similar farm systems, which

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

often means they are advising on the same crop types. These actors have a close relationship, they meet often and as a source of support when things are tough. Both Case 1 and Case 2 explained that they would call on their close FISR friends after having a difficult day, and those FISRs would call them if they were also in need of emotional support. Farmers with who they had a close relationship were also identified by both FISRs as people who they called on after a tough day. Case 1 gave examples of calling into have a laugh and drink with farmer clients who had over time become a friend. Case 2 gave examples where they would call in and visit a farmer they had become friends with through their interactions, as they felt they were appreciated there and that made them feel better. The literature describes bonding social capital theory as close relationships between actors with similar backgrounds, and where there is a strong level of trust and mutual connection (Fisher, 2013; Gray et al., 2014; King et al., 2014). Compagnone, & Hellec (2015) used linking social capital to describe the nature of the relationship between farmers and advisors as the advisor enables the farmer to access information, they are not able to gain through their close network. Although the FISR provides the farmer information potentially sourced from outside of the farmers network, the examples given by the FISR on the close trusted relationships between them and their farmer friends highlight that for the FISRs some farmers are also part of their bonding networks.

The interactions between the FISR and their supplier company representatives, or the farmer groups they work with, can be explained through bridging social capital theory. Bridging social capital explains the connection between two separate tightly bonded networks, which enables knowledge sharing between these networks (Fisher, 2013; Gray et al., 2014). This study did not explore the social interactions of farmers or the other advisors in the FISRs network, so no comment can be made on the closeness of the farmer and supplier company representative's networks. Both cases gave examples where they shared information with other actors in their network.

In the case of the FISR, linked social capital can be explained by the relationship between the FISR and actors who work for industry good organisations, market supply companies, regional councils and government bodies. Linking social capital describes the relationships between actors within a hierarchy, which enables the actor to increase their knowledge outside of their current expertise, such as what occurs in decentralised networks (Fisher, 2013; Gray et al., 2014).

The examples given by Case 1 and Case 2 show these FISRs inform their advice through interactions in their networks that reflect their own social capital. The closeness of these networks can be described using community of practice and network of practice theory which include social interactions described through centralised, distributed, and decentralised network theory.

6.4 LEARNING AND KNOWLEDGE

The FISRs interviewed identified that they use technical and practical knowledge to inform their advice, which is gained through their interactions and through formal, informal, and non-formal learning.

6.4.1 Learning methods

Case 1 and Case 2 have different experiences when it comes to methods of learning. Case 1 has formal education at university level where they gained a Bachelor of Science in an agricultural related area. Formal education is defined by Landini (2022) as education that is intentional, and where the attendee receives certification, for example an academic degree. The academic degree gained by Case 1 led them into a role where they conducted research and development in the animal health sector. The knowledge that was gained through their research on the products they now sell in their FISR role is used in the conversations they have with farmers. As well as the formal education, Case 1 and Case 2 both highlighted the value of their informal learning gained (Šūmane et al., 2018). The third learning method described in the literature is non-formal, which is planned learning where no certification or qualification is gained (Landini, 2022). Case 1 had gained formal presentation training provided by an external company. This was structured learning, which was part of a programme implemented by the company; however, no formal certification or qualification was awarded. Both FISRs have experience of learning through their experiences while in the role.

Both FISRs learned through their interactions within their community and network of practice. The actors within their networks provided knowledge and expertise that the FISR would not be exposed to without their connections. Both FISRs draw from a range of networks regardless of their education and as is argued in the literature gain value in the in their roles from a combination of formal, non-formal and informal methods to the actors learning (Šūmane et al., 2018); Landini, 2022).

6.4.2 Knowledge types

The FISRs used a combination of know-what, know-why, know-how, and know-who knowledge relationships. Technical knowledge on the products they sell, such as a crop type, is know-what, the reason that product will act as needed on the crop is an example of know-why knowledge. The practical knowledge of how to apply the chemical to the crop is know-how knowledge and knowing who can provide the technical and practical knowledge relevant to the previous stated types of knowledge is know-who knowledge. Literature identified explicit knowledge as that which can be categorised and shared through know-what and know-why knowledge relationships (Gray et al., 2014; Klerkx & Proctor, 2013), tacit knowledge is practical skills that are gained through experiences and shared through know-how knowledge relationships, (Ingram, 2008; Gray et al., 2014; Klerkx & Proctor, 2013; Oreszczyn et al., 2010), and the knowledge of social networks to access knowledge as an advisor is know-who knowledge (Sutherland et al., 2017). The knowledge required for the FISR role is a blend of explicit, and tacit knowledge, which this study provides has been identified in studies as a requirement for advisors to support farmers (Klerkx and Procter, 2013).

