The Impact of a Values-Based Supply Chain (VBSC) on Farm-Level Viability, Sustainability and Resilience: Case Study Evidence

Hooks, T[1]., Macken-Walsh, Á.[2], McCarthy, O.[3], Power, C.[3] and Henchion, M.[4]

[1]School of Business, University College Dublin[1]
[2]Rural Economy and Development Programme, Mellows Campus, Teagasc, Athenry, Galway, Ireland
[3]Centre for Co-operative Studies and Department of Food Business & Development, O'Rahilly Building, University College Cork, Ireland
[4]Rural Economy and Development Programme, Teagasc, Ashtown, Dublin

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Abstract

Irish beef farms have experienced poor viability longitudinally, reaching crisis levels in 2013. In response to this, beef Producer Organisation (PO) legislation was introduced in 2016 to allow Irish beef farmers to negotiate collectively for the first time and to allow for a greater integration of beef farmers to the supply chain. Given this new enabling environment for collective action among beef farmers and current policy objectives to add value to Irish beef, this research focuses on a US based development paradigm the 'Agriculture of the Middle'(AotM) which simultaneously fulfils these objectives. AotM posits that family farms must transition from a supply chain to a values-based supply chain (VBSC) approach, involving amendments to both product type and actor dynamics within the chain, to ensure future sustainability. This paper presents a qualitative case study of a US based beef co-operative integrated to a VBSC. We use an analytical framework of viability, sustainability and resilience to analyse impacts at farm-level. Our analysis highlights a number of positive effects on farm-level viability, sustainability and resilience including improvements to market orientation and price stability, among others which provide crucial insights for beef PO development in Ireland. Furthermore, this paper outlines current Irish stakeholder views towards beef POs and highlights some potential caveats of such an approach in the Irish context.

Keywords: Ireland, beef farms, Producer Organisations (POs), product differentiation, co-operative, values-based supply chain, viability, sustainability, resilience

1.0 Introduction

The Irish beef sector accounts for almost 40% of total Gross Agricultural Output (GAO), which amounted to €6.92 billion in 2016 (Bord Bia, 2016). It is a highly export oriented sector, with 90% of total beef output being exported (Bord Bia, 2018). Furthermore, it is the largest agricultural sector, with over 100,000 of the 139,000 total farms in Ireland having a cattle enterprise (DAFM, 2015). Despite the importance of the beef sector in terms of its size and value to the Irish economy, at farm-level the sector struggles with poor viability[1] (Burke and Roche, 1999; Connolly *et al*., 2003; Hennessy and Moran, 2015). For instance, in 2016 an average of only 26.3% of all beef farms were categorised as economically viable (NFS, 2016). The beef sector, in particular, experiences poor market returns with the majority of beef farms highly reliant on EU subsidies and off-farm employment to remain stable (Dillon *et al*., 2017). By comparison, the Irish dairy sector, while a substantially smaller sector in terms of the number of farms involved, is recognised as one of the most profitable sectors at farm-level. One of the reasons posited for this is an institutional difference between the two sectors. Since the late 19th century, farmer owned co-operatives have formed an integral part of the Irish dairy sector and are considered vital to the stability and growth of the sector (Murtagh and Ward, 2011). However, the beef sector, in this respect, remains largely unorganised.

The poor economic viability of Irish beef farmers is often attributed to asymmetries of power within the supply chain that tend to favour processors and retailers (Renwick, 2015). The Producer Organisation (PO) model, similar to co-operatives, has been proffered as a way to "rebalance the supply chain by strengthening the hand of producers" (Minister for Agriculture, Food and the Marine quoted in Cadogan, 2016). In 2013, two events provided the catalyst for the introduction of beef PO legislation in Ireland. Firstly, at the EU level, EU Regulation 1308/2013 expanded to provide legal recognition of POs[2] in the beef sector, and secondly the Irish 'beef crisis'[3] in 2013 led to the establishment of the Beef Forum[4] which was initiated in April 2014 by the Department of Agriculture, Food and the Marine (DAFM). The Dowling Report, which was developed under the competency of the Beef Forum, recommended that the role of POs within the Irish beef industry be examined as a strategy to rebalance power in the supply chain and enhance farm-level viability (DAFM, 2014). Subsequently, the legislation was implemented in Ireland to allow beef farmers to organise for the first time in order to negotiate collectively with meat factories for better terms and prices for their cattle, without

[1] Viability is defined as providing the average agricultural wage for family labour in addition to providing a 5% return on non-land assets (Frawley and Commins, 1996)

[2] POs were first introduced in the EU in 1972 (Eastham, 2014) and organised mostly in the fruit and vegetable sector. PO legislation was extended to the dairy sector in 2011 and beef in 2013.

