

1 **Understanding the drivers and motivations of farm diversification:**

2 **Evidence from Northern Ireland using a mixed methods approach**

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8 **Abstract**

9 Farmers are increasingly required to become more productive and innovative to ensure effective
10 management of farm resources and to improve their livelihoods. Farm diversification has been
11 identified as a viable strategy that can be adopted by farm businesses to achieve these objectives
12 in order to reduce their reliance on agricultural production as the main source of household
13 income. In this study, we employ a mixed methods approach to analyse the factors influencing
14 farm diversification and diversification strategies in Northern Ireland. The challenges of setting
15 up a farm diversification enterprise were also explored. Data collection and analysis were
16 undertaken by combining both quantitative and qualitative approaches in a two-stage process
17 using primary data obtained from a survey of farm businesses and interviews with key
18 stakeholders involved in the Northern Ireland agricultural sector. The study results show that the
19 primary motivating factor in pursuing farm-level diversification is the need to generate additional
20 income. The analysis has shown that farm level diversification has the capacity to contribute to
21 both the sustainability of family farms and the wider rural economy. The study results support
22 the need for governments to explore the development of policy measures to support
23 diversification at farm level.

24 **Keywords:** Farm diversification; Entrepreneurship; Mixed methods; Northern Ireland

25 **1.0 Introduction**

26 Farm diversification has been shown to be a viable strategy for farm businesses to pursue
27 in order to reduce their reliance on agricultural production as the only source of household
28 income (McNamara and Weiss, 2005; Lange et al., 2013). Farm businesses, by their very
29 nature, have access to a range of resources, such as, land, buildings, capital and labour which

1 can provide opportunities for establishing a farm diversification enterprise (Alsos et al., 2003;
2 Mc Fadden and Gorman, 2016). Added to this, diversification can provide, in the face of
3 changing political, economic and environmental conditions, an opportunity for farmers to
4 maintain their standard of living alongside a farming way of life (Morris et al., 2017; Hansson
5 et al., 2013; McElwee and Bosworth, 2010b; McElwee and Bosworth, 2010a). Although farm
6 businesses continue to focus the majority of their resources on improving farm level
7 productivity, uncertainty surrounding returns to agricultural production have stemmed a
8 renewed interest in developing alternative non-farming income-generating activities (Hansson
9 et al., 2013)

10 From a policy perspective, levers aimed at supporting farm diversification have been shown
11 to contribute to developing more sustainable rural economies by stimulating employment and
12 limiting rural-urban migration while also creating a more balanced territorial development
13 (Lange et al., 2013; De Rosa et al., 2019). Diversification can represent an important economic
14 adaptation and survival strategy, particularly in periods of farm business crisis and income
15 squeeze, helping farm businesses to reduce their exposure to the risks associated with price,
16 technology, and policy uncertainty (Moschini and Hennessy, 2001). [Since the United
17 Kingdom's \(UK's\) decision to leave the European Union \(Brexit\), \(June 2016\), there has been
18 increased uncertainty within the agriculture sector around the future policy agenda. With
19 Brexit, the UK will no longer be part of the European Union \(EU\) Common Agricultural Policy
20 \(CAP\) and this might have a significant consequence for farmers in Northern Ireland where the
21 direct payments constitutes a substantial part of the farm business income and contributes
22 significantly to the overall viability of the majority of farm businesses. The direct payment,
23 when measured across all farm types in Northern Ireland represents as much as 90 per cent of
24 the value of the average farm business income \(DEARA, 2020\). Sixty-nine per cent of the total
25 agricultural area farmed in the region are categorised as "less favoured" compared to 51 per](#)

1 cent for the rest of the UK and 61 per cent for the EU15 (DAERA, 2019). The relatively low
2 average farm income in the region present a significant challenge for the long- term
3 sustainability of the industry.

4 Generally farm entrepreneurs in line with entrepreneurs in other business sectors are
5 assumed to take calculated economic risk aimed at maximising profit (Vesala et al., 2007).
6 Considering the state of uncertainty caused by the possibility of failure in setting up a
7 diversification enterprise, the ability to recognise business opportunities, strategic planning,
8 cooperation, networking and innovative abilities are major requirements for farmers engaging
9 in diversification (McElwee, 2008). An improved understanding of farmers' preferences and
10 motivations towards diversification will inform the evidence base to support the development
11 of policies that encourage entrepreneurial activity which support alternative income streams at
12 the farm level.

13
14 In respect of the above, the objective of this study is to examine and understand the
15 characteristics and drivers that motivate farmers to get involved in farm diversification
16 activities and how this impacts upon the farm business. The motivations and challenges of farm
17 diversification are also analysed. The study adds to the existing literature in examining the
18 context-dependency of motives behind diversifying farm businesses beyond conventional
19 agricultural related enterprises. This is important as rural entrepreneurial ventures vary in the
20 extent of their rurality and this impacts on their development and success. In fact, the
21 sustainable development of entrepreneurial ventures is a function of the embeddedness of the
22 entrepreneur/farmer in the local place (with a particular emphasis on the topographical
23 materiality of the place) and connects with traditional understanding of the farmer as a steward
24 of nature and the landscape (Korsgaard et al., 2015). These differences across place contributes
25 to the extent to which rural ventures impact on local development and resilience (Korsgaard et

1 al., 2015) An important consideration is that entrepreneurship is spatially bounded, and thus
2 involves the creation of new value by (creatively) recombining available resources from the
3 existing environment (Korsgaard et al., 2015). The exploratory analysis of the factors
4 influencing farm diversification in Northern Ireland can therefore provide insights that support
5 the design of policies for the sustainable development of rural areas especially in other regions
6 with comparable characteristics. The remainder of this paper is organised as follows. Section
7 2 provides a background to the study and section 3 reviews the existing literature within the
8 area of entrepreneurship and diversification at farm level. Following this, the methodology
9 employed is presented in section 4. The results alongside a discussion of the key findings are
10 presented in section 5 and finally section 6 concludes the paper.

11 **2.0 Background of the study**

12 The agri-food industry is one of the most important sectors in Northern Ireland. There are
13 about 25,000 farms in Northern Ireland and 75 per cent of the total land area is used for
14 agriculture with about 76 per cent of the total farmed land devoted to grass (silage, hay and
15 pasture) (Adenuga et al., 2018a; DAERA, 2019). Farming in Northern Ireland is relatively
16 important in terms of its contribution to the economy, employing about 6 per cent of the total
17 working population. This is significantly higher than the United Kingdom average of 1.1 per
18 cent and the European Union average of 4.1 per cent (DAERA, 2019). Agriculture is
19 predominately livestock based, with this sector making the largest contribution to the
20 agricultural economy. Recent census figures indicate that the dairy, beef and sheep enterprises
21 make up about 89 percent of the total agricultural output (Adenuga et al., 2018b DAERA,
22 2019). Almost four fifths of farms in Northern Ireland are defined as very small (less than one
23 full time employee) and another 11 per cent as small (between one and two full time employees)
24 (DAERA, 2019). The vast majority of the farms are family operated businesses; with average
25 farm size of 41 Hectares which is significantly less than the UK average of 81 hectares. In

1 addition, the majority of Northern Ireland farms are owned and characterised by
2 intergenerational succession and inheritance (DAERA, 2019; Jack et al., 2019). In this context,
3 agriculture is relatively more important to the Northern Ireland economy compared to the UK
4 economy as a whole.