6.4.3 Essential skills and training

There are a range of skills that were identified by both FISRs as important factors which helped them inform their advice and interactions with farmers. Farm system knowledge was identified by both FISRs interviewed as a required knowledge area for the FISR role. Case 1 explained how the practical knowledge they gained by working on farm as foundational knowledge in which they rely on to support their farmers. Case 1 also identified the need to understand personality types and how to interact with different people, public speaking, and identifying body language as important skills. Case 2 said that knowing how crops and plants grow was an important area of expertise, as well as knowing who to source information from, and having experience with using the products they sell. These are in line with the interaction and interpersonal skills, advisory technique, and subject matter expertise which has been identified as the major skills an advisor requires in previous research (Klerkx & Procter 2013; Gray et al., 2014), to inform the advice and interactions with farmers.

Advice provided by the FISRs will change depending on climate, farming practice, a change in on farm production required. Both Case 1 and 2 gave examples where they required an understanding of crop types and how they are suited to the local environment and farm production. Case 1 gave an example where they gained farm system change knowledge from farmers. This included a change from using a brassica crop over summer then they planted a permanent ryegrass-based pasture once the stock had consumed the crop to a system that used a high producing herb, such as chicory, instead of the brassica, and the permanent pasture is changed to a shorter lived but higher producing ryegrass species. Case 2 gave an example where farm system changes meant that farmers were no longer planting winter brassica crops in response of regulations. This shows that both FISRs develop their own knowledge in response to climate and market fluctuations, and regulation changes as identified as a required skill for agriculture advisers (Nettle et al., 2018), as well as give advice on methods to increase profitability and production identified by Eastwood et al. (2019) as a skill required by advisors.

The FISRs in this study give examples where they are involved in constant non-formal learning. They do this through meeting with experts in their field and are co-learning with farmers. The constant learning keeps the FISRs informed on new products, market fluctuations, and how weather patterns are influencing crop management for farmers. Both cases receive non-formal training on products from the internal regional agronomist, their FISR peers, and the external product supply company representatives.

Both cases gave examples of little support or on the job training when they began in the role. Although Case 1 indicated that this has been an increase in the support and training for new starters, it is important that there is a focus on this as it has been pointed out in research that advisors require adequate training and continued support (Klerkx & Jansen, 2010).

Personal skills are a vital part of the role, the training in this area has not come though as a strong training focus from the results. This may be due to the lack of training from the company in this area or is it an assumed part of the personality that is hired into the role. Case 1 gave examples where they had a body

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

language specialist with them for a day while they had conversations with their farmers. The FISR found this confronting, but useful to highlight areas where their communication and body language could be adjusted to improve their interpersonal skills. Although interpersonal skills may be the most difficult to learn, they are seen as the most important as they enable the advisor to develop their networks (Gray et al., 2015). Case 1 explained that by having training in personal skills, they were able to make their conversations with farmers more relaxed and interactive.

7 CONCLUSIONS

This research confirms the importance of networks to an advisor. It has been established through this study that embedded advisors, such as FISRs, draw from their networks to gain knowledge that informs their advice and interactions with farmers. The role of the FISR is providing product advice to the farmer, who are also a source of knowledge and part of the FISRs network. Networks of the embedded advisor include actors who are internal and external to the company who employs the advisor. Embedded advisors in this case, are not networking within the entire web of influence, they do not seek advice from competing companies, nor from some of the other actors who are part of the farmer's network.

Internal actors are other FISRs, regional agronomists, line managers and branch-based staff. Other FISRs were described as a tight crew, who had similar regions, farming systems, and crop types to advice on that the FISRs would use to confirm information and were a source of emotional support. FISRs would seek information on farm systems and specialised crop knowledge from the regional agronomist, as well as have co-learning opportunities. Branch based staff would support the FISRs with day-to-day operational requirements.

External actors are farmers who provide local practical product use knowledge; supplier representatives who provide products specific information; local agricultural crop and spray contractors who provide knowledge on local product implementation; market supply representative who provides wider market and agricultural updated knowledge; and actors who work for industry good organisations who provide information on farm management and regulation changes.