[3] Renwick (2015) attributes the beef crisis of 2013 to a number of factors including production driven systems; export blockades; power imbalances within the chain; poor flow of information across the chain; the horsemeat scandal; processors' cattle specifications (weight targets and carcass conformation). A lack of transparency and communication exists between different actors in the chain, generating mistrust and suspicions of profiteering further down the chain (Renwick, 2015, p.21).

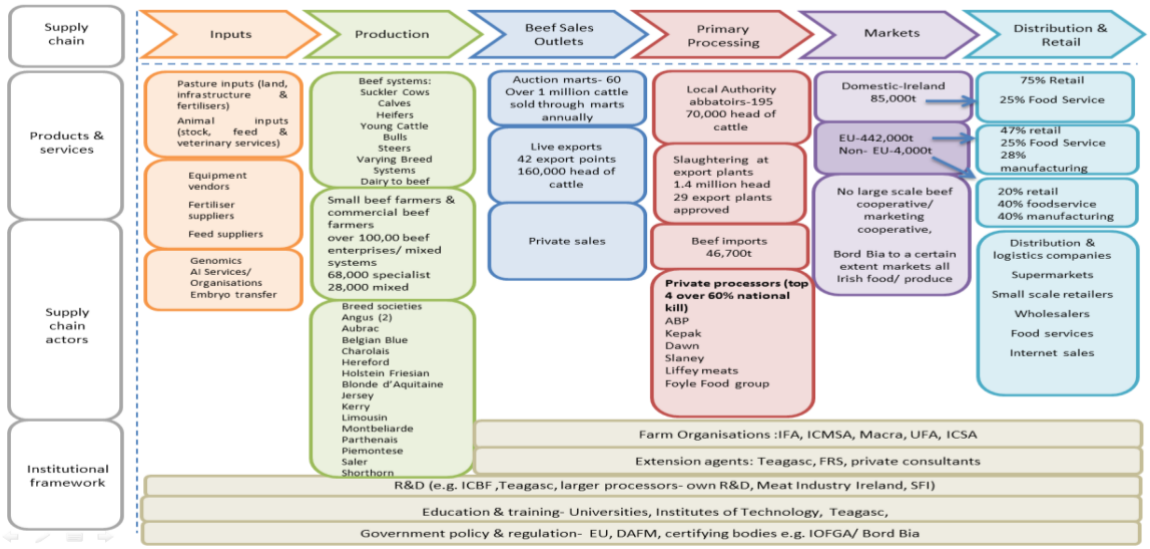
[4] The Beef Forum was initiated by the DAFM in April 2014 to respond to the 2013 'beef crisis'. The Beef Forum was essentially a series of roundtable talks involving industry stakeholders, identifying potential solutions for the sector.

breaching competition rules (Hennessy, 2016; European Commission, 2017). The beef PO legislation is a significant development in enabling collective action among Irish beef farmers, however the perspectives and attitudes of beef industry stakeholders will ultimately shape engagement with the PO model and, consequently, the impact of the legislation.

2.0 The Irish beef sector

Approximately 588,000 tonnes of beef were produced in Ireland in 2016 with 535,000 tonnes exported (Bord Bia, 2018). The beef supply chain is characterised by diverse actors spanning input-suppliers, farmers, and numerous sales outlets, processing, distribution and retailing outlets. Figure 1 illustrates the complexity of the chain and the heterogeneity of the Irish beef herd in terms of the systems (for example cattle rearing, cattle finishing), types of beef animals (ranging from suckler cows, calves, heifers, young cattle, bulls and steers) and breed variety (Hocquette and Chatellier, 2011; Finneran and Crosson, 2013).