5 An important aspect of the recent policy agenda has focused on developing coherent
6 measures to support farmers and improve the quality of life; this has been undertaken mainly
7 through the Northern Ireland Rural Development Programme (NIRDP). An aspect of this
8 included providing both direct and indirect support to encourage entrepreneurship, innovation
9 and diversification with measures designed to strengthen the social and economic infrastructure
10 of rural areas, in order to create employment opportunities and improve the welfare and
11 livelihood of farming households while also ensuring better management of economic activities
12 (NISRA, 2016). The measures are also aimed at optimising the use of Northern Ireland's
13 natural, human and historic assets through sustainable economic and social development
14 (DAERA, 2013). Examples of such programs included the Processing and Marketing Grant
15 Scheme (PMG) and the Short Rotation Coppice Scheme (SRC) which was introduced to
16 provide financial support to farmers to plant SRC crops, such as willow, for the production of
17 wood chips for renewable energy generation (DAERA, 2007).

18 However, particularly in recent years, farm businesses have come under increased pressure
19 to become more competitive and productive, especially in terms of managing resources,
20 alongside their need to maintain food quality standards and implement good environmental and
21 animal health practices (Ploeg and Roep, 2003). Furthermore, they face high levels of income
22 variability on a year to year basis, due to market volatility, increased input costs and pressure
23 on margins along supply chains (DAERA, 2019). These uncertainties make it more challenging
24 to find new opportunities within the agricultural sector for the farmers (Joo et al., 2013). From
25 an industry and policy perspective it has been recognised that the vulnerability of the

1 agricultural sector to market, environmental and policy challenges requires the adoption of new
2 strategies. On-farm diversification has been identified as one of the possible solutions.
3 Diversification at the farm-level can provide alternatives to traditional production agriculture
4 and offers a potential solution to low income levels in farming. It has the potential to improve
5 the economic viability of the farm businesses and reduce dependence on the production of
6 primary subsidised agricultural commodities (Vesala et al., 2007). An important element of
7 this is the willingness and ability of farmers and their family members to respond to and engage
8 in innovation and entrepreneurial activities as well as use resources beyond traditional
9 agricultural enterprises (Mc Fadden and Gorman, 2016; McElwee and Wood, 2017). Currently,
10 only 8 per cent of farms in Northern Ireland are involve in on-farm diversification (DAERA,
11 2019). Developing a better understanding of the individual factors and farm characteristics
12 which influence diversification and how these impact on the type of diversification activity
13 undertaken in a regional context adds to existing knowledge in this area of farm-level
14 diversification and entrepreneurship. Such understanding will have significant implications for
15 policy makers and increase the efficiency of policies aimed at promoting farm diversification.

16 **3.0 Literature review and conceptual framework**

17 The term “farmer” has been defined in various ways in the literature mostly from the
18 perspective of the particular activities they engage in. Farmers can be defined as a group of
19 people occupied on a full or part-time basis who are engaged in a range of activities of
20 cultivating the soil or growing crops and/or raising livestock to derive their main source of
21 income (Vesala et al., 2007; McElwee, 2008). On the other hand an entrepreneur is engaged in
22 active, dynamic and competitive economic striving, in a continuing pursuing of opportunity
23 (McElwee and Bosworth, 2010a).

24 The structure and dynamic of the farm business offers an interesting perspective on
25 entrepreneurship, as it provides an organisational setting where family members can bear

1 business risk to reduce transaction costs using family connection thereby supporting
2 employment creation and rural economic development (De Rosa et al., 2019; Alsos et al., 2014;
3 Carter, 1998). Although the same principles applied by business entrepreneurs in other business
4 sectors can also be used for rural enterprises, farmers as entrepreneur do not entirely operate
5 business activities in the same manner as their urban counterparts due to differences in
6 production and policy environment (McElwee, 2008). Specifically, the components of the
7 classical theory of the firm such as raising capital by share ownership, separation of ownership
8 and management control, and profit maximisation, do not readily apply themselves to the farm
9 and in particular the family farm (Carter and Rosa, 1998; McElwee, 2008)

10 In defining farm diversification, the literature presents a range of definitions but in general
11 a farm can be considered to have diversified if it uses resources for activities other than
12 conventional agricultural production to generate income or engages in adding value to raw
13 materials from primary production (Ilbery, 1991; McNally, 2001).

14 To be able to engage in successful farm diversification businesses, farmers need to acquire
15 and embrace some entrepreneurial characteristics of risk-taking; growth orientation and
16 innovativeness (Vesala et al., 2007). On the basis of this, there exists some level of variability
17 in entrepreneurial identity among farmers and their ability to diversify. Farmers who have
18 diversified can be referred to as “entrepreneurial farmers” and they fall into three main
19 categories namely, the pluriactive entrepreneur, the resource-exploiting entrepreneur and the
20 portfolio entrepreneur (Alsos et al., 2003). Pluriactive entrepreneurs are those who start new
21 business activities “in order to be able to sustain or expand the business to create employment
22 for other family members and consequently contribute to the economic success of the farm
23 venture, which in both cases demands more income-generating activities” (Alsos et al., 2003;
24 Vesala et al., 2007). Those categorised as resource-exploiting entrepreneurs are motivated by
25 the goal of utilising existing resources, while for portfolio entrepreneurs, exploiting a business

1 opportunity is considered to be their key motivating factor (Alsos et al., 2003; Hansson et al.,
2 2013; Alsos et al., 2014; Carter, 1998; Vesala et al., 2007).

3 Motivations towards diversification have also been categorised on the basis of specific
4 strategies, for example, rural area, farm processing and agricultural strategies (Ilbery, 1991;
5 Ploeg and Roep, 2003; Boncinelli et al., 2017). The rural area strategy focuses on developing
6 activities that take advantage of rural location/space for example in the area of tourism and
7 renewable energy. The entrepreneur creates new source of income, such as, by developing agri
8 and food tourism and social farming enterprises (Morris et al., 2017). The farm processing
9 strategy focuses on the mobilisation of resources through off-farm labour or low-external input
10 farming such as organic farming while the agricultural strategy focuses on agriculture and
11 associated activities aimed at improving agricultural product characteristics such as on-farm
12 sale and processing. Combined approaches and effects frequently occur (Ilbery, 1991; Ploeg
13 and Roep, 2003; Boncinelli et al., 2017).

14 Generally, farmers are either “pushed” into diversifying, for example, due to poor market
15 returns and a need to secure other income sources; these farmers are described as “necessity
16 driven”. In other cases, farmers are “pulled” into diversification reflecting their ability to see
17 an opportunity that acts as a pull factor in developing a diversification activity; such farmers
18 are described as “opportunity driven” (Hansson et al., 2013; Amit and Muller, 1995).
19 Regardless of the motivation, either necessity or opportunity driven, the literature generally
20 concludes that farm-level diversification has contributed to improving farm household
21 economic well-being and also that of the wider rural economy (McNamara and Weiss, 2005).