FISRs will go to different actors within their networks because they give accurate and reliable technical information on products and product use, for reliable information on the practical use in the field of these products, to gain up to date knowledge and information on current situation and trends relevant to farming and farmers in their region, and because they trust and know they can use them as a sounding board on the advice and interactions with farmers, as well as emotional support.

FISR networks vary over the embedded advisor's career. Networks are broad when they begin in the role, and as they become more experienced, these networks are tightened as the FISR finds the actors in their networks who have the expertise sought. The experience of each FISR and the knowledge they seek will determine the actors who the FISR goes to for information. With experience, embedded advisors will continue to use their networks for confirmation of information or if they require new knowledge. The advice given is defined by the field they work in, which covers information on animal health, chemical, and seed. Their advice does not cover financial or broader farm business management advice; however, they do have an understanding of how the products they sell and advise on fit the wider farm business. The FISR role, as has been reported about other agricultural advisors, includes the role of an intermediary translating technical information for farmers, and connecting farmers with subject matter experts. This is reflected in the networks in which the FISRs operate.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

There are areas of commonality and differences between the two cases. The data shows the commonalities are the company which they work for, the farming systems to which they provide product knowledge, the networks available to them, how they have built their networks and how these have changed over time, the companies who employ the actors within their networks, the focus on farmer success and providing the right product. The differences are the background and education of the two FISRs, the time they have spent in the role, they operate in different regions, and have different actors within their networks.

The focus on relevant advice rather than sale target Key performance indicators by the FISR challenges the view in literature that implies embedded advisors have sales bias. KPIs are based on product sales, which may lead to the perception of bias towards sale results over relevant advice, however the data in this study shows the FISRs are focused on providing relevant advice to farmers irrespective of their sales expectations. Embedded advisors have a much wider role to play than just simply selling the product.

FISRs are constantly learning within their networks where they gain technical and practical information through nonformal and informal learning. The FISRs in the study use their own education and/or experience to gain knowledge, as well as become part of networks where knowledge exchange occurs. FISRs receive training and opportunities to share knowledge on the practical and technical aspects of the role, however there is little mention of the development of interaction skills. Interaction skills have been highlighted as an important skill for an advisor. There is opportunity for the company to focus more on training social interaction skills, to further to provide FISRs with valuable skills to further support the success of not only farmers, but the agricultural sector.

The methodology used in the research has enabled an enriched perspective and in-depth understanding of the relationships, networks, and the information gathering processes in which the FISRs operate. This study has focused on the networks of embedded advisors, and the knowledge they gain from their networks, and the interactions that occur in these networks to show how farm input sale representatives inform their advice and interactions with farmers.

7.1 AREAS OF FUTURE RESEARCH

This study provides some rich insights to how the FISRs operate and has identified some areas that would benefit from further exploration.

The interactions of two FISRs were the focus of this study, which although gave an understanding of the networks which they use to inform their interactions and advice with farmers, did not study these interactions from FISRs nationwide. Further studies from regions across the country could be undertaken to gather further detail on nationwide embedded advisor networks.

FISRs gain knowledge through the actors in their networks, there was little focus on how this information was validated. Areas of future research could explore methods of information validation, and if this occurs through embedded advisor networks.

Supplier representatives from external companies were identified as playing a significant role in informing a FISRs advice and interactions with farmers. Future research could examine the interactions and knowledge exchange within the supplier representative networks and what influences them to interact with FISRs.

FISRs are constantly learning through their networks and experiences, with little evidence of company run training programmes. Future research could explore the training schemes available to embedded advisors.

There could be further exploration into the situation when farmers seek information for their embedded advisors, compared to a paid consultant or other actors in their network. This could include what makes the farmer choose which company they get their farm supply inputs from, and whether the embedded advisor who works for that company has any influence on the farmer's decision.

Part of the literature review identified that embedded advisors support on-farm innovation. This study identified embedded advisors as part of the farmer's network, however the extent of influence of the advice given to the farmer was not explored. Future research could explore how the advice FISRs provide to the farmer supports on-farm innovation.