Figure 1: The Irish beef supply chain



Source: adapted from Renwick, 2015 and Heery *et al.*, 2016

Some 100,000 farmers in Ireland are involved in beef production, with just 32 major export-approved privately-owned slaughtering facilities (DAFM, 2015). While there are a further 195 low-volume slaughterhouses (DAFM, 2015), 32 are involved in the processing of all exports (accounting for 90% of output). This points to a high level of concentration in the processing sector with just four processors accounting for 65% of the total kill (Renwick, 2015). Allegations of 'price fixing' and 'beef cartels' in the Irish meat-processing sector have circulated in the industry longitudinally but these claims have not been substantiated (O'Sullivan, 2000; Shannan, 2000). Unlike the dairy sector, there are no co-operatives that have processing functions in the beef sector. There is, however, a well-established network of marts whose primary functions are confined to providing a transparent method of selling livestock and securing payment (ICOS, 2017).

2.1 Producer Organisations

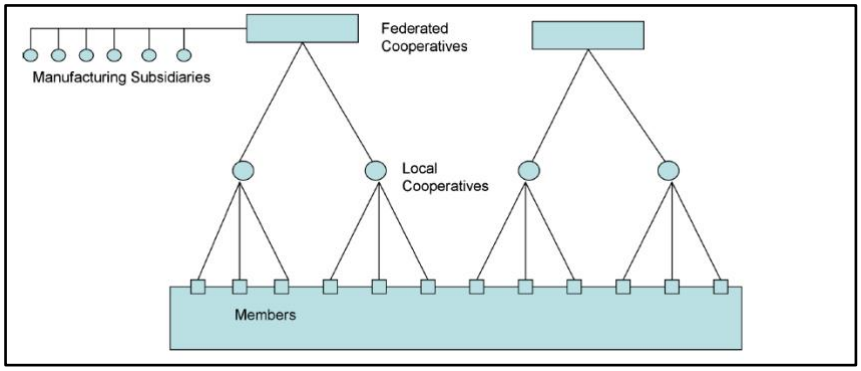
The PO is designed to support farmers to achieve collective scale and bargaining power within the food supply chain (Penrose-Buckley, 2007; Falowski and Cianin, 2016). The EU regulation 1308/2013 stipulates that POs must comply with certain criteria in order to become established. POs must be producer led; produce a specific product as provided for within the regulation; form a legal entity or a clearly defined part of a legal entity; have a minimum number of members or marketable produce; provide sufficient evidence that it can/ has carried out activities; and should be established in order to pursue at least one of the specific objectives outlined in (Table 1) the regulation (CMO Article 152[5]; European Commission, 2018):

Table 1: Objectives of Producer Organisations

Joint distribution, including joint selling platform or joint transportation
Joint promotion
Joint organising of quality control
Joint use of equipment or storage facilities
Joint management of waste directly related to the production of live cattle
Joint procurement of inputs

Van Herck (2014) identifies potential benefits arising from POs for producers including strengthening of farmers' bargaining power upstream and downstream; reduction of risk; access to new markets; reduction in transaction costs; and higher incomes, but to name a few (van Herck, 2014, p. 4-5). The regulations that govern the operation of POs also provide for the establishment of Associations of POs (APOs), which are formal collaborative associations of multiple POs horizontally similar to the federated collaborative structure as favoured by the Agriculture of the Middle (AotM) movement (see Figure 2).

Figure 2: Federated co-operative structure



Source: Gray and Stevenson, 2008, p.47

The individual POs maintain their independence while co-operating via federated-type structures (Lyson *et al.*, 2008). van Herck (2014) and Eastham (2014) observed that while the economic performance of a PO may be positively correlated with its size, 'larger POs could also be associated with structural complexity and reduced flexibility'.

Critically, however, POs should be set up on the initiative of producers and should aim to increase the economic performance of members by tailoring production and sales to market demand (Chlebicka, 2015; Falkowski and Ciaian, 2016). Typically, POs are organised as agricultural co-operatives which represent one of the main models recognised under currentU PO Regulations. Co-operatives are flexible, adaptable business models (Birchall and Ketilson, 2009; McCarthy *et al*., 2010) and are user-owned, user-controlled and user-benefit organisations, making them appealing structures for the establishment of POs (Bijman *et al*., 2012; Chlebicka, 2015).

