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The role of emotions in the choice to adopt, or resist, innovations by Irish dairy farmers

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1. INTRODUCTION.

In this paper we uncover the emotional factors that contribute to the adoption, or rejection, of different categories of innovation by dairy farmers in Munster, Republic of Ireland. By using in-depth interview data we uncover how rational or cognitive elements (Doloreux and Lord-Tarte, 2013; Rieple and Snijders, 2014) interact with emotions (Maye et al, 2014; Silvasti, 2003; Choi et al 2010), to shape the adoption of specific types of innovations. Our findings have surfaced the strong value-driven emotions that underpin the Irish dairy farmers' beliefs about what farming is, and means, and the influence that this has on innovation choices.

Emotional or affective dimensions are rather under-represented in research into innovation adoption and rejection, especially by businesses; most of the research that has examined the interaction between emotions and innovation adoption has focused on industries other than agriculture (Vuori and Huy, 2016). We would argue that the important role of emotions in social settings (Parkinson and Manstead, 2015), combined with the heavily values-driven nature of Irish farming (Fahey, 2002; Ni Laoire, 2005) and the inherently emotional nature of work that involves interactions with the land and with animals (Scotney et al., 2015), means that innovation in Irish dairy farming is worthy of investigation. The rural literatures have also tended to 'understate emotional dimensions' and have seldom made feelings an explicit focus for analysis (Jennings et al., 2015) despite the fact that these "loom large in idealised imaginings of rurality" (Pini et al., 2010). We also challenge the prevailing dominance within

innovation adoption theory of a bias toward a pro-change stance, which we address by shedding light on the underpinnings of passive and active innovation resistance (Talke and Heidenreich, 2014; Heidenreich et al., 2016).

This paper unfolds as follows. We first review the innovation adoption and emotions literatures to understand the factors that influence acceptance of, or resistance to, innovation and the types of innovations adopted, focusing especially on the role of emotions in the innovation adoption or rejection decision. We then describe our methodology and research setting, including the selection of interviewees, our interview protocols and data analysis methods. The following section discusses our findings and proposes a novel framework for understanding the interaction of external and emotional influences on the adoption of innovation and the types of innovations adopted in the Irish dairy industry. This is followed by a final section that draws out implications for theory and for further research.

2. THEORETICAL BACKGROUND.

2.1 Innovation Adoption .

Research on both the adoption and the diffusion of innovations has a long and wide-ranging history (Kapoor et al 2014; Büschgens et al., 2013). Much of this body of literature focuses on the role of innovation in fulfilling a perceived need or solving a problem, whether this is economic or social (Rogers, 2003). Much of the early literature focused on product or technology innovation; subsequent theory has extended to include innovation in services and in business models. Each tends to be diffused via a different path (Rieple and Kapetaniou, 2017) and involves different players in the process.

How and why an innovation takes hold has been the subject of considerable research on diffusion and adoption processes. A number of models of product or technology innovation diffusion paths have focused on the characteristics of the adopter, defined as, for example, innovators, early adopters or laggards (Reinhardt and Gurtner, 2015; Rogers 1983). Early adopters are characterised as novelty-seekers, who are discontent with the status quo (Gourville, 2006). Laggards are content with the status quo and more fearful of the disruption of change (Heidenreich and Handrich, 2015). However, these models neglect the influence of emotional factors in the process.

In one of the best known models Rogers (2003) proposed that five factors influence an innovation's adoption: relative advantage (the degree that an innovation is perceived to be better than the product it is superseding), compatibility (the degree to which the innovation is perceived to be consistent with the adopter's values, experiences, and needs), complexity (the degree to which an innovation is perceived to be difficult to understand and use), trialability (the degree to which an innovation can be trialled or experimented with), and observability (the degree to which the benefits of an innovation are visible to its potential adopters).

However, models such as this tend to focus on the individual adopter and ignore the systemic and social aspects of the adoption process.

For example, social and spatial proximity to other adopters can be important factors in the adoption process. This happens through a number of different mechanisms. Social contagion (Hinz et al., 2014; Hatfield et al., 2010; Angst et al, 2010) works because of humans' psychological need to belong to a group (Fischer and Manstead, 2016). However, although concepts such as mimetic isomorphism (Dimaggio and Powell, 1983) focus on imitative processes to explain why firms within the same industry tend to have the same structure and

operating frameworks, few have attempted to understand the socio-psychological underpinnings of such mimesis (Delgado-García et al., 2010; Smith and Mackie, 2015; Thagard and Kroon, 2006). The proximity of the source of contagion to the receiver also affects the potency of the influence (Gaba and Meyer 2008), as does the ‘infectiousness’ of the influencer, often based on their perceived legitimacy or reputation (Greve et al., 2016). Word of mouth is a potent source of new ideas, especially if those come from highly respected peers. Here the geography of identity and embeddedness is important (Woods, 2007; Stenholm and Hytti, 2014; Cheshire et al., 2013). The frequency of interactions that comes from physical proximity (Cantwell and Zhang, 2011; Zander and Kogut, 1995) as well as social and cognitive proximity (Boschma, 2005; Uzzi 1996; Hardeman et al., 2014) affects access to, and adoption of, knowledge.