22 While acknowledging the individual uniqueness of farming households a number of factors
23 have been identified in the literature as influencing the decision to engage in on-farm
24 diversification. Such factors include the family farm itself and its ‘sense of place’ within the
25 family history, the lifestyle farming provides, alongside the drive to produce and maintain good

1 quality output (Mc Fadden and Gorman, 2016; Howley, 2015; Alsos et al., 2003).
2 Consideration is also given to resources available and how they can be allocated or reallocated
3 (Morris et al., 2017; Alsos et al., 2003). Alongside this, the level of “calculated economic risk”
4 that a farmer is willing to take bearing the state of uncertainty caused by the possibility of
5 failure is also important depending on the farmer’s economic conditions, social cycle, lifestyle
6 and the level of resources they have access to (Northcote and Alonso, 2011; Vesala et al.,
7 2007). In the literature, the fear of failure has been analysed from two perspectives both an
8 “economic” and “psychological” perspective (Arafat et al., 2020). From an economics
9 perspective, the fear of failure is a form of risk and has an inverse relationship with the
10 entrepreneurial decision such as starting a new business (Arafat et al., 2020). This will be
11 particularly pronounced in a situation where an intending entrepreneur lack the requisite
12 experience in a diversification activity. There is always the need on the part of the farmer for
13 proper business planning, robust risk management, compliance with legislation and regulation
14 and prudent insurance arrangements all of which constitute additional costs direct or indirect
15 to the farmer. Findings from the literature have shown that reducing the risk of perception or
16 fear of failure has the tendency of increasing entrepreneurial drive (Arafat and Saleem, 2017).
17 From the psychological perspective, the fear of failure relates to the socio-cultural trait that
18 affects attention to rewards in the social environment. It is based on the view that in certain
19 social cycle, people’s attitude toward failure is influenced by the presence of social norms that
20 see failing as a shameful experience (Arafat et al., 2020). Generally, the fear of failure can also
21 be described as risk aversion and has the tendency of reducing probability to face uncertain
22 situation like farm diversification (Arafat and Saleem, 2017).

23 The majority of previous studies have employed quantitative techniques to undertake their
24 analysis. They are also context and time specific and the results from one region may not apply
25 to another. At the Northern Ireland level some of the previous studies conducted examining

1 farm diversification include: Magee (1991) who showed that only seven percent of farms were
2 engaged in some form of farm diversification. Moss and Lewis-Bowen (1995) undertook an
3 evaluation of a previous rural development scheme, the Agricultural Development Operational
4 Programme for Northern Ireland (ADOP), an aspect of which was aimed at encouraging the
5 development of farm diversification activities. Their evaluation identified an interest in farm
6 diversification across a wide range of enterprises in Northern Ireland.

7 This study contributes to the literature by analysing the factors influencing farm
8 diversification, in a Northern Ireland context, using a mixed methods approach. Currently, little
9 is known about the farm/farmer characteristics that influence farm diversification in Northern
10 Ireland. As the literature indicates, while some drivers of farm-diversification maybe universal
11 others may vary according to geographic location, time or are specific to certain farms types,
12 programme and individuals (Boncinelli et al., 2017). For example Müller and Korsgaard (2018)
13 have found that spatial context has a considerable significance to the rural entrepreneurial
14 process such that the social, institutional, economic, and spatial contexts frame entrepreneurial
15 activities, and shape the content and outcomes of these activities

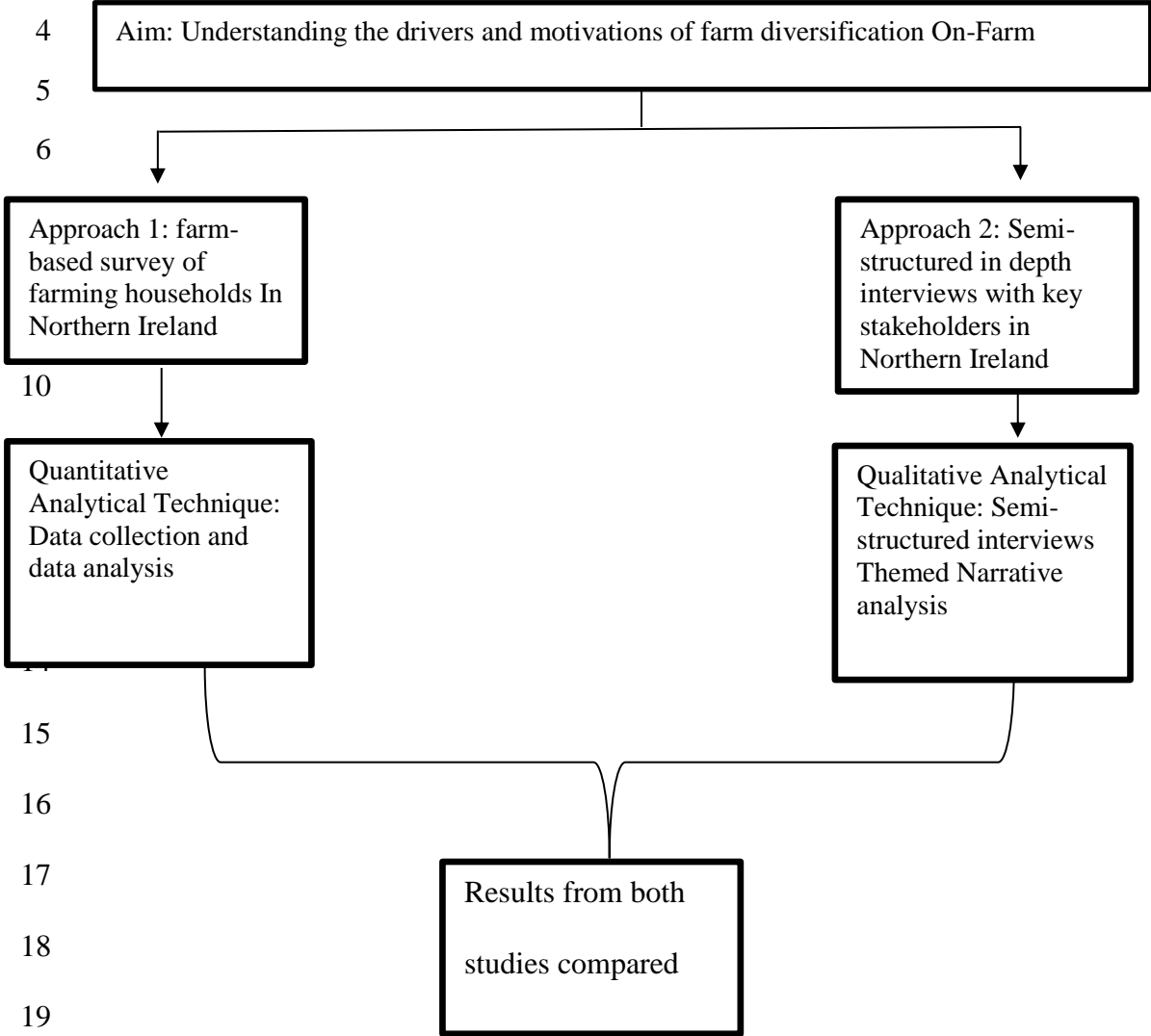
16 Figure 1 provides a conceptual framework for this study in respect of factors influencing
17 farmers' decision to diversify.

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3 **Figure 1: Conceptual Framework**



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20 Source: Authors' compilation

21 **4.0 Methodology**

22 **4.1 Data Collection and Analysis**

23 Data collection and analyses were undertaken by combining both quantitative and
 24 qualitative approaches in a two-stage process culminating in the mixed methods approach. [The](#)
 25 [first part of the analysis employed data obtained from a farm-based survey conducted between](#)
 26 [July and October 2018. The survey was directed towards those farm businesses who were](#)

1 previous recipients of funding through a farm diversification scheme under the Northern
2 Ireland Rural Development Programme 2007-13. The scheme was open to farm owners and
3 their family members and supported a number of different farm diversification activities
4 including tourism, renewable energy generation and engineering. In conducting the survey,
5 consideration was given to either undertaking an online or postal survey. The Department of
6 Agriculture Environment and Rural Affairs (DAERA) held the database of names and
7 addresses, but not email addresses for all the funding recipients. Therefore a postal survey was
8 deemed the best approach to ensure full coverage of recipients. Furthermore, in order to ensure
9 General Data Protection Regulation (GDPR) compliance the questionnaire was sent out by the
10 database owner, DAERA, with a covering letter explaining the rationale for undertaking the
11 study, alongside a covering letter from the research team.