2.1 Adding value

There is a direct association between POs and the pursuit of high valued-added markets. PO legislation provides specifically for differentiated products (Articles 150 & 172 of EC Regulation 1308/2013; European Commission, 2018). Berdegué (2008) and Hellin et al. (2009), among others, argue that POs are more successful when they produce value-added rather than undifferentiated commodity goods. To enhance competitive advantage, Beverland (2007) states that producers need to focus on quality enhancing attributes that are difficult to replicate. By enhancing product quality, not only are producers able to command premium prices, but they can also compete on quality and not solely on the price 'race to the bottom' generally associated with the commodity markets (Young and Hobbs, 2002). Because most agricultural commodity prices are dictated by global supply and demand, it is crucial that POs have the ability to innovate and add value to ensure the long-term viability and sustainability of farmers (DEFRA, 2014, p.17).

The distinction between value and volume of produce is a recurring theme in agricultural development debates. At farm-level, arguments that increases in scale are positively associated with improvements in farm viability are tenuous at best. In an Irish study of the beef sector, Tsakiridis *et al.* (2016) found that there are few, if any, returns to increasing the scale of beef farms. On the other hand, increasing attention is paid to the economic potential arising from adding value to produce rather than increasing its volume. Quality attributes are increasingly sought after by consumers (Regan *et al*., 2018) and in this context policy-oriented documents promote the production of food *"that is demonstrably superior from multiple (quality, safety, health and environment) perspectives"* (Purvis *et al*., 2012, p.39; Bell and Shelman, 2010; Monaghan *et al*., 2015). Ireland's most recent agriculture development blueprint *Food Wise 2025* explicitly emphasises the need to build on increasing value over volume and targeting higher value-added markets as a means of increasing economic returns (p.35).

Quality Assurance (QA) accreditation has been an important strategy in promoting Irish beef produce (Bord Bia, 2018). The QA scheme operated by Bord Bia verifies that beef is produced sustainably on certified farms by enhancing elements of food safety, animal welfare, traceability, and environmental protection (Bord Bia, 2017). Currently, over 95% of beef products and 85% of dairy products are accredited by Origin Green (Origin Green, 2018).

These attributes, together with the inter-generational heritage of Irish family farms and their close human-ecological relationships, provide highly valuable attributes for the development of a strong farmer-owned Irish beef brand (Macken-Walsh *et al*., 2017; Macken-Walsh, 2017). Clearly, however, it is neither possible nor desirable for many small beef farmers to develop such a brand individually and collective action is recognised internationally as a solution in this context (Lyson *et al*., 2008; Macken-Walsh *et al*., 2017).

2.2 'Agriculture of the Middle 'model: A prospective blueprint for Irish beef POs

The 'Agriculture of the Middle' (AotM) development model emerged as a response to the 'bifurcation' of farms in the US (Kirshchenmann *et al*., 2008) referring to an increasing number of large scale producers supplying commodity markets on one hand and a growing number of smaller scale producers supplying specialised markets on the other, rendering the farms in the 'middle' under threat [Kirshchenmann *et al*., 2008; Kirshchenmann, 2012). The rationale underpinning the AotM agenda is that 'middle' farms also have valuable sustainability attributes that are worth protecting for society (Shucksmith and Rønnigen, 2011: McDonagh, 2013; Hooks *et al*., 2017c).

The AotM development model incorporates a two-strand strategy to improve the viability and sustainability of middle farms. The first strand is to brand family farm products to express the socio-cultural and ecological sustainability values associated with family farms (Lyson *et al*., 2008; Macken-Walsh *et al*., 2011) thereby creating a differentiated product, targeted at premium non-commodity markets (Stevenson *et al*., 2011). Secondly, AotM proposes co-operation between family farms to create efficiencies, scale and coordination in accessing markets as well as with chain actors including processors, retailers and consumers, achieved by organising into a values-based supply chain (VBSC) (Stevenson and Pirog, 2008). VBSCs aim to combine shared vision, information, achieve high performance and trust while adhering to principles of "equitable profits, equitable wages, and business agreements of appropriate extended duration" for all partners in the chain (Stevenson and Pirog, 2008, p.120).