7.2 PRACTICAL IMPLICATIONS

FISRs provide advice on products supplied to the farm, which reinforces the need for input supply companies to focus on building advisory capability rather than focus on only sales based KPIs. The assumption is that by building strong advisory capabilities, the sales will come. FISRs have understanding on how the products they sell suit the farmer, which gives importance for a farm input company to employ advisors who understand farming systems.

FISRs received limited support and training when they began in the role. This highlights the need for training and support for advisors when they begin embedded roles. There was little mention on building interaction skills, therefore the focus on training in interaction skills can be increased.

Networks are a vital factor in how a FISR informs their advice and interactions with farmers. It is therefore important for actors in these roles to be given time by the companies they work for to attend networking events, as well as informal events to foster and build their networks, capabilities, and expertise.

8 REFERENCES

- Agerberg, M., van den Hooff, B., Huysman, M., & Soekijad, M. (2010). Keeping the Wheels Turning: The Dynamics of Managing Networks of Practice. *Journal of Management Studies*, 47(1), 85-108. doi:doi: 10.1111/j.1467-6486.2009.00867.x
- Botha, N., Coutts, J., & Roth, H. (2008). The Role of Agricultural Consultants in New Zealand in Environmental Extension. *Journal of Agricultural Education and Extension*, 14(2), 125-138. doi:10.1080/13892240802019147
- Cerf, M., Guillot, M.N., & Olry, P. (2011). Acting as a Change Agent in Supporting Sustainable Agriculture: How to Cope with New Professional Situations? *The Journal of Agricultural Education and Extension*, 17(1), 7-19. doi:<http://dx.doi.org/10.1080/1389224X.2011.536340>
- Chopin, P., Mubaya, C.P., Descheemaeker, K., Öborn, I., & Bergkvist, G. (2021). Avenues for improving farming sustainability assessment with upgraded tools, sustainability framing and indicators. A review. *Agronomy for Sustainable Development*, 41, 19. doi:<https://doi.org/10.1007/s13593-021-00674-3>
- Cofré-Bravo, G., Klerkx, L., & Engler, A. (2019). Combinations of bonding, bridging, and linking social capital for farm innovation: How farmers configure different support networks. *Journal of Rural Studies*, 69, 53-64. doi:Journal of Rural Studies
- Collins, H. M., Gray, D.I., Reid, J.I., Shadbolt, N.M., & Dooley, A.D. (2018). Accessing and building social capital: How a farmer-led initiative influenced environmental policy implementation. *Rural Extension & Innovation Systems Journal*, 14(1), 73-82. doi:doi/epdf/10.3316/informit.563491074825947
- Compagnone, C., & Hellec, F. (2015). Farmers' Professional Dialogue Networks and Dynamics of Change: The Case of ICP and No-Tillage Adoption in Burgundy (France). *Rural Sociology*, 80(2), 248-273. doi:10.1111/ruso.12058
- Compagnone, C. Simon., B. (2018). Cooperation and competition among agricultural advisory service providers. The case of pesticides use. *Journal of Rural Studies*, 59, 10-20. doi:<https://doi.org/10.1016/j.jrurstud.2018.01.006>