12 The survey questionnaire focused on four main areas namely: the diversification
13 activity the grant recipient undertook; the recipient's experience of the scheme; the background
14 to their farming business and finally some socio-economic questions in relation to the recipient.
15 The two main questions in relation to diversification decision and type of diversification
16 activity include: *"for each of the factors below indicate how important they were in your
17 decision to diversify?"* Subsequently the responses to a question on respondents' specific
18 choice of diversification enterprise *"For each of the following factors indicate how important
19 they were in choosing the enterprise you diversified into?"* Responses to both questions were
20 provided along a 5-point Likert scale ranging from 1 being not important and to 5 being very
21 important. An additional question asked farmers to rank how challenging a number of obstacles
22 were to the setting up and running of their farm diversification projects. The questionnaire was
23 issued to 525 scheme recipients and included a prepaid return envelope and a pen for
24 convenience of completion. The survey had an eight week return period during which two
25 reminder letters were issued. In addition, in order to incentivise the return of forms the option

1 was provided to enter completed and returned questionnaires into a prize draw for a £100
2 voucher. In total 161 completed questionnaires were returned resulting in a 31 percent response
3 rate.

4 In the second part of the analysis, semi-structured interviews with key stakeholders in
5 Northern Ireland's agricultural sector were undertaken. The interviews took place between
6 February and April 2019 and it contained ten mainly open-ended questions designed to elicit
7 the opinions of the interviewees. The questions were focused around, agricultural policy to
8 support diversification and entrepreneurship. Furthermore, the interview explored areas of
9 potential growth for rural businesses and the general drivers and constraints that farm families
10 face in relation to becoming involved in and creating a new farm diversification business. The
11 interview questions were designed to complement the survey of previous scheme recipients but
12 were also designed to stimulate discussion and engage more on the potential policy levers.
13 Incorporating knowledge, opinions and drawing on the expertise of key stakeholders has been
14 shown to contribute positively to the policy development process (Fischer et al., 2014).
15 Individuals were selected on the basis of their profile, experience and professional contribution
16 to the Northern Ireland farming and agri-food sector. Representatives from eight organisations
17 were asked to participate; there was one non-response. Overall, nine individuals from seven
18 organisations were interviewed. Participants included senior representatives from agricultural
19 educational providers, farmers' unions, academia, rural support agencies, an agricultural
20 research body, a public investment support agency and a regional food and drink development
21 organisation. Overall, the representatives either had a stake in farm diversification as a policy
22 issue and/or could be impacted by policies in the area. Individuals who had significant
23 professional expertise in the areas of business start-ups and rural development and with an
24 interest in policy development were also included. The interviews were semi-structured, with
25 open-ended questions leading to follow-up probes that were more pointed. Each interview

1 lasted between sixty to ninety minutes. Interviews were recorded and subsequently transcribed
2 and analysed.

3 The mixed methods approach employed combines quantitative analysis from the farm-
4 based survey with qualitative analysis from the stakeholder interviews. The approach provides
5 a balanced analysis around the decision of farmers to diversify alongside providing additional
6 insights from key industry representatives on the perceptions and motivations around
7 diversification. The stakeholders were asked questions relating to their assessment of the areas
8 of farm diversification where there is potential for future growth and the drivers of farm
9 diversification. Questions about the constraints to farm diversification, based on their
10 experience in relation to policy and availability of capital were also asked. The responses from
11 the stakeholders provides different perspectives and helps improve our understanding of the
12 factors influencing farm diversification. The mixed methods approach is fast gaining popularity
13 in the literature as it provides a deeper analytical base for responses drawing on personal, social
14 and psychological variables. Examples of studies that have applied similar approaches include
15 Gittins et al. (2020) in which they combined both interviews with farmers and a Discrete Event
16 Simulation (DES) model to illustrates the benefits and challenges associated with farm
17 technology and software adoption in Yorkshire, England. Valliant et al. (2017) also employed
18 the mixed method approach to analyse how a set of diversified and non-diversified farms in
19 Indiana, Michigan and Ohio considers further diversifying agricultural products. Similarly,
20 Jack et al. (2020) employed the mixed method approach to examine and analyse the drivers of
21 farmers' decisions in relation to joining and participating in this new approach to farm
22 extension, learning and advisory service provision in Northern Ireland.

23 **5.0 Results and Discussion**

24 An overview of the main characteristics of the farmers who participated in the survey
25 is presented in Table 1. The respondents were predominately middle aged with 79 per cent of

1 the respondents above the age of 45. This is reflective of the wider farming population in
2 Northern Ireland where 81 per cent of farmers fall within this age range with a median age of 58
3 years (DAERA, 2019). The results are also in line with that of a previous study by McElwee
4 (2006b) in which they found that younger farmers select diversification strategies more often
5 compared to older farmers in Finland. Seventeen per cent of the respondents were female. This
6 is relatively high given that in general, only about five per cent of farmers in Northern Ireland
7 are female and it highlights the fact that family members associated with the farm business
8 were also eligible to apply for a grant through the funding programme. Respondents had on
9 average, attained a higher level of education compared to the overall farming population with
10 37 per cent of respondents indicating that they had either a degree or a professional
11 qualification. The results align with previous studies indicating that higher levels of educational
12 attainment make farm diversification more likely (Arafat et al., 2020; Howley, 2015; Ilbery
13 and Bowler, 1993). Beef farming is the main farm enterprise for the majority of respondents
14 and 68 per cent indicated that less than half of the household income came from farming. In
15 addition, 62 per cent of respondents spent less than 30 hours a week working on the farm,
16 indicating that they mainly farmed on a part-time basis. To assess contributions of farming to
17 household incomes, respondents were asked about the proportion of household income
18 supplied by their farm operation. About 50 per cent of the farmers stated that farming constitute
19 up to 25 per cent of their household income while only 19 per cent stated that farming constitute
20 at least 75 per cent of their household income. This result is an indication of the small-sized
21 nature of farms in the sample and is a reflection of the structure of farm business income in
22 Northern Ireland where the average farm business income is £28,612 and the off-farm income
23 of the farmer and spouse averaged £10,587 per farm (DAERA, 2020). Forty-three per cent of
24 the respondents stated that they are engaged in other off-farm work a value which is less than

- 1 the 32 percent of farmers engaged in off-farm work in Northern Ireland’s farming population
- 2 (DAERA, 2019)

Table 1: Socioeconomic characteristics and farm type of farmers

Attributes (n =160)	Frequency	% of respondents
Age		
25-34	14	8.44
35-44	21	12.99
45-54	41	25.97
55-64	45	27.92
65+	39	24.68
Gender		
Female	27	16.89
Male	133	83.11
Proportion (%) of household income comes from farming		
Over 50% but less than 75%	21	13.38
Over 25% but less than 50%	29	17.83
Over 75%	31	19.11
Up to 25%	79	49.68
Off farm work		
No	91	57.14
Yes	69	42.86
Highest Level of Education		
Degree level qualification (or equivalent)	36	22.73
O Level or GCSE equivalent (Grade A-C)/ including apprenticeship	25	15.58
None	24	14.94
Higher educational qualification below degree level	24	14.94
Professional qualifications	23	14.29
A-Levels or equivalent	10	6.49
ONC / National Level BTEC	7	4.55
Other qualifications	7	4.55

GCSE grade D-G or CSE grade 2-5 or Standard Grade level 4-6	3	1.95
Main agricultural Enterprise		
Pigs	4	2.23
Horticulture	4	2.79
Poultry	5	3.35
Dairying	16	10.06
Arable	17	10.61
Beef finishing	21	13.41
Other	24	15.08
Sheep	28	17.32
Beef suckler herd	40	25.14

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2 Respondents were also asked about the type of diversification activity they choose to
3 undertake. The results are shown in Table 2. The respondents were engaged in a wide range of
4 diversified activities. However, these can be amalgamated and grouped around three main
5 areas: agri-tourism, products and services and renewable energy (see Table 3).