Individual farms often do not have sufficient scale (Briscoe *et al*., 1982, Birchall and Ketilson, 2009) to partner with large entities, such as processors and retailers in VBSCs, so they must act collectively. Co-operatives are argued to be flexible business models that are compatible with POs, have principles of provenance and equitable governance and are compatible with the values of the 'ethical consumer' who seeks produce that has genuine and traceable links with producers and who desires that their purchases directly support the continuation of producers (Little *et al*., 2010; Stevenson *et al*., 2011; Schindler, 2012; Feenstra and Hardesty, 2016).

3.0 Methods

Data collection took place in two separate studies, namely a case study of a US based beef co-operative integrated to a VBSC which had the aim of understanding how it operates and to explore the actual impact of the co-operative on farm-level viability, sustainability and resilience. Secondly, Irish fieldwork was conducted to assess the feasibility of such a model in the Irish context. This section will introduce the two studies separately and will finish with some conclusions based on the two studies.

3.1 US case study

This beef co-operative was selected based on three main criteria:

- The majority of Irish farms are classified as family farms, similar to the composition of the case study co-operative and this represents a significant element of their marketing strategy.
- The product of the case study co-operative is similar to the Irish beef product in terms of its orientation towards premium, value added markets. The co-operatives produce occupies the natural market niche similar to Irish beef being sold in the US.

And were further validated by the fact that:

- The main buyer of the co-operatives beef happens to be the main buyer of Irish beef in the US.
- The co-operative relies on separate structures and processing entities to bring its produce to market by integrating to a VBSC, which is the most feasible scenario in the Irish beef context.

Data collection involved conducting qualitative interviews using an adaptation of the Biographical Narrative Interpretive Method (BNIM) (Wengraf, 2001). Each interview commenced with a Single Question Aimed at Inducing Narrative (SQUIN) and this allowed interviewees to divulge their own experiences and allowed for revelations that may have been otherwise omitted if questioning commenced with a set of pre-defined questions[6]. In total, 24 face-to-face interviews were conducted. A total of 11 were undertaken with co-operative members (all family farms) from farms of various sizes (large, medium and small, based on head of cattle committed to the co-operative). These interviews were conducted with ten current members and one former member of the co-operative. An additional 13 interviews were conducted with the internal partners, founder members of the co-operative, representatives of partners in the chain and key informants. Data collection took place over

[6] All interviewees gave their informed consent for inclusion before participating in the study and ethical approval was granted in accordance with the Social Research and Ethics Committee in University College Cork

a 6-week period. Limitations included the fixed time period of the field research (6 weeks) and also geographical barriers meant sampling from a smaller area[7].

3.1.1 The beef co-operative

The beef co-operative was established in 1986 in the Western US when beef markets were in a state of flux. The majority of ranches, at this time, were under threat due to falling commodity prices. A small number of ranch families (14) saw this situation of adversity as an opportunity to exit the commodity market and make their beef unique to target premium markets for better prices. Their brand was created based on a co-operative of 'local' (initially one state) ranch families; producing rancher-owned 'birth to box' 'natural' beef, i.e., naturally raised on pasture with no antibiotics, hormones or artificial ingredients.