Agricultural innovations frequently concern not so much the adoption of newly introduced technologies, but the adaptation of existing ones (van der Veen, 2010). Agriculture is a regulated industry and product innovation is controlled, limiting the types and scale of innovations available (McElwee, 2006). Other factors that are material to our study of innovation adoption by dairy farmers include historical farm ownership structures and identities that are strongly influenced by values and ideologies that focus on their role as keepers of the land (Silvasti 2003; Maye et al., 2014). Many of Ireland’s small farms have been within the same family for generations, a factor that has the potential to ‘lock them into a way of being’ (McElwee, 2006). This is a secure environment which has the potential to influence their willingness to take risks or destabilise their lifestyle, and blocks the desire to acquire entrepreneurial resources. Those who *are* able to innovate can be constrained to a relatively small number of options because of restrictive tenancy agreements (McElwee,

2006).

2.2 Innovation Resistance.

Much of the literature on innovation resistance has also ignored systemic or environmental factors. It has also been dominated by a novelty-seeking paradigm that privileges the positive benefits of innovation (Heidenreich and Handrich, 2015; Talke and Heidenreich, 2014). As Mugwisi et al. (2015) say, the pro-innovation bias has tended to privilege the individual and ignored systemic aspects so that there is a “tendency to hold the individual responsible for his/her problems rather than the system in which he/she is part”. Recent theorising has focused more on the economic and systemic factors that block innovation adoption. One stream of research has focused on how differences between innovations, in terms of their novelty, difficulty, capital intensiveness, and the need for the involvement of complementary assets and infrastructure, affect the adoption process (Soriano and Huarng, 2013). However, there is still a relative paucity of research on the factors that inhibit innovation adoption (Frambach and Schillewart, 2002; Talke and Heidenreich, 2014) and why novelty is either actively or passively resisted (Kleijnen et al., 2009; Laukkanen, 2016).

In addition to the psychological and emotional aspects that we discuss in more detail below, there are numerous structural and systemic reasons why innovations may not be taken up (Paluch and Wunderlich, 2016). People may choose to adopt an innovation because it improves aspects other than profit, or they may choose not to adopt because adopting would be in conflict with their values or existing practices (Sun et al., 2015; Laukkanen, 2016). It seems likely that strong values will shape resistance to innovation more than they will shape innovation adoption. This is especially relevant in our case as farming is one of the most strongly values-driven industries (Warren et al., 2016; Burton et al., 2008).

One recent paper encountering these issues examined a potential change of land in Scotland, where non-financial factors related to identity, lifestyle, culture and the perceived importance of food production powerfully shaped the overwhelmingly negative attitudes of farmers to the introduction of a new crop, short rotation coppice willow for biomass fuel use (Warren et al., 2016). A study of mental models towards innovation held by different actors in the Australian beef industry also revealed the power of deep seated values and beliefs to shape innovation adoption (Sun and Bosch, 2013). One innovation (over-stocking to increase productivity) was achievable in the short term and would improve profits, but only at the cost of damage to pastures which would cause problems in the long term (Sun and Bosch, 2013). As a result of the farmers' concern for the land the innovation was rejected. Such research also hints at farmers' tendency to be influenced by socially-shaped perceptions of what constitutes 'good farming' (Winkler, 2016; Burton, 2012) and deep attachment to their preferred way of doing things (Gosling and Williams, 2010). Rather than seeking the pure profit maximisation of classic economic models of business they are strongly influenced by social norms, cultural beliefs, socio-psychological factors, aesthetic judgements and personal values concerning nature, family and community (Warren et al., 2016). Our study addresses these issues.

2.3 Emotional Aspects to the Adoption of Innovation.

The issue of attachment brings us to the important role of emotions in farmers' decisions as to whether or not to adopt an innovation. Emotion refers to a feeling state with an identified cause or target that can be expressed verbally or nonverbally (Fineman, 2003; Quay et al, 2014), that results in physical and psychological changes, and that influences behaviour (Russell 2003). Some examples of emotions are anger, fear, jealousy, pride, and love (Russell, 2003; Ramirez-Ferrero, 2005). Emotions are often used interchangeably with similar

constructs such as moods and core affect (Hansen and Greve, 2015; Grichnik et al., 2010), although these differences are not the primary focus of this paper. Relevant to this paper is that emotions are *about* something (Russell, 2003).

Emotions can be placed on a continuum of intensity based on arousal of the nervous system, strong emotions being often the driving force behind the motivation to act (van de Ven, 2017). They influence the process of decision-making by changing the cognitive evaluation of costs and benefits, and they influence how people process information (Isen and Labroo, 2003; Lyubomirsky et al., 2006). Another important aspect for this paper is that emotions are not merely innate biological responses but can be learned and imbued with socio-cultural factors (De Leersnyder et al, 2013). They can be strengthened by previous experiences or external events (Baron, 2008). Antioco and Kleijnen (2010), for example, found that bad past experiences could have a negative effect on the decision to adopt an innovation.