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Table 2: Type of farm diversification business

Type of project	Frequency	Percentage (%)
Accommodation	27	17
Other Manufacturing/Engineering	25	16
Wind Turbine	24	15
Leisure/Recreation	20	13
Hydro Energy	9	6
Other	9	6
Horse/Equine	8	5
Professional Services	6	4
Retail/Direct Marketing (Farm Shop)	6	4
Craft	4	3
Solar PV	4	3
Wood for renewable energy	4	3
On farm processing of farm produce	3	2
Recycling	3	2
Vehicle Services	3	2
Contracting	2	1
Other Animal Health	2	1
Childcare	1	1
Total	160	100

1 **Table 3: Clustering of diversification activities**

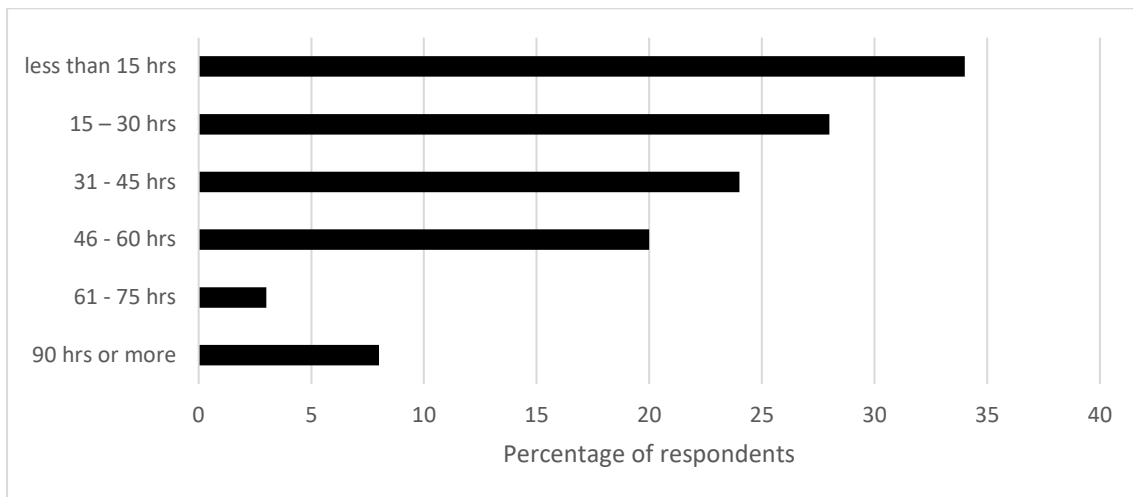
Activities	Definition
Product and Services	Businesses that are producing a product for sale or a service for sale but do not usually require customers to come to the farm premises. In this category, we have Childcare, on farm processing of farm produce, Retail/Direct Marketing (Farm Shop), Manufacturing/Engineering, Contracting, vehicle services, Professional Services etc.
Energy Production	These businesses are dedicated to producing renewable energy in exchange for subsidies. They include: Wood for renewable energy, Hydro Energy, Wind Turbine
Agri-tourism	These businesses are aimed at attracting people to the farm. The enterprises in this group include accommodation and Leisure/Recreation businesses, holiday cottages and/or a permanent camping/caravan site within farm boundaries

2 The activities varied in both the level of resource input required, and the amount of time
3 spent on the business activity relative to their farming. About thirty-five per cent of respondents
4 indicated that they were spending more than 30 hours per week on their diversified business
5 whilst just over half of respondents were spending less than 15 hours (Figure 2). Time
6 committed varied depending upon the type of project; leisure and recreation and manufacturing
7 showing a larger time input compared to accommodation and energy production. In terms of
8 income from the diversification activity, 50 per cent of the respondents were gaining less than
9 15 per cent of their household income from their farm diversification project while for around
10 16 per cent of those surveyed it was contributing more than 75 per cent to household income.
11 Accommodation and energy production were more likely to contribute a smaller proportion
12 towards the household income whilst leisure and recreation and manufacturing predominately
13 contributed a larger share of household income. This difference was also reflected in the
14 turnover of the businesses (Figure 3).

15

16

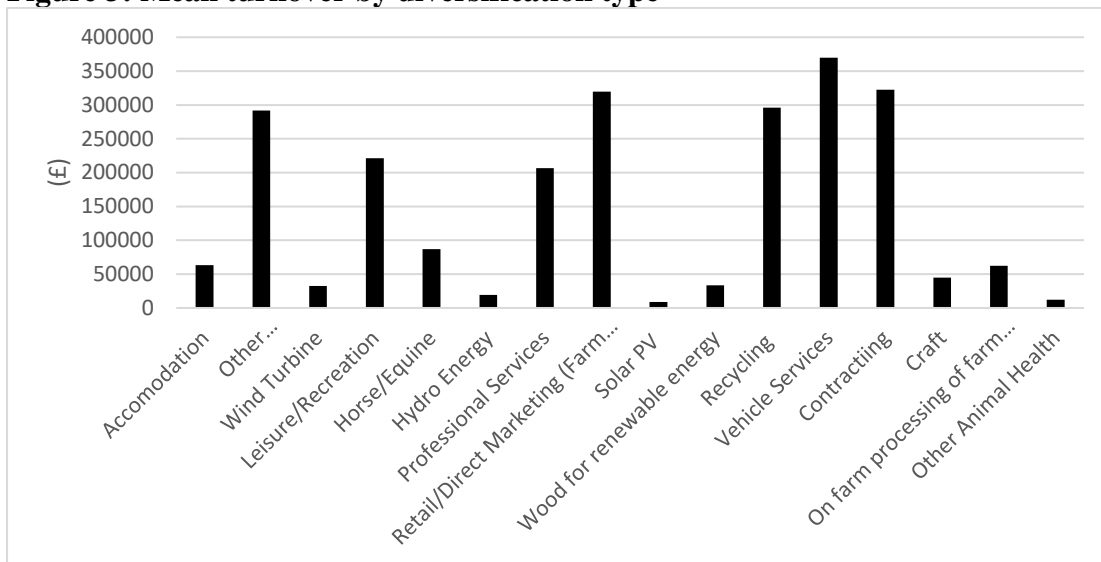
1 **Figure 2: Average hours spent on diversification project per week**



2

3

4 **Figure 3: Mean turnover by diversification type**



5

6 **5.1 Factors influencing the decisions to undertake farm diversification**

7

8 The main factors influencing on-farm diversification are presented in Table 4.

9 Respondents ranked the need for additional source of income as the most important factor for

10 engaging in farm diversification projects. This result reflects previous studies which identified

11 income generation as the major motivating factor for undertaking farm diversification to

12 improve their personal and family welfare (Ilbery, 1991; Barbieri and Mahoney, 2009). A

13 [previous study in Northern Ireland by Davis et al. \(1997\)](#) also found that around 50 per cent of

1 Northern Ireland household income arose from off-farm work by the farmer. Apart from the
 2 challenges resulting from dwindling farm income which necessitates the need to find other
 3 sources on income, farmers also need more income to be able to keep other family members
 4 on the farm. Taking advantage of the available funding opportunity provided by the grant was
 5 also highly ranked by respondents. This is in line with previous result obtained by Turner et al.
 6 (2006) in which they highlighted that grant aid can be an important factor in facilitating the
 7 launch of farm diversification and an important influence in farmers’ decisions to diversify.