- Duncan, R., Kirik, N., Booth, P., Robson-Williams, M. (2021). *Primary producers' perspectives on New Zealand's primary industries advisory services system*. MPI technical paper no:2021/01.2021
- Duncan, R., Robson-Williams, M., & Edwards, S. (2020). A close examination of the role and needed expertise of brokers in bridging and building science policy boundaries in environmental decision making. *Palgrave Commun*, 6(64). doi:<https://doi.org/10.1057/s41599-020-0448-x>
- Eastwood, C. R., Ayre, M., Nettel, R., & Dela Rue, B. (2019). Making sense in the cloud: Farm advisory services in a smart farming future. *NJAS: Wageningen Journal of Life Sciences*, 91(1), 1-10. doi:DOI: 10.1016/j.njas.2019.04.004
- Eastwood, C. R., Champan, D.F., & Paine, M.S. (2012). Networks of practice for co-construction of agricultural decision support systems: Case studies of precision dairy farms in Australia. *Agrivultural Systems*, 108, 10-18. doi:doi:10.1016/j.agsy.2011.12.005
- Eastwood, C. R., Dela Rue, B.T., Gray, D.I. (2017). Using a 'network of practice' approach to match grazing decision-support system design with farmer practice. *Animal Production Science*, 57, 1536-1542. doi:<http://dx.doi.org/10.1071/AN16465>
- Fazey, I., Evely, A. C., Reed, M. S., Stringer, L. C., Kruijssen, J., White, P. C., Newsham, A., Jin, L., Cortazzi, M., Phillipson, J., Blackstock, K., Entwistle, N., Sheate, W., Armstrong, F., Blackmore, C., fazey, J, Ingram, J., Gregson, J., Lowe, P., Morton, S., & Trevitt, C. (2012). Knowledge exchange: a review and research agenda for environmental management. *Environmental Conservation*. 40(1), 19-36. doi:doi:10.1017/S037689291200029X
- Fisher, R. (2013). 'A gentleman's handshake': The role of social capital and trust in transforming information into usable knowledge. *Journal of Rural Studies*, 13, 13-22. doi:<http://dx.doi.org/10.1016/j.jrurstud.2013.02.006>
- Gray, D. I., Kemp, E, Reid, J.I., Westbrooke, V. (2014). How dairy consultants help farmers design improved farming systems? *Centre of Excellence in Farm Business Management*, 1-145.
- Grelet, G., Lang, S., Merfield, C., Calhoun, N., Robson-Williams, M., Horrocks, A., ... & Kerner, W. (2021). *Regenerative agriculture in Aotearoa New Zealand- research pathways to build science-based evidence and national narratives*.
- Ingram, J. (2008). Are farmers in England equipped to meet the knowledge challenge of Sustainable soil management? An Analysis of farmer and advisor views. *The Journal of Environmental Management*(86), 214-228.
- Ingram, J. (2015). Framing niche-regime linkage as adaptation: An analysis of learning and innovation networks for sustainable agriculture across Europe. *Journal of Rural Studies*, 40, 59-75. doi:<http://dx.doi.org/10.1016/j.jrurstud.2015.06.003>
- Ingram, J., Maye, D., Bailye, C., Barnes, A., Bear, C., Bell, M., Cutress, D., Davies, L., de Boon, A., Dinnie, L., Gairdner, J., Hafferty, C., Holloway, L., Kindred, D., Kirby, D., Leake, B., Manning, L., Marchant, B., Morse, A., Oxley, s., Phillips, M., Regan, A., Rial-Lovera, K., Rose, D. C., Schillings, J., Williams, F., Williams, H., & Wilson, L.