Any new product adoption entails change, uncertainty, or risk, meaning that resistance is likely on emotional grounds (Paluch and Wunderlich, 2016). The novelty-seeking paradigm that has dominated the innovation literature focuses on people's needs for stimulation, uniqueness, and novelty as the underlying reasons for innovation adoptions (Heidenreich et al, 2016). However as new product failure rates of up to 90% would seem to show, Heidenreich and colleagues (2016) suggest that most people seem to have no a priori desire to seek novelty or change. In fact a number of authors regard emotion-maintenance as a key behavioural motive as people in a good emotional state try to preserve these and to improve those states that are experienced as unpleasant (Carver and Scheier, 2003). The status quo bias (Gourville, 2006) suggests that people favour the current situation: if they are attached to existing products (Heidenreich et al, 2016) and satisfied with the status of current innovation

(Reinders, 2010). Other factors relate to the fear of loss of control or inability to cope with the stress of change plus a focus on the short term in which individuals are distracted by the short-term inconveniences involved in change to the detriment of any potential long-term benefit (Heidenreich et al., 2016).

Negative emotions signal a problem that stimulates people to find solutions to the problem (Grichnik et al., 2010; Ellsworth and Scherer, 2003). However, some of the research on the effects of positive versus negative emotions on innovation adoption is equivocal and paradoxical, even if it is possible to agree on a definition of 'positive' (Hu et al., 2017; Richman, et al., 2005). In a positive emotional state, which we (rather tautologically) define as one in which problems can be faced with equanimity, people may be able to cope with the stress resulting from innovation but they will be less motivated to put effort and resources into solving the problem. On the other hand, in a negative emotional state people may be more willing to put effort into solving a problem, but will be less psychologically capable of doing so (Talke and Heidenreich 2014). In our study, we investigate whether this paradox might be influenced by factors such as the deeply-felt attachment that Irish farmers have to a certain ways of doing things (Gosling and Williams, 2010), influenced by social norms, cultural beliefs and values concerning nature, family and community (Warren et al., 2016).

Ambivalence may also be a factor in the decision to adopt or reject an innovation.

Ambivalence is a psychological state caused by contrasting evaluative orientations toward an object. Some theorists have suggested that it is possible to hold both strongly negative and strongly positive emotions simultaneously about an object (Ashforth et al., 2014). The antecedents of ambivalence can originate in both personal and social influences, through, for example, the conflict that comes from within one's own thoughts and feelings and from how

significant others are perceived to feel. Contagion, for example, is the result of individuals' tendency to imitate "automatically and subconsciously" (Jennings, et al., 2015) the emotional displays of others with whom they interact, and especially those that they respect (Fischer and Manstead, 2008; Angst et al., 2010; Greve et al., 2016). This has been seen in the case of entrepreneurial passion where colleagues come to share an entrepreneur's enthusiasm simply through exposure to the individual (Jennings et al., 2015). Ambivalence can be particularly stressful when a potential adopter has to choose between different decisions, such that they seek out information that might enable them to resolve the conflict. This process involves consulting with significant others in order to reduce the uncertainty and stress, bringing social influences into the innovation adoption decision (Fineman 2000).

To conclude, emotions have been extensively researched in different fields, particularly psychology and neuroscience but also organisational behaviour, however there is little research to date that has examined the effects of emotions on farmers' decision making (Brun Norbye, 2016). One of the rare studies (Ramírez-Ferrero, 2005) identified pride as the most salient dimension of the emotional life of Oklahoma farmers. This concerned what it meant to be a good farmer, person, and citizen and was further rooted in their capacity to own, tend, and hold onto the land that they inherited. However, we have been able to find very little other research that has examined the effects of emotions on farmers' innovation choices, an important factor if innovations are necessary for economic growth of the sector. This stimulated our interest in understanding the factors that contribute to the adoption or rejection of different categories of innovation by dairy farmers in Ireland.

3. CULTURAL AND ECONOMIC BACKGROUND OF THE IRELAND DAIRY INDUSTRY.

Our study took place in the Munster region of the Republic of Ireland, a member of the

European Union (EU). This is the most important region for grass-based dairy farming in Ireland, a country that has a worldwide reputation for dairy produce (Donnellan et al. 2014). Although in the last twenty years the country has moved away from being a nation of small farmers towards a more knowledge-based economy, focusing on services and high-tech industries, dairy farming still plays an important role in Ireland's economy and sense of self. Despite the fact that farming and agribusiness now accounts for only 7% of Irish economic activity (Boland 2015), the Irish government still sees a key role for the dairy industry and agri-food business, Ireland's 'largest indigenous sector', in underpinning exports and economic activity (Bord Bia 2014).