8 **Table 4: Important Factors in the decision to diversify (mean ranking of importance)**

Factors	Mean ranking*
To generate a new income source	4.35
To provide opportunities for my children to take over the business	3.58
To take advantage of funding opportunities	3.33
To provide myself with employment	3.25
To provide employment opportunities for other family members	3.23
To provide a new use for redundant buildings/resources	2.88
Satisfy an interest or hobby	2.60
To meet new people through the activity	2.34
To exit or transition out of farming	2.05
To educate the public about farming/rural life	1.87

* based on 1 - 5 scale between “Not important” and “Very Important”

9
 10 The drive to make the farm business sustainable in terms of providing both employment
 11 for other family members and succession potential also ranked as important factors influencing
 12 the decision to diversify. This is in line with previous literature where it has been found that
 13 family size and structure influence the decision of farming households to engage in
 14 diversification activities (Alsos et al., 2003; Barbieri, 2010; Ollenburg and Buckley, 2007;
 15 Boncinelli et al., 2017). This supports the view by Korsgaard et al. (2015) that rural

1 entrepreneurship engages with its location not primarily as a space for profit but with “place”
2 as a location of meaningfulness and social life. A recent study by Alsos et al. (2014) which
3 relates to the Norwegian and Scottish rural portfolio entrepreneurs has also shown that
4 entrepreneurs are partly driven by strong feelings of engagement and responsibility for their
5 communities and the place which can stimulate an interest in developing of new business
6 activities.

7 From the analysis, it was also found that female members within the family play an
8 important role in decision of the farming households. Indeed, the majority of male respondents
9 indicated that it was their spouse with whom they consulted on the decision. McNally (2001)
10 has also found that the probability of taking up diversification activities is positively influenced
11 by the presence of farm-based females. Exiting farming was considered one of the least
12 important factors influencing the decision to engage in diversification activities. Rather than
13 diversification being viewed as a pathway to exit farming, this highlights that activities
14 associated with diversification enterprises are regarded by farm household members as
15 something to be combined with normal farming activities.

16 As part of the survey process, the respondents were asked to respond to an open text
17 question to provide other reasons why they had chosen to diversify. Analysis of these showed
18 that the responses fell within three key areas which are presented in Table 5. Entrepreneurship,
19 the need for additional income and the desire to be environmentally friendly and sustainable
20 were all highlighted as the reason for getting involved in farm diversification business. The
21 results reinforce the fact that apart from the monetary incentives and profit, farmers also
22 engaged in farm diversification in pursuit of, societal or environmental aspirations which
23 consequently contributes to the sustainable development of the rural areas.

24

Table 5: Other key reasons for diversification (open text responses)

Entrepreneurship	Income	Environmental & Sustainability
“Just to take the risk and see if it would work”	“Have not enough land to farm full time”	“To support climate change/environmental attitudes”
“Clear need for service”	“The need for safe income resource”	“Availability of natural energy resource”
“I had always planned to start my own business”	“No money in farming”	“To save a building that was derelict”
“Identified a need for the area- to provide service”	“Dissatisfaction with returns from agriculture”	“To be involve in renewable energy generation”
“To provide a solution not only for me but for other farmers”	“A good transition from dairy farming”	

1 **5.2 Factors Influencing Diversification Type**

2 To determine the factors influencing the type of diversification activity pursued,
3 respondents were also asked to rank a number of factors in terms of their importance. The
4 results are presented in Table 6. The majority of respondents based their choice of
5 diversification enterprise around access to skills and resources. This result is in line with those
6 obtained in previous studies. For example, Morris et al. (2017) identified that a key driver of
7 farm diversification is resource availability (labour and skills, land and fixed and financial
8 capital). Similarly, Lange et al. (2013) also found that rural attractiveness correlates with more
9 diversification activities and being closer to an urban environment has a positive effect on the
10 probability of diversification type. Northcote and Alonso (2011) found that the main drivers
11 for Australian olive farmers diversifying into direct marketing were their location and the
12 farm’s proximity to population centres. Resources tend to come either from having access to a
13 government grant, identifying underutilised resources relating to farming or by transferring
14 resources being used for farm production (thus reducing the level of farm production) into the
15 new activity. For example, a larger farm which has land to spare will find it easier to diversify
16 into a business that requires land without sacrificing too much farm output compared to a small
17 farm which may be maximising land-use for purely agricultural production. The respondents
18 also ranked their desire to keep the family business going, the need to meet perceived gap in
19 the market locally and the opportunity to make use of their farming skills and experience as
20 important factors that influence their choice of diversification activities. These factors can be

1 seen as indicators of respondents' entrepreneurial drive. The positive relationship between the
 2 experience of farmers and diversification type has also been found in previous study by
 3 McElwee and Bosworth (2010b) in which older and more experienced farmers were more
 4 likely to use property development as a means of diversification whilst younger farmers are
 5 more likely to move into tourism or new farm related activities.

6 **Table 6: Factors influencing choice of diversification project**

Factors	Mean ranking*
Availability of resources of farm (building, land)	3.90
The availability of finance for diversification	3.89
Wanting to keep a family business going	3.74
To meet a perceived gap in the market locally	3.67
Using my experience of being in off farm employment	2.99
My education background	2.92
Using the skills and experience I have gained through farming	2.81
Advice from government groups	2.80
To take advantage of the local beauty around the farm	2.76
The opportunity to renovate old farm buildings	2.72
Hobbies/interests of myself or spouse/partner	2.63
Closeness to urban population	2.31
The employment experience of my spouse/partner	2.15
My spouse/partners educational background	2.01
Advice from other farmers	1.92

* based on 1 - 5 scale between "Not important" and "Very Important"

7 For each of the diversification types, respondents were also asked to rank the most
 8 important factors that influence their choice of diversification activity, see Table 7. The
 9 availability of resources and finance as well as the need to meet a perceived gap in the market
 10 locally also ranked highly. Those who choose Leisure/Recreation, did so mainly to take

1 advantage of their location and the local beauty of the countryside in which their farms are
 2 located. Previous research has also identified that spatial characteristics of the farm impact
 3 upon diversification decisions (Lange et al., 2013; Northcote and Alonso, 2011). That is, a
 4 farm in an attractive natural landscape provides opportunities for tourism and other
 5 enterprises which can attract visitors to the farm.

6 **Table 7: Most important factors by type of diversification project**

Type of diversification	1st	2nd	3rd
Accommodation	The availability of resources on farm (building, land)	To take advantage of the local beauty around the farm	The availability of finance for diversification
Wind Turbine	The availability of resources on farm (building, land)	The availability of finance for diversification	Wanting to keep a family business going
Other Manufacturing/Engineering	To meet a perceived gap in the market locally	Wanting to keep a family business going	Using my experience of being in off farm employment
Leisure/Recreation	To take advantage of the local beauty around the farm	To meet a perceived gap in the market locally	The availability of resources on farm (building, land)
Hydro Energy	The availability of resources on farm (building, land)	The availability of finance for diversification	Wanting to keep a family business going
Horse/Equine	To meet a perceived gap in the market locally	The availability of resources on farm (building, land)	Wanting to keep a family business going
Professional Services	The availability of finance for diversification	My educational background	To meet a perceived gap in the market locally
Retail/Direct Marketing (Farm Shop)	The opportunity to renovate old farm buildings	The availability of resources on farm (building, land)	To meet a perceived gap in the market locally