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

- (2022). What are the priority research questions for digital agriculture? *Land Use Policy*, 114, 1-13. doi:<https://doi.org/10.1016/j.landusepol.2021.105962>
- King, B., Fielke, S., Bayne, K., Klerkx, L., & Nettle, R. (2019). Navigating shades of social capital and trust to leverage opportunities for rural innovation. *Journal of Rural Studies*, 68, 123-134. doi:<https://doi.org/10.1016/j.jrurstud.2019.02.003>
- Kirk, N., Duncan, R., Booth, P., Robson-Williams, M. . (2022). Shifting knowledge practices for sustainable land use: Insights from producers of Aotearoa New Zealand. *Frontiers in Agronomy*, 4, 1-18.
- Klerkx, L., & Leeuwis, C. (2008). Matching demand and supply in the agricultural knowledge infrastructure: Experiences with innovation intermediaries. *Food policy*, 33, 260-276
- Klerkx, L., & Proctor, A. (2013). Beyond fragmentation and disconnect: Networks for knowledge exchange in the English land management advisory system. *Land Use Policy*, 30(1), 13-24. doi:doi:10.1016/j.landusepol.2012.02.003
- Klerkx, L., Petter Stræte, E., Kvam, G. T., Ystad, E., & Butli Hårstad, R. M. . (2017). Achieving best-fit configurations through advisory subsystems in AKIS: case studies of advisory service provisioning for diverse types of farmers in Norway. *The Journal of Agricultural Education and Extension*, 23(3), 213-229. doi:<https://doi.org/10.1080/1389224X.2017.1320640>
- Klerkx, L. & Jansen, J. (2010). Building knowledge systems for sustainable agriculture: supporting private advisors to adequately address sustainable farm management in regular service contacts,. *International Journal of Agricultural Sustainability*, 8(3), 148-163. doi:10.3763/ijas.2009.0457
- Labarthe, P., Sutherland, L. A., Laurent, C., Nguyen, G., Tisenkopfs, T., Triboulet, P., Bechtet, N., Bulten, E., Elzen, B., Maduriea, L., Noble, C., Prazan, J., Townsend, L., Zarokosta, E., Prager, K., & Redman, M. (2022). Who are Advisory Services Leaving Out? A Critical Reflection on 'Hard to Reach' Farmers. *EuroChoices*, 21(1), 50-55. doi:DOI: 10.1111/1746-692X.12347
- Landini, F. (2021). How do rural extension agents learn? Argentine practitioners' sources of learning and knowledge. *The Journal of Agricultural Education and Extension*, 27(1), 35-54. doi:<https://doi.org/10.1080/1389224X.2020.1780140>
- Laurent, C., Nguyenb, G., Tribouletc, P., Ansalonic, M., Bechtetc, N., & Labarthe, P. . (2022). Institutional continuity and hidden changes in farm advisory services provision: evidence from farmers' microAKIS observations in France. *The Journal of Agricultural Education and Extension*, 28(5), 601-654. doi:<https://doi.org/10.1080/1389224X.2021.2008996>
- Lowe, P., Phillipson, J., Proctor, A., & Gkartzios, M. (2019). Expertise in rural development: A conceptual and empirical analysis. *World Development*, 116, 28-37. doi:<https://doi.org/10.1016/j.worlddev.2018.12.005>
- Materia, V. C., Giarè, F., & Klerkx, L. . (2015). Increasing Knowledge Flows between the Agricultural Research and Advisory System in Italy: Combining Virtual and Non-virtual Interaction in Communities of Practice. *The Journal of Agricultural Education and Extension*, 21(3), 203-218. doi:DOI: 10.1080/1389224X.2014.928226
- Moschitz, H., Roep, D., Brunori, G., & Tisenkopfs, T. . (2015). Learning and Innovation Networks for Sustainable Agriculture: Processes of Co-evolution, Joint Reflection and Facilitation. *The Journal of Agricultural Education and Extension*, 21(1), 1-11. doi:<https://doi.org/10.1080/1389224X.2014.991111>
- Nettle, R., Crawford, A., & Brightling, P. . (2018). How private-sector farm advisors change their practices: An Australian case study. *Journal of Rural Studies*, 58(1), 20-27. doi:<https://doi.org/10.1016/j.jrurstud.2017.12.027>
- Nortron, G. W., & Alwang, J. . (2020). Changes in Agricultural Extension and Implications for Farmer Adoption of New Practices. *Applied Economic Perspectives and Policy*, 42(1), 8-20. doi:doi:10.1002/aapp.13008
- Oreszczyn, S., Lane, A., & Carr, S. . (2010). The role of networks of practice and webs of influencers on farmers' engagement with and learning about agricultural innovations. *Journal of Rural Studies*, 26, 404-417. doi:doi:10.1016/j.jrurstud.2010.03.003
- Otter.ai. (2025). The #1 AI Meeting assistant. <https://otter.ai/>
- Phillipson, J., Proctor, A., Emery, S. B., & Lowe, P. . (2016). Performing inter-professional expertise in rural advisory networks. *Land Use Policy*, 54, 321-330. doi:<http://dx.doi.org/10.1016/j.landusepol.2016.02.018>
- Pinxterhuis, I., Dirks, S., Bewsell, D., Edwards, P., Brazendale, R., & Turner, J. A. (2018). Co-innovation to improve profit and environmental performance of dairy farm systems in New Zealand. *Rural Extension & Innovation Systems Journal*, 14(2), 23-33.
- Prager, K., Creaney, R., & Lorenzo-Arribas, A. (2017). Criteria for a system level evaluation of farm advisory services. *Land Use Policy*, 61, 86-98. doi:<http://dx.doi.org/10.1016/j.landusepol.2016.11.003>
- Putnam, D. (1994) Social Capital and Public Affairs. *Bulletin of the American Academy of Arts and Sciences*. 47(8) 5-19. <https://doi.org/10.2307/3824796>•<https://www.jstor.org/stable/3824796>
- Rijswijk K., Klerkx, L., & Turner, J. A. (2019). Digitalisation in the New Zealand Agricultural Knowledge and Innovation System: Initial understandings and emerging organisational responses to digital agriculture. *NJAS: Wageningen Journal of Life Sciences*, 90-91, 100313. doi:<https://doi.org/10.1016/j.njas.2019.100313>
- Skaalsveen, K., Ingram, J., & Urquhart, J. (2020). The role of farmers' social networks in the implementation of no-till farming practices. *Agricultural Systems*, 181, 102824. doi:<https://doi.org/10.1016/j.agsy.2020.102824>