As a member of the EU the Irish dairy industry is regulated by European agricultural laws and institutional frameworks. One of these is the milk quota. The EU has had a milk quota system since 1984, in order to deal with milk over-production, freezing each country's production at the 1983 levels. The quota allows farmers to produce only up to their designated limit (Lapple and Hennessy, 2012). For the farmers in our study this meant they were able to increase their income mainly through improving milk quality or producing milk more efficiently. Our study took place just as the quota was about to be removed, meaning that the stable market for milk production would disappear (Lapple and Hennessy, 2012). The quota acted to protect farmers from international competition, so there was a fear that the industry would have had to change significantly in order to compete with more efficient international farms. In this context of increasing international competition and abolition of the quota system, changes included a push towards greater efficiencies (Lapple and Hennessy, 2012) and an improvement in the knowledge-base, and thus competitiveness, of the industry. These were being steered by the Irish government via institutions such as the Irish Agricultural Research Institutes¹ (IARIs). In

Munster, the local ARI's remit was to undertake research into pasture-based systems of milk production and disseminate this knowledge to farmers through open days, farm walks, workshops or discussion groups. The ARI discussion groups used to be accessed on a voluntary basis but recently farmers had been paid an incentive to participate.

Most agricultural land in Ireland is quite fragmented, the result of the selling off of small packets of land in 1921 when Ireland gained independence from Britain and freedom from large landowners (Fahey 2002). Fahey (2002) also suggests that this history was absorbed into Irish consciousness as a lesson in the evils of agrarian capitalism. Together with the famine of the 1840s this brought about profound changes in Irish family structures (Bierman, 2011).

Passing on the farm in a complete and intact state was a counter to the fear of dispossession and was an important responsibility for the farmer (Ni Laoire, 2005). 'Impartible inheritance' meant that the head of the household, who was invariably male and held sole title to the land, would select one of his children to inherit the entire holding. Cassidy and McGrath (2014) suggest that this provides 'cultural scripts' for farm families to this day. At this time the State's agrarian policy supported a 'rural fundamentalist' vision of Irish society 'centred on the small family farm as a social ideal in a society dominated by pastoral values' (Fahey 2002). Today farming is still predominantly a family-owned business (CSO 2013). The Irish identity with its associated notion of family, is reinforced by the Catholic Church which, although arguably weakening, still dominates some aspects of cultural life in Ireland (Breathnach, 2008).

Traditional farming masculinities in Ireland have been rooted in idealised notions of family life, morality, and farm ownership that confers status and prestige on the landowner (Shortall, 1997) and in which tenacity, self-reliance and autonomy are important elements.

This context provided the background for our study into innovation. In the remainder of the

paper we identify the emotion-based factors that contribute to the adoption, or rejection, of different categories of innovation by dairy farmers in Munster, Republic of Ireland.

4. MATERIALS AND METHODS.

We chose to use interviews to help us understand why dairy farmers adopt certain innovations because analysis of qualitative data can provide contextualised and nuanced interpretations of behaviours and is able to reveal previously unknown and/or unrecognised influences. To this end we sought to interview a purposive cohort of 27 dairy farmers in the Munster region of Ireland. Supporting information came from interviews with 6 other participants in the local industry. Introductions to interviewees were facilitated by three people: a dairy specialist employed by the local ARI, a former employee of that centre who had retired but was still working as a freelance in the industry and a farmer in an area out further from the local ARI. One of the people who facilitated the interviews is a former colleague of one of the authors of this paper. This relationship had benefits in creating a context in which the interviewees could feel comfortable in discussing issues with someone with knowledge of the industry and region (Cassidy and McGrath, 2015).

Our interviewees ranged in age from their mid thirties to late seventies. Typical of the Irish dairy farming industry (O'Hara, 1998; CSO, 2012), all of our cohort were male, and 26 of them were married with children. Two of the 27 farmer interviewees were owners of large-scale farms employing farm managers and other employees; the remaining twenty-five owned medium-sized farms of around 40-50 ha, with 50-100+ milking cows and fewer than five employees. Three interviewees had degrees in a non-agricultural subject, one had obtained a degree in agriculture: the remainder had obtained a 'green cert', a farming qualification

provided by the IARI. Two farmers had bought their farms on the open market. The rest had taken over the farm from their fathers or inherited it from other family members. The farms typically had been in the family for two or more generations.

4.1 Data Collection Methods And Analysis.

Data gathering took place between September 2012 and July 2016. All respondents were interviewed by one or both of the authors. In addition a number of informal discussions were held with other industry members, who provided background information. We adopted a semi-structured format where key themes were explored, but interviewees were encouraged to talk freely about related issues if they wished in order to generate knowledge that was not captured in existing theoretical writings. Each formal interview lasted for between one to one and a half hours. They were audio recorded and transcribed. Occasionally, further information was sought in a follow-up telephone call.

We based our initial questions on the established innovation adoption literature and asked 1) what were the influences on their behavioural choices, for example relationships with other industry participants, participation in knowledge networks, education, background and experience; and attitudes to learning, farming practices, and novelty, and 2) what innovations they had adopted and why.