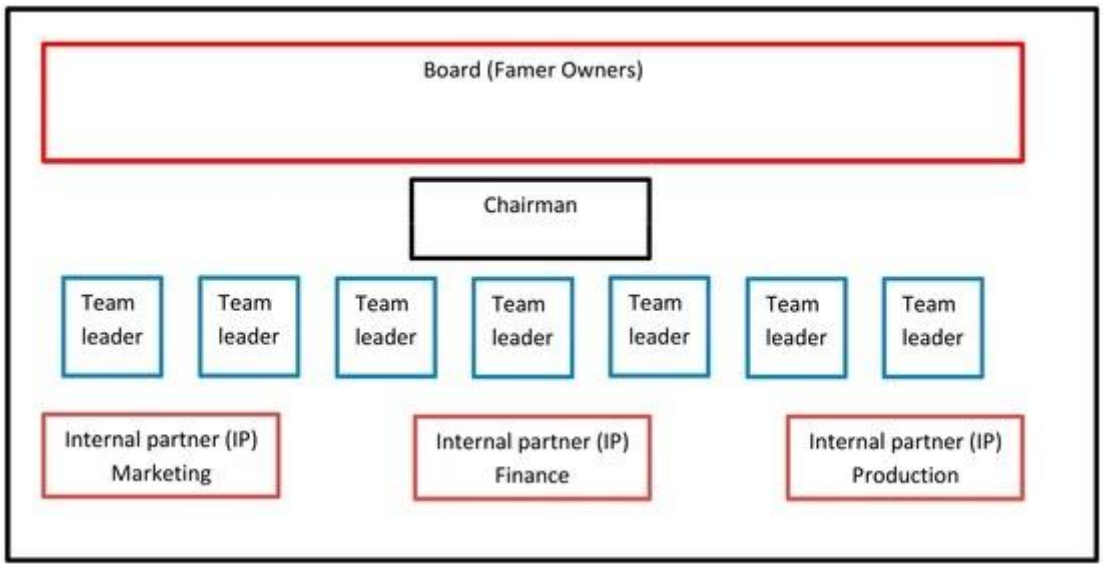
Structurally, the co-operative owns no assets, with the 'buy in[8]' based on the number of cattle committed to the co-operative rather than a monetary transaction. This co-operative operates a pull system of production; forward contracts or agreements for cattle numbers are decided 18 months in advance and prices are then set to reflect all costs and profit margins. The main criteria to be a co-operative member include committing an agreed number of cattle in advance; attending the Annual General Meeting (AGM); carrying out an annual in-store demonstration to connect with consumers; carrying out animal welfare audits; and completing legal documentation to guarantee compliance with antibiotic and hormone free standards.

As illustrated in Figure 3, farm families make up the board of directors and exercise one vote each on major decisions. Decisions are made by consensus, whereby everyone discusses the motion until they reach a decision that is accepted. Additionally, the co-operative has internal partners (IPs) who are co-operative members and oversee the running of the co-operative in areas of finance, marketing and production. The IPs are contracted and paid on a per head (of co-operative cattle) basis and operate based on a margin of 4% of total sales to run the co-operative. A smaller board of team leaders (7) are then elected by the membership to monitor the IPs.

Figure 3: Structure of the co-operative

[7] Data collection was conducted in one state, where the co-operative originated and where the majority of operations and members (45 ranches) are based

[8] Buy in refers to the acquisition of a share in the co-operative



The co-operative developed its supply base by directly supplying 1–5 cattle per week to an independent retailer. From there, the co-operative attracted a large international customer and grew to supplying 50 head a week. This increased demand allowed the co-operative, due to its increased scale and supply, to access large processing facilities which has remained a chain partner for over 20 years. The co-operative cattle are processed based on a separation programme whereby only the cattle of the co-operative are slaughtered together, and these are never mixed with any other cattle. The processor also takes care of the fabrication, grading, boxing and distribution of the beef, which is sold as either boxed beef of specific cuts or the whole carcass. All of the beef sold, in whatever cut or format, is sold as premium natural beef. In the meantime, the co-operative also grew its domestic supply base mainly through independent retailers and this diversification buffered against negative impacts when the international contract ceased.

As the demand for natural beef grew, so did the membership and customer base of the co-operative mostly due to the addition of a major US retailer as a customer. As this retail chain expanded, so did the geographical reach of the co-operative's product. This increased demand means that the co-operatives membership now spans ten states and has since rebranded to accurately present its multi-state membership. In order to maintain product consistency, the co-operative chose to add a feedlot stage, finishing cattle on a non-Genetically Modified Organism (GMO) ration/feed three times a day, for a minimum period of 90 days. In the feedlot, they are segregated into their individual pens and are tagged electronically to record information in relation to feed, health and conversion rates. Figure 4 illustrates the partners involved in the VBSC.