How Farm Input Sales Representatives Inform their Advice and Interactions with Farmers

- Šūmane, S., Kunda, I., Knickel, K., Strauss, A., Tisenkopfs, T., des los Rios, I., Rivera, M., Cheback, T., & Ashkenazy, A. (2018). Local and farmers' knowledge matters! How integrating informal and formal knowledge enhances sustainable and resilient agriculture. *Journal of Rural Studies*, 59, 232-241. doi:<http://dx.doi.org/10.1016/j.jrurstud.2017.01.020>
- Sutherland, L., & Labarthe, P. (2022). Introducing 'microAKIS': a farmer-centric approach to understanding the contribution of advice to agricultural innovation. *The Journal of Agricultural Education and Extension*, 28(5), 525-547. doi:<https://doi.org/10.1080/1389224X.2022.2121903>
- Sutherland, L. A., Madureira, L., Dirimanova, V., Bogusz, M., Kania, J., Vinohradnik, K., Creaney, R., Duckett, D., Koehnen, T., & Knierim, A. (2017). New knowledge networks of small-scale farmers in Europe's periphery. *Land Use Policy*, 63, 428-439. doi:<http://dx.doi.org/10.1016/j.landusepol.2017.01.028>
- Thomas, E., Riley, M., & Spees, J. (2020). Knowledge flows: Farmers' social relations and knowledge sharing practices in 'Catchment Sensitive Farming'. *Land Use Policy*, 90, 104254. doi:<https://doi.org/10.1016/j.landusepol.2019.104254>
- Turner, J., Stevens, D., Rijswijk, K. (2014). Revitalising the role of rural professionals in primary sector innovation. *Primary Industry Management*, 18(1), 21-24.
- Wenger, E. (2000). Communities of practice and social learning systems. *Organization*, 7(2), 225-246.

9 APPENDICES

9.1 APPENDIX 1- INFORMATION SHEET



MASSEY UNIVERSITY
 COLLEGE OF SCIENCES
 TE WĀHANGA PŪTAIAO

How [REDACTED] inform their advice and interactions with farmers.

INFORMATION SHEET

Researcher Introduction

I'm Laura Simpson, a Master of Science – Agricultural Science student at Massey University in the School of Agriculture and Environment. I study part-time and am employed full-time by [REDACTED]. The purpose of this project is to explore how [REDACTED] gather information to build their technical knowledge and support their farmer interactions.

Project Description and Invitation

Rural professionals, such as [REDACTED], are part of the networks that farmers use to keep them informed on the latest policy, products, and markets. Due to this [REDACTED] need to be aware of industry changes to ensure their advice given to their farmer clients is timely and accurate. Research in rural advisory services has largely been focused on the networks of practice of paid consultants, industry extension officers, and other advisors that have been directly paid for by the farmer. Rural supply companies, and the on farm [REDACTED] that work for these companies, have been identified as part of farmer support networks. However, there is little known about the way these field officers gather their knowledge and expertise, and how they use this information to influence the interactions with the farmers they support.

The aim of this research is to develop an understanding of how people in the [REDACTED] role build their knowledge, and how they translate this knowledge into advice to their farmer client base.

Participant Identification and Recruitment

Data collection for this research is by using semi-structured interviews with [REDACTED] who have been working for the company for longer than 5 years. There is potential that additional interviews may be required from advisors or people identified as support networks by the original participant. As someone who has been in a [REDACTED] role for less than 5 years, I would like to invite you to be part of this research.

Project Procedures

If you agree to participate in this research, an interview with me is involved. This interview should take no longer than one and a half hours. There is a potential that there may be a follow up interview if there are some points that require further input from you. The location can occur at a location of mutual agreement, and I am happy to travel to you.

Data Management

The interview will be recorded and transcribed, and the information gathered will be used to inform my research. You will not be identified in any published material, any direct quotes used in the report will be attributed to your professional position i.e., rural professional, and you will have the opportunity to review any quotes for accuracy.

The audio recording and the transcription of the interviews will be stored on a secure device only accessible by the researchers. Once the masters thesis has been submitted and finalised, the data will be destroyed.