Data were analysed using standard thematic qualitative coding techniques (Flick, 1999; Braun and Clarke, 2006). This method was deemed appropriate as it can highlight similarities and differences across the data set, it allows for social as well as psychological interpretations of data and it can generate unanticipated insights (Braun and Clarke, 2006). We looked for links between pre-identified themes and the types of innovation adopted, and the recursive interplay

between factors in the process of encouraging or blocking innovation adoption. Examples of the themes and subthemes that were identified both from pre-existing theory and inductively from our data are shown in table 1.

Insert Table 1 about here.

It was during the analysis process that the important role of emotions emerged from the data, and a subsequent literature review was retrospectively undertaken on the role of emotions in innovation adoption.

Rigour was ensured through strategies recommended to enhance the credibility of qualitative study findings (Morse et al., 2002). The potential for bias - both in terms of the analysis of the data and the ways in which interviewees chose to respond to questions - was minimised as far as possible through discussions of the data analysis protocol and implications of the findings between the two co-authors and other colleagues (Chenail, 2011). We also attempted to ensure transparency of analytical trails and data presentation. However, because of the small size and convenience nature of the cohort we make no claim for the generalisability of our findings.

Instead we simply aim to develop insights into some of the competing influences on farmer's choices in a specific rural location in Ireland.

5. RESULTS AND DISCUSSION: THREE CATEGORIES OF INNOVATION.

Three underlying themes emerged from analysis of our primary data: grassland management, technology and herd characteristics. We discuss our results on the role of emotions on innovation adoption and rejection structured around these categories.

5.1 Innovations In Grassland Management.

Innovations in grassland management included grass measuring, the adoption of new grass varieties or different ways of pasturing the cows such as strip grazing. In this category the IARI's research and knowledge dissemination processes via the discussion groups that they held, along with 'farm walks' (in which farmers visited each other's farms), were the predominant factors influencing the adoption of these types of innovations. Five of our interviewees had rejected new grassland management practices. Of the remainder, the twenty who had actively embraced novel grassland management practices had done so on the advice of the IARI: .

... he [the IARI's researcher] did grassland measurement trials, and we were one of the 12 or 14 farms he used ... he taught me how to measure the grassland ... and that led onto a better appreciation of the value of grass. It gave us the confidence to [pasture] earlier in the spring and to set up the system where you graze late into the autumn, which meant that you had a much cheaper system. (Farmer C).

Here is a description of how knowledge is transmitted, and confidence engendered through access to the IARI's research. Economically, the grassland innovations promoted by the IARI made sense for most farmers. However, we could also discern the influence of comfort in 'belonging' and 'in-group' membership (Hewstone, et al., 2002) in the above account, which contrasted strongly with those few that we discuss below who had chosen to not adopt new grassland management practices. This would have strengthened his commitment to the advice given. Not all discussion groups were open to everyone. This exclusivity made membership more desirable for some farmers:.

Yeah, I wanted to... Well, I had actually tried to get in [the discussion group] before, but they weren't taking in anyone at that stage ... I would have been aware that it had the most information. It was at the edge of farming technology, of what was happening in farming, and I suppose I would have known some of the people in it, and seen how they were farming. (Farmer D) .

Participation in the discussion groups had another effect. Members could learn from others which had been the most successful initiative, with the intention of copying what they did (McAdam et al., 2014). In some cases this was in order to supersede it as a form of 'healthy competition', despite the fact that there was little evidence of any attempt to grow market share at the expense of their colleagues. This somewhat paradoxical finding can be explained by placing it within the context of Irish farming, its history of subordination and domination by outsiders, and therefore the strong bonds that develop within the community.

We found that emotions in regard to grassland innovations were strengthened in either a positive or negative direction (Baron, 2008) by reactions to the IARI, more strongly than we encountered in the other two innovation categories. Despite the majority of our interviewees having adopted the recommendations of the IARI, five did not, and actively rejected their advice. Sometimes this was due to the perceived incompetence of the local discussion group facilitator (Dorner and Karpati, 2010), thereby devaluing the advice that was provided.

However, in other cases we could discern the influence of very strong negative emotions, resentment and envy (Tai et al., 2012), and even contempt (Fischer and Manstead, 2016). A recurring theme from those rejecting the IARI's advice was that their research was not applicable to all farms or that their cows did not like the grass types: .

You see, you get lots of research from research farms, but research farms are

farming on the best of land, and do you really get the full, truthful story from them? (Farmer U).

...the grasses that are coming in aren't liked by the cows, they hate the modern grass. (Farmer S) .

As a pasture-based system, grass is the main source of fodder and improving grassland yields is an important source of economic benefits for dairy farmers in Ireland (Teagasc REF).