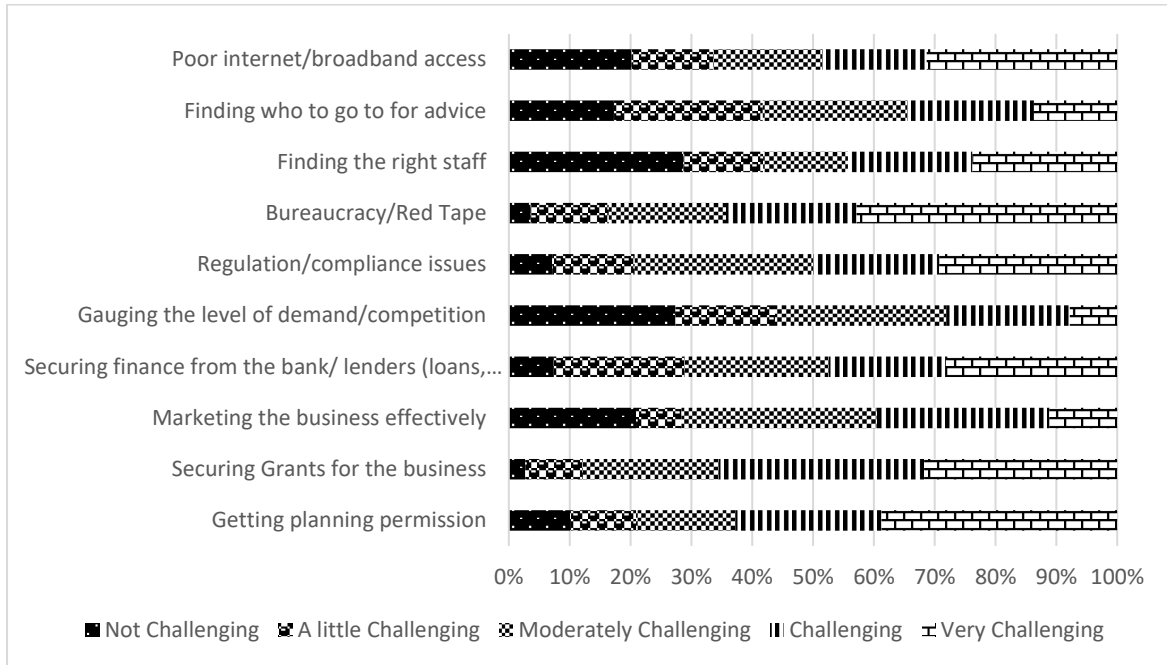
7

8 **5.3 Main challenges faced in diversification**

9 Respondents were asked to consider the main challenges they faced in establishing and
 10 running their diversification business. As shown in Figure 4, the biggest challenges reported

1 were securing finance, dealing with bureaucracy and red tape, marketing the business
 2 effectively, internet/broadband access and connectivity and obtaining planning permission.

3 **Figure 4: Challenges faced when starting and running a diversification business**



4
 5 Respondents were also asked to identify what skills they considered to be particularly
 6 important in being a successful farm-based entrepreneur. Respondents identified five main
 7 areas namely, developing business skills, market knowledge, having a hardworking attitude,
 8 communication skills in relation to customers and staff and having the entrepreneurial ability
 9 to see the opportunity (Figure 5).

1 **Figure 5: Summary of important skills needed as a farm-based entrepreneur**



2 **5.4 Results of key industry Stakeholder Interviews**

3 The semi-structured key stakeholder interviews aimed to compliment the survey results
4 alongside exploring, in more depth some of the main themes from the survey findings in order
5 to add to the evidence base to inform the policy development process. The majority of key
6 stakeholders interviewed considered low farm incomes and the overall profitability of the
7 primary agriculture sector as important drivers for those farm businesses opting for
8 diversification, including the volatility of incomes year on year. The findings support the results
9 of the survey that farmer diversify for the purpose of having additional income as was also
10 found in previous studies (Ilbery and Bowler, 1993; Lange et al., 2013). Beyond financial
11 challenges, consideration of members of the wider farm household was highlighted as
12 something which motivated and influenced the diversification decision. Often the initiator in

1 the decision to diversify and to create a new business on the farm was taken by a partner or
2 spouse. This is supported by the statement of one of the interviewees:

3 *“Quite often, if it is a wife, they're doing it because it's allowing them to stay at home with*
4 *the children “*

5 This supports our earlier survey findings, acknowledging the importance of the partner
6 or spouse in either undertaking or initiating the diversification decision and indicating that they
7 have an important role in the farm diversification process. This finding is further supported by
8 McElwee (2006b) who established that many farm diversification activities are instigated and
9 managed by female partners; who particularly engage in activities such as running farm
10 accommodation or establishing a farm shop. Furthermore, Bock (2004) examined
11 entrepreneurial activities by Dutch farm women and found that women entrepreneurs
12 contribute to the establishment and efficient management of diversification enterprises on the
13 farm. From a policy development perspective, McElwee (2006b) has argued for the need to
14 develop more holistic entrepreneurial policies that do not just focus on men but also take into
15 consideration the important roles that women play in the development and management of
16 entrepreneurial activities in rural areas.

17 The stakeholder interviews also reflected the desire amongst farming families to secure
18 the future of the farming household and retain them in the local area by combining the aims of
19 making the farm more viable while establishing other income sources through diversification.
20 The general consensus amongst the interviewees was that in order to support other family
21 members the farm businesses have to adapt and change to meet the demands of the next
22 generation and a future successor from both an income and lifestyle perspective.

23 *“Life-cycle events like a family member (or successor) joining the business may*
24 *instigate a desire to diversify as a way of securing an income for the new partner(s) in the*
25 *business.”*

1 Uncertainty around future agricultural policies, in particular support for the sector post
2 Brexit, was viewed as something which could impact and bring about an increased interest in
3 diversification as a means of augmenting farming incomes.

4 Stakeholders indicated that an important driver of the diversification decision was the skills,
5 interests and resources that those associated with the business, particularly the farmer
6 possessed.

7 *“Each individual has particular skills, interests and experiences and people are more likely
8 to pursue an opportunity they understand or enjoy.”*

9 The survey of scheme recipients had highlighted that those participating tended to have
10 higher levels of education and training on average, compared to the overall farming cohort.
11 Many of the stakeholders’ expressed the view that in their experience, those who chose to
12 diversify tended to have higher levels of qualification, skills and in many cases have been
13 employed off-farm either full-time or part-time. This is supported by results from a previous
14 study by Arafat et al. (2020) who found that education has a significant influence on the
15 entrepreneurial propensity of the individuals in trying to start a new business in agriculture.
16 Some of the stakeholders were of the view that these individuals often use their off-farm
17 experience to acquire skills which they then transfer into developing their farm-based
18 diversification activity. Particular examples given by the stakeholders were in the areas of
19 artisan foods and home distilling. Stakeholders also emphasised how they considered that it
20 was an individual’s own ability to ‘spot’ a gap in the local market or identifying their farms
21 location as providing the basis for a diversification opportunity

22 *“In other cases, it is simply opportunity driven. Individuals spotting opportunities in
23 the market and instinctively pursuing those prospects based on their ambition and desire to
24 progress.”*

25 The location of the farm was viewed as an important influence on potential diversification
26 opportunities:

27 *“Locational factors are critical to development of retail or tourism type ventures, e.g.
28 proximity to customers for a farm shop.”*

29

30 In continuing around the theme of individual skills and attitudes, the stakeholder’s
31 highlighted a farmer’s attitude to risk and their decisions around using the resources available

1 to them had a significant influence on the decision to diversify. It was suggested that farmers
2 tend to assess the risk of establishing a certain diversification business against its ability to
3 generate a higher level of income. In addition, they may choose an enterprise that best reflects
4 their needs in terms of the time and resources they wish to put into the project.