Participant's Rights

You are under no obligation to accept this invitation. If you decide to participate, you have the right to:

- decline to answer any particular question;
- withdraw from the study at any time;
- ask any questions about the study at any time during participation;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.
- ask for the recorder to be turned off at any time during the interview

Project Contacts

If you have any further questions, please do not hesitate to contact either myself or one of my supervisors.

Researcher

Laura Simpson [Laura.simpson@\[REDACTED\]](mailto:Laura.simpson@[REDACTED]) or 0212228845

Supervisors

Janet Reid J.I.Reid@massey.ac.nz 021569393
Lucy Burkitt L.Burkitt@massey.ac.nz (06) 356 9099 extn 86207
David Gray D.I.Gray@massey.ac.nz

Nature of this Research

Ethics Committee Approval Statement

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 4000027794 If you have any concerns about the conduct of this research, please contact Dr Gerald Harrison, Chair, Massey University Human Ethics Committee: Southern B, telephone 06 356 9099 x 83570, email humanethicsouthb@massey.ac.nz

This project has been evaluated by peer review and judged to be low risk. Consequently, it has not been reviewed by one of the University's Human Ethics Committees. The researcher(s) named above are responsible for the ethical conduct of this research.

If you have any concerns about the conduct of this research that you wish to raise with someone other than the researcher(s), please contact Prof Craig Johnson, Director, Research Ethics, telephone 06 356 9099 x 85271, email humanethics@massey.ac.nz

9.2 APPENDIX 2 – PARTICIPANT CONSENT FORM – INDIVIDUAL



MASSEY UNIVERSITY
COLLEGE OF SCIENCES
TE WĀHANGA PŪTAIAO

How [REDACTED] *inform their advice and interactions with farmers.*

PARTICIPANT CONSENT FORM - INDIVIDUAL

I have read, or have had read to me in my first language, and I understand the Information Sheet attached as Appendix I. I have had the details of the study explained to me, any questions I had have been answered to my satisfaction, and I understand that I may ask further questions at any time. I have been given sufficient time to consider whether to participate in this study and I understand participation is voluntary and that I may withdraw from the study at any time.

1. I agree/do not agree to the interview being sound recorded.
2. I wish/do not wish to have my recordings returned to me.
3. I wish/do not wish to have data placed in an official archive.
4. I agree to participate in this study under the conditions set out in the Information Sheet.

Declaration by Participant:

I _____ hereby consent to take part in this study.

Signature: _____

Date: _____

9.3 APPENDIX 3 – INTERVIEW GUIDELINES

- Encourage the interviewee to talk about the role they do describe the daily/weekly actions
 - Expand to the network they work within
 - How they see their role in the farming industry
- What type of farming enterprises do you work with – dairy / sheep beef etc – corporate and/or Māori land governors
 - Potential changes in methods of interactions depending on enterprise
 - Person who is worked with from these businesses – i.e. owner/farm manager/ sharemilker etc
 - Is the farmer part of community discussion groups? Is the rep aware of other external knowledge inputs
- What are the drivers of the people in [REDACTED] roles?
 - KPIs and goals, does the company need to change KPIs to create change?
 - The type of advice given, and is this driven by KPIs or farmer need
- How the client base is expanded – word of mouth or is this driven by the rep i.e. cold calling
- How do reps identify knowledge they need
 - Types of knowledge reps need to do their job
- Knowledge gathering to support the farmers they work with
 - The Activities engaged in to gather knowledge – industry workshops? Reading? Training days?
 - What type of information the farmers they work with ask from you – what role do they take in advising the farm business
- What type of training do they have
 - Technical knowledge (i.e. chemical)
 - People skills and how to work with farmers
 - Background education and experience
- Information sources
 - Resources: i.e. internet, manuals, etc.
 - “Where do you get information on new products?”
 - Where and how are they updated on challenges facing farmers
 - Areas of difficulty in finding information
- What networks and domains of knowledge
 - And networks around those domains
 - Describe the interactions that you have with the people within your network
 - “Are there different people you go to for different types of information”
 - The locations of the people within the networks
- The people who they support in terms of knowledge and information (other reps?)
 - Why do you think they come to you
- Verification of knowledge, how do you check that the information you have given is correct
 - What are your successes? And how do you know when you’ve succeeded?
 - Expand on the good points of the role
- Are you doing things differently due to the current changes of regulations?
 - How farmers are responding to new regulations