Therefore one might have expected that all farmers would have wanted to listen to the IARI's advice, given that it was probably the most important source of grassland management knowledge in the country. Yet we found examples of farmers who knowingly rejected this advice. One explanation is that they perceived that they were not part of the 'in-group' (Goldenberg, et al., 2016) and were made to feel like outsiders (Tai et al., 2012; Shteynberg et al, 2014). Those who did feel marginalised felt especially resentful. Here, the emotions were directed (Russell, 2003) towards a body that was perceived to have ignored or marginalised some individuals or groups and related to previous bad experiences with the local ARI (Baron, 2008). These perceptions were made sense of as 'this is not relevant to me' (Choi et al, 2010).

As a result the advice provided by the IARI on this, and other issues that may have been beneficial, was rejected. On the other hand, those that did adopt grassland innovations were made to feel special and part of 'leading-edge' developments and the innovations proposed in these fora were adopted. We did not explore this in our current study and it remains an issue for further research.

An alternative explanation is based on the conservative preferences of farmers. Although Sun and Bosch (2013) did not specifically focus on the role of emotions in their study of beef farmers in Australia, they found similar resistance to grassland innovation. New grass types

would have provided better nutrition and therefore better cattle growth. However, uncertainties about whether newly introduced grass species would turn into weeds, and lead eventually into lower quality pastures, meant that such grassland innovations were rejected. Fear of the negative impact overcame any potential evaluation of the upside - and without research to prove that their fears were unfounded, the farmers stayed with what they already had. Those of our respondents that rejected the IARI's advice did not have the benefit of the trials that had been undertaken on better land or felt they did not get the full information regarding some aspect of grass-based research, and therefore chose to stay with the status quo.

5.2 Innovations In Herd Characteristics.

Our second category of innovation related to herd characteristics such as herd size and breed type. We found that the emotional factors influencing herd innovations were strikingly different from those shaping grassland innovation, and veered more towards positive emotions. Amongst our cohort, the use of land other than for dairy farming was rarely seen to be a viable option: the price that could be obtained for milk was too good relative to the alternatives. Because incentives had been taken away from the beef industry farmers who had previously moved into beef and/or tillage were now returning to dairy. As we suggested above herd quality was one of the few ways of improving the farmer's economic performance; changes to herd characteristics and adopting improved cattle breeds were another. The milk quota, whose complexities are beyond the scope of this paper to discuss (Department of Agriculture, Food and the Marine, 2013), was a major influence on farm profits. Quotas were created by the government and allocated by the local Co-operatives to farmers, whose milk they then bought and assessed for quality. Gaining a larger quota could only be achieved by increasing herd and/or land size, but the structure of land ownership and the availability of

labour made both of these hard to achieve. Improved yields and milk quality, and therefore income, could be achieved through different breeds. As a result the IARI also undertook research into cow breeds, and six farmers had experimented with different types, notably Jerseys, Norwegian Reds or cross-breeds; one of these was one of the large 'professional' farmers, and the others had medium-sized farms. They had been introduced to these breeds by the IARI, the 'AI man', or heard from them from neighbouring farmer friends. However not all these farmers continued with the different breeds. They argued that this had an economic basis, in that although Jersey cows could produce better milk this was countered by the lower income from selling calves.

However, decisions relating to herds had a strongly affective- and/or values-driven component to them. Throughout our interviews it was evident that the farmers loved what they did. They had made a positive choice to farm. In most cases they had inherited the farm from their family - an example of 'impartible inheritance', which, as mentioned earlier, engendered a sense of belonging and common history. Cassidy and McGrath (2014) say "emotive attachments to the farm are anchored in a temporal continuum, which position actors in a framework incorporating past, present and future generations". Silvasti (2003) goes so far as to suggest that this is the most significant norm in the community. In terms of the effect on the choice of innovations it is plausible that our respondents were the chosen successors because they were considered the most likely to preserve the farm for the future, and not 'rock the boat', thereby maintaining intergenerational continuity (Vanclay and Enticott 2011). Our interviewees were members of a community whose history and cultural context meant that the loss of a farm would be much more than the loss of a business enterprise: it would represent the loss of a way of life and of a family inheritance.

So, you know, that...any ground that is, any ground – to me, any ground that has been owned by the family is...is and should not ever been for sale. Any ground that has been purchased by a member of the family or purchased in reasonably recent history, by which I mean probably back to my grandfather, is...an asset that is tradable for a better use, to transfer that asset into a better use somewhere else. (Farmer A).

All of our respondents were exemplars of the Irish rural character; self-reliant, ‘men of the land’, and conservative with a small ‘c’: conserving their way of life, valuing stability and tradition (Silvasti (2003)). Although adopting a new breed of cow was a way of increasing income through the better-quality milk and protein solids that new breeds produced, the adoption of different breeds was conditioned by less economically-motivated emotion-based reasons, even aesthetic ones that were shaped by the script of what it meant to be an Irish farmer:.

I don't particularly like looking at these cross-breed cows [laughing]. I prefer looking at these black and white cows. (Farmer G).

...trying to be a progressive farmer, but at the same time, I'm traditional enough and stay with black and whites. (Farmer L).