5 *“Perception of the size of the opportunity and risk involved... In the case of renewable*
6 *energy projects, the availability of particular financial incentives has been a key driver*
7 *especially as those incentives help to de-risk the chosen venture.”*

8 An important finding in the survey of previous scheme receipts was the need for more
9 support and mentoring. The stakeholder findings also reflected this, from the perspective that
10 fear of failure alongside having a lack of self-belief and confidence was something which, in
11 their view, could hold back farm business owners from diversifying. This finding is consistent
12 with those of previous studies on entrepreneurship, which found fear of failure was an
13 impediment to entrepreneurship (Martin-Sanchez et al., 2018). This may be linked to the nature
14 of farming in Northern Ireland where most of the farmers have a very strong connection to their
15 farms that goes beyond economic objective (Howley, 2015). Most farms in the region are
16 family owned and managed over many generations. Culturally, the farm and the land is core to
17 the family tradition and heritage to which there is a strong emotional attachment and no one
18 generation wants to be responsible for putting the farm at risk by pursuing something beyond
19 the traditional farming enterprises which they have undertaken and engaged in.

20 According to Arafat et al. (2020) the interaction of the individuals with situation-
21 specific stimuli leads to a particular behaviour and in this case, the deeply embedded
22 relationship that most farmers in Northern Ireland have with their farms influences their
23 behaviour such that they might not be encouraged to engage in other enterprise creation
24 because of the fear of being seen as a failure (Conway et al., 2018). This highlights the
25 psychological perspective to entrepreneurship such that some farmers are reluctant to start a
26 farm diversification project as it could be perceived amongst their peers and neighbours as

1 having failed in farming. This observation reinforces the importance of context and
2 environment in farmers' decision to diversify. As noted by one of the respondents;

3 *“Some people have good business ideas but don't take them forward. For some*
4 *individuals the lack of confidence reflects a fear of failure or feeling that they don't have the*
5 *necessary skills/expertise.”*

6 *“I think there's also that reluctance in diversification because it's seen as admission of failure,*
7 *defeated in farming or whatever, you know, in that farming identity”*

8 Added to this, stakeholders indicated that because farming is an occupation were
9 farmers predominately work alone and in isolation, they may not have access to or an
10 opportunity to talk through and develop their ideas with other farmers.

11 *“I think a lot more farmers could get involved but they just need someone to kind of give*
12 *them a few ideas, you know, there's no one to advise them”*

13 Finally, beyond looking at those individual farmer and farm characteristics which may
14 influence farm diversification, stakeholders were also asked to identify the key barriers that
15 were holding farms back from engaging in diversification. Stakeholder responses reflected and
16 aligned with the responses from the survey recipients. For example, the majority of the
17 stakeholders identified access to good internet broadband facilities as an important factor in
18 developing a successful diversification project. In the words of one of the stakeholders;

19 *“If people have access to good broadband, they could do anything, and that would just maybe*
20 *help retain young people in the countryside as well, and all of those things.”*

21 Obtaining planning approval for developing businesses in rural areas was identified as
22 a particular constraint alongside the payment of rates at a higher level on diversified businesses
23 which are classified as non-farming. Business rates for new farm-based diversification
24 businesses were also highlighted as a potential barrier. It was highlighted that farmers who
25 have diversified often assume that the diversification enterprise will be treated as part of the
26 farm and thus they are not eligible to pay the higher level of business rates. Stakeholder's

1 expressed that there was a need for training in this aspect. Added to this, the general
2 bureaucracy and the length of time taken to complete the funding application for diversification
3 projects was highlighted:

4 *“The other thing that catches a lot of people out is rates, so they start small and all of*
5 *a sudden, their rates bill arrives ...particularly where the first vocation is quite connected to*
6 *the farm so the likes of a vegetable packer for example, just think that's another part of the*
7 *farm business and then there's potentially rates implications there and that can be a quite*
8 *substantial cost that they haven't thought about.”*

9 This would suggest that financial support secured through government schemes can
10 be a key incentive for certain types of ventures, especially renewable energy as such grant
11 minimises the risk for the recipient

12 **6.0 Conclusion**

13 In this study, we analysed the factors influencing farm diversification and
14 diversification types using a mixed methods approach. To achieve the study objectives a survey
15 of farmers who received a farm diversification grant in Northern Ireland was quantitatively
16 analysed. A qualitative analysis of data obtained from interviewing key stakeholders within the
17 Northern Ireland agricultural sector was also conducted.

18 The study results show that the primary motivating factor in pursuing farm-level
19 diversification is the need to generate a new income source which might be linked to dwindling
20 farm income, and the need to keep more family members on the farm. However, factors such
21 as resource availability, securing succession, providing employment opportunities for
22 household members and taking advantage of funding opportunities were also highly ranked as
23 factors influencing farmers' decision to set up diversification enterprises. Farm level
24 diversification was viewed as something that contributed to the sustainability of a family farm
25 and potentially supported wider rural economic development.

1 This study also identified that the availability of resources on farm, the availability of
2 finance, a farmer’s own skills and experience both on and off the farm, the need to keep the
3 family business going while also meeting perceived gap in the market locally as important
4 factors influencing diversification types. These factors reflected respondents’ entrepreneurial
5 drive; that is, their ability to identify a gap in the market, making resources available and
6 developing the skills to exploit it.

7 Generally, the motivational and driving factors of diversification amongst farm families
8 vary in importance and these differences are evidenced through their different diversification
9 choices. The main factors identified as constraints to diversification were reliable internet
10 access, planning, business rates, a lack of support networks and a fear of failure. Acquiring the
11 right skills for managing a farm diversification business was one of the most important factors
12 identified by the farmers as essential to achieve success and ensuring the survival of the farm
13 business.

14 Our research identified the importance of providing support to farmers to undertake
15 farm diversification projects and as highlighted by an interviewee “there is a need for a sound
16 balance between soft supports (e.g. training, mentoring, advice, market research) and hard
17 supports (grants, access to loans, etc.)”. Training on how to design an effective marketing plan
18 and support around business skills will go a long way to supporting farm diversification
19 enterprises. In providing training to the farmers, it should be short term, locally provided and
20 not integrated with non-farming training sessions. It is also essential that those providing
21 training to the farmers are well equipped with the right skills, knowledge and experience about
22 business and farming. In addition, developing mentoring and support networks among farmers
23 who have or are planning to diversify are considered as an important mechanism for ensuring
24 the success of farm diversification enterprises.

1 From a policy perspective, there is a need for measures to support the development of
2 diversification enterprises at farm level as the results show that engagement in on-farm
3 diversification has the potential of contributing to the income of farming households and to the
4 vitality of the farming sector and the rural areas. Bureaucracy was highlighted as one of the
5 constraining factors in the establishment of a diversification enterprise, therefore efforts should
6 be made to make the process of setting up a diversification business and accessing funding less
7 bureaucratic alongside providing access to support and mentoring services post the business
8 being established. Greater collaboration is needed between government departments and
9 policymakers with a need for a more joined up approach to policy development. The study
10 supports the need for government departments and agencies to be involved in the coordination
11 and provision of advice to farmers to ensure a successful establishment of farm diversification
12 enterprises. The provision of reliable high-speed internet facilities was identified as critical to
13 supporting a range of farm diversification businesses in rural areas in order to develop a more
14 sustainable and diversified rural economy which would benefit both the local and wider
15 regional economy.

16 Further research is needed to explore the risk behaviour of farmers in relation to setting
17 up a diversification enterprise. Such studies would throw more light on why farmers who have
18 the resources to set up a diversification enterprise decide not to do so. Future research may also
19 involve the development of models to build social capital among farmers including the role of
20 education. This will be useful in enhancing the farmers' entrepreneurial skills and self-
21 confidence as well as increasing their motivation towards engaging in other economic and
22 social activities outside farming.

23
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25

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