Black and white cows (British Friesians) epitomises the dairy cow in Munster. A Google image search for “Irish dairy farmer” produces pages of photographs of Friesians; of the first 30 photographs only two show other types of cow (brown - alongside Friesians).

The IARI once again provided a source of innovative knowledge as new cow breeds, especially crossbreeds, was an area that they researched. However the IARI's advice was not always adopted and resistance to different breeds or economic growth for the sake of it could be seen in a number of accounts which, instead, revealed an attachment to the traditional way

of Irish farming (Fahey, 2002):.

...an agenda out there in the Government, [IARI], all these circles really, you know, is to push us all into very intensive farming to produce a cheaper product for whom, and so we'll all have to work hard for this very cheap product. Like I mean, if you look at the whole thing, right, I'd be very pro family-based farming, not factory farming, do you know? (Farmer S).

Two additional recurring themes could be found in our interviewees' accounts that affected the choice to change their herds - contentment with their lives and the desire to be in control (Heidenreich et al., 2016). As two of our respondents put it:.

I like doing what I do. I like the cows, I like milking cows, ... when you like a thing, it takes the drudgery out of it too like. I'm lucky I suppose. (Farmer G).

There isn't any point really in putting in huge investment and getting into a lot of extra cows if all the profit is going to go on labour, and/or we're going to have a terrible life as well. (Farmer M).

Another farmer preferred to use a member of staff on an ad-hoc basis rather than employ a full time member of staff because this would have required him to increase his herd numbers to an economically efficient, but *uncomfortable*, size. In these examples we see a trade-off being made between economic benefits and comfort, and comfort winning. Whether this will prove still to be the case once the protecting effect of the quota disappeared is an intriguing avenue for further research.

5.3 Innovations In Technology.

The final category of innovation that we identified concerned the use of new technology such as robotic milking machines, other machinery and new types of buildings. This was the least mentioned of our three categories, and as these innovations tended to be incremental some of our interviewees did not regard them as anything particularly special. As farmer C described it, *'I wouldn't call it innovative really because, you know, I don't think we've done anything really new'*. However, the innovations' introduction was not a foregone conclusion. For the family-based farmer with few employees, typical of our cohort, introducing larger, more economically efficient and effective milking parlours was perceived as difficult and expensive and - crucially - unlikely to improve their lives, a further example of contentment 'trumping' ambitious growth. Indeed, this type of initiative was not always regarded as something to be admired or imitated, in a very tight-knit and visible community this may well have put off all but the most heterodox characters:

I think a lot of people just think of innovation being, "oh Jesus, he put in a milking parlour that can milk a thousand in 10 seconds like" (Farmer G).

Despite our cohort generally being content with their income, cost was commonly identified as a block to technology innovations. For those that *had* been prepared to make the investment, ignoring any negative comments from the community, it improved their lives through saving time, but also improved their enjoyment of farming: .

When I put in the new parlour, it just makes things very simple, and I have a very good parlour, and milking cows now is a pleasure...now we have 24 units, which means that I'm able to put the cows through it an awful lot quicker, which saves me time (Farmer I).

To summarise, in this section we have identified the different emotional influences on three different categories of innovation in the Irish dairy farming industry. The identification of the important role of emotions in innovation adoption decisions, helps to explain why some types are adopted and others are not. In the following section we place our findings in the context of established research on the role of emotions in innovation decision-making, given the social and economic context in which it took place.

6. CONCLUSIONS AND IMPLICATIONS FOR PRACTICE AND FURTHER RESEARCH.

In this study we could identify a number of ways in which emotions influenced the adoption, and especially the rejection, of innovations. The moderating effects of emotions varied according to innovation type and the influences were not symmetrical in the different categories of innovation; some appeared to be stronger in their influence *against* innovating than they were in the pro-adoption direction. This also varied by category.

Our cohort as a whole exhibited a strong need for autonomy and a preference for a stable and comfortable life, rather than the uncertainty of something new and potentially disruptive.

Contentment with their lifestyle was discernible in most of our interviewees' accounts. A wish to be part of a community was also noticeable, highlighting the important role of socio-emotional bonds and therefore a desire not to attempt to out-compete colleagues or, except in rare cases, develop new initiatives that would incur ridicule or envy. This also manifested itself in the strong emotions expressed by those who felt that they were excluded from some of the most important communities, those that were privileged to have strong research-based connections to the IARI, for example.

The protection of the traditional way of life and the continuity of the family farm appeared to be a "central cultural script" in most of our interviewees' accounts. Almost all of our respondents had taken the farm over from a family member, father or uncle typically. In two cases the brother that had not inherited the farm had bought farms themselves. Only two of our interviewees had entered farming through the open market. This is likely to have had a number of important effects on their innovation choices. First, this system of inheritance meant that the person who took on the farm was already selected-in on the basis of their possession of certain attributes, for example their desire for continuation and stability or their passionate attachment to the land. Second, almost all of our interviewees had small shrines to the Virgin Mary in a prominent position on a wall, and interview accounts made frequent reference to the community of fellow farmers. This suggests that any innovation had to be positively selected for through a filter of what would be acceptable to their family, to their farmer colleagues and to the wider community including the Catholic Church. Certain types of innovation would be less likely to cause offence to some or all of these groups especially in the categories that were the most value-laden, notably herds and to a lesser extent grassland management. This also suggests that those farmers that felt marginalised from community-based participation would experience an even stronger sense of resentment than would others who were 'left out' of less value-laden industries. Those innovations that had less association with Irish farmer identity, such as those categorised in technology, were notable for being decided on other grounds - particularly comfort and economics.

We could identify a number of complex interactions between competing emotions - for example the desire for comfort and contentment encountered ideology-driven emotions of what it is to be a farmer. Decisions on grassland adoption involved interacting with a

dominant, and some would say domineering, institution, the IARI, with a strongly reputation- and economics-driven agenda. Grass-based farming systems are core to the reputation of Irish dairy produce exports, and are therefore more important to the IARI than either technology or herd innovations. Although the IARI undertook research into new dairy breeds, there was never a strong sense from our interview data that their influence dominated, as it did in grassland innovation decisions. As the IARI was not pushing herd innovations to the same extent as grassland, there was less resentment, and less adoption by the ‘chosen’ farmers and less resistance by the marginalised ones.

Herd influences were more diverse, and included the economic exigencies of the quota, local colleagues, the ‘AI man’ (the supplier of artificial insemination straws of bull semen), land characteristics as well as the international farming community. Ultimately, however, decisions on herds were mainly about achieving contentment through emotional engagement with animals, a factor that seemed to apply to everyone we interviewed. The farmers that preferred the traditional black and white breeds admitted that the decision was not an economically rational one, but didn’t care that it did not make economic sense. It was about wanting to enjoy life and what it is to be an Irish farmer.

Our results indicate many avenues for further research. First, studies of the role of emotions in business decisions are relatively rare, notwithstanding some key texts (Fineman, 2000, 2003). The role of emotions in innovation decision-making are even rarer (Choi et al 2010; Grichnik et al., 2010; Jenning et al., 2015), and studies of the role of emotions on farming innovation decisions are almost non-existent. All of these warrant further research. Understanding why certain categories of innovation are influenced by different types of emotions would make targeted interventions (for example like those of the IARI or innovation-development agencies

in other countries) more effective.

Whether the moderating effects of emotions found in this study applies equally in other dairy farming communities or other farming industry sectors also deserves further research. The influence of culture and history are stronger in Ireland than in many other countries, and farming is more central to the Irish sense of identity than in most other places. How this influenced innovation choices, and whether those predict behaviours in other places, is unknown.

Our analysis suggests that there were different motivations underpinning decisions relating to the different sort of innovation, and different emotions influencing the adoption as opposed to the rejection of certain innovations. These appeared to be asymmetric in their impact, and a more granular understanding of these emotions would help us to understand in a more nuanced way the interplay of factors on behavioural choices. For example in a community with a strong collective identity how might a reluctance to engage in competitive behaviours translate into a decision to imitate a favourite colleague rather than take the advice from a less engaging institution.

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Table 1:

Theme	Sub theme
History and experience of farmers	background, experience, education, age, marital status
Farming	manner of acquisition, farm type, farm size
Institutional context	Social economic environment, land ownership structure, IARI
Networks	social/professional relationships, discussion groups and facilitators (IARI advisors)
Personal characteristics	ambition and motivation, outlook on life (contentment), attitude to farming/food quality.
Emotions	Contentment, resentment, belonging

Highlights

- This paper identifies the role of emotion in Irish dairy farmers' innovation choices
- Using in-depth interview data we identify three important categories of innovation
- Value-driven emotions about farming underpin the farmers' innovation choices
- The moderating effects of emotions varies according to the type of innovation

Brief biographies

Dr Alison Rieple is Professor of Strategic Management at the University of Westminster in London, UK. Following a degree in music and an early career in the Probation Service, she now teaches strategic management, research methods and innovation management on Westminster's MBA and PhD programmes. Alison also undertakes consultancy and workshops with commercial clients on design and innovation management, and the management of change. Her research interests include the management of design, innovation in the cultural and creative industries such as fashion design and music, and the factors blocking the adoption of innovation in developing countries. She is the co-author of two strategic management textbooks. She is co-editor of a book published in 2016 on the role of design in disruptive innovation.

Dr Sylvia Snijders is a Senior Lecturer in Human Resource Management Department in Westminster Business School. She qualified at Wageningen University, the Netherlands, with a MAgSc in animal science and completed her PhD in University College Dublin, Republic of Ireland, on bovine reproductive physiology. Her research interests include innovation and best practice management in agriculture such as dairy industry stakeholders' attitudes towards animal welfare., and diversity related issues, particularly related to gender in construction and science, as well as menopause and the market.