Figure 4: VBSC partners

Over time, the co-operative added different product attributes. While 'natural beef' remains the main product category, the adoption of third party animal-welfare auditing and additions such as 'grazewell principles[9]', extend the range of premium product attributes. 'A 'grass finished' product was later developed, which is differentiated from the 'natural' beef product by finishing cattle on grass rather than being confined. The co-operative, at its peak, had approximately 120 ranch family members in 2010 and had reduced to 60 during data collection.

3.1.2 Impacts on farm-level viability, sustainability and resilience

Viability

3.1.2.1. Market Orientation

The adaptation of this co-operative towards more premium value-added markets has allowed the co-operative to integrate to a VBSC with partners of similar values which has facilitated it to access premium markets. Targeting and accessing premium markets has allowed co-operative members to experience stable pricing and avoid the volatility within commodity markets:

"*And so the [names of retailers] … they're selling to people who have strong environmentalist beliefs. And they're the people who also are willing to spend the money to say we support and we endorse what we're doing"*

3.1.2.2 Pricing structure

Prices are set using a 'cost of production model' which calculates all the costs to members of producing a pound (in weight) of beef at farm-level. Input costs such as feed, veterinary costs, depreciation of machinery, as well as processing and packaging costs are inputted to the cost of production model to set prices to cover these costs and include a 4% profit margin for all chain partners. The price is then set in such a way that 75% of the membership is profitable in a given year, due to variability in costs of production[10]. Prices, volumes of product, the number of cattle each member commits, target weights, and the different times of year that different members send their cattle to the feedlot are all agreed 18 months in advance.

"*If it's cost of production and you're selling to the commodities it really doesn't matter if you know or not, you're gonna make money or not depending on what the commodity does. But in our case you know your cost of production and you put the price on it.*"

3.1.2.3 Payment structure

[9] Grazewell principles underpin ranchers' commitment to the management of animal health, environmental standards and land stewardship.

[10] This variability in costs of production can usually be attributed to contextual differences at farm-level including environmental factors such as soil and climate, as well as differing levels of managerial capabilities leading to higher costs of production for some members.

The payment structure operates on the basis that the members receive a maximum of four payments each year. Once the cattle reach 15 months, and/or have reached target weights, they are sent to the feedlot for an average of ninety days. It is at that point that ranchers receive their first payment, which takes the form of a placement bonus that varies according to the time of year that cattle are placed:

"It varies by month because sometimes it's harder to get cattle and so it varies from a high of $100 in December, November and January are $70 and then July, August, September are the easiest months to get cattle and they are 30 bucks."

The second payment is paid directly by the processing plant to members when slaughter occurs. The third payment is conditional on hitting 'bull's-eyes' or target specifications, in terms of fat and rib eye carcass quality, among other specifications. The last payment of the year is based on the patronage dividend based on the number of head of cattle they have placed through the co-operative that year.

3.1.3 Sustainability

Focusing on the different facets of sustainability, the findings indicated that the VBSC co-operative delivered a number of positive sustainability impacts.

3.1.3.1 Economic Sustainability

The economic sustainability or the viability of members, as mentioned above has been enhanced through market orientation and profitability.

3.1.3.2 Environmental Sustainability

While the environmental indicators are harder to measure without quantitative data, the 'natural' label of this co-operative means that cattle are naturally raised with no antibiotics or hormones. In line with the 'grazewell principles' of the co-operative, land is managed in an ecologically and environmentally friendly way, for example no artificial fertiliser is applied and, depending on farm circumstances, minimal, if any, housing during winter. Natural holistic remedies are used for animal health and use of antibiotics is a last resort[11]. A primary concern of the ranchers is farming in a sustainable manner that is sensitive to the ecological integrity of the land. One rancher stated:

"*We want to invest it in things that will improve the long-term productivity of this ranch, so we don't buy new pick-ups we don't buy new tractors, but we do like to invest in fencing, we do like to invest in water developments and in education.*"

3.1.3.3 Social Sustainability

Themes of education and innovation emerged strongly. It emerged that members assigned a high value to the social aspect of the co-operative and the accumulated tacit farming knowledge. Education emerged as one of their most valued benefits of co-operative membership. For example, external professionals are regularly acquired to bring expertise to members and all ranchers assigned a great significance to this:

[11] If cattle are treated with antibiotics they are sent to the commodity market

"*The educational aspects… have been a real plus. I think it makes us better ranchers, because we've learned a lot about how to handle animals and keep em safe … we got to work with … a professor…she … taught us how to get down and actually think about what an animal is seeing … and when we put in new corrals in the last 3–4 years we have used a lot of her principles…and stuff, worked out well.*"

Interviewees were continuously seeking ways to improve their farms and the co-operative was a means of achieving this. Many interviewees commented on the value of learning from other members of the co-operative and a culture of willingness to share knowledge within the group:

"*That camaraderie and the value of everybody's knowledge and no two ranches are the same... So, you pick things out that you can use and things that you don't want to use, but it's set up the way that we try to help each other.*"

Learning and innovation also arose from interactions with other partners in the VBSC. At a technical level, the availability and use of carcass data were mentioned as a significant benefit of co-operative membership due to their close collaboration with the meat processing facility:

"*We get good data back on every animal that we place … So we're getting … actual carcass data that I can tie through back to the cow that had that calf. So that just allows me … to cull out the ones that aren't performing for me. And we've made a lot of progress with that and you know we can't get that information otherwise.*"

3.1.4 Resilience

Resilience is defined as the ability of a system to respond to threats, generally using techniques of adaptation, transformation and persistence (Folke *et al.*, 2003; Walker *et al.*, 2004; Darnhofer, 2010).

3.1.4.1 Co-operation and differentiation

Co-operation and product differentiation are examples of resilience strategies:

"*It was a bad time in the industry, banks were calling in loans …[we] had the idea that maybe we could get together and find a way to make our beef unique, so that we could get out of the commodity beef production and start producing cattle that would get a little bit of a premium. And the goal was not to get rich… we were just desperately trying to find a way to stay in business.*"

The integration of this co-operative to a VBSC allows them to access the resources of their partners that may otherwise be beyond their reach. Partners made investments in the co-operative by offering financial and technical assistance, assisting with vaccination and nutrition protocols, among others. These resources are largely tied to the nature and longevity of the relationships between partners of the chain, but are also fundamental to the stability and resilience of the co-operative, as explained by the feedlot partner:

"*[That]—goes back to a group of ranchers being able to partner with bigger players that have all the infrastructure. I mean we have millions of dollars invested into the infrastructure that [name of organisation] uses. And the processor has millions of dollars invested… and …*

because we do it on a much larger scale … [name of organisation] and other users are able to utilise resources that we have that they couldn't otherwise ever get."

The volume of cattle produced is generally agreed 18 months in advance. However, when prices rose on the commodity market, some of the less committed members withdrew their cattle from the co-operative. This had repercussions for the whole chain, compromising the reputation of the co-operative as a reliable supplier and leaving retailers without sufficient volume of product. In response to shortfalls in supply, partners in the chain (the feedlot, the processor and the co-operative) have come together to form a separate entity to purchase cattle outside the co-operative. This activity is funded by the co-operative (50%) the feedlot (25%) and the processor (25%). Therefore, the purchasing of cattle from non-members could be perceived by members as a resilience strategy.

3.1.4.2 Self-solution of problems

The issue of illness at the feedlot stage was highlighted as problematic, due to the merging of herds and ensuing animal stress and illness. As members own the cattle until 'the head drops', this presented a huge financial stress on members. Based on members' narratives, however, it emerged that the co-operative has come up with a solution in creating an 'Out of Programme' (OP) insurance system:

"*We were losing a lot of rancher members because their cattle would go to the feedlot and get sick and they stood the risk … we created what we call OP insurance… The OP insurance [means] the high-risk cattle pay $5 a head into a pool, the low risk cattle, so ranchers that haven't had problems pay $2 into the pool … and at the end of the year that money is divided out amongst the cattle that get sick, so it gives those ranchers more than they would have received but not everything. So, they don't go broke but there is an incentive to do better. And that simply came from a handful of ranchers working together in a room.*"

3.1.5 Caveats of co-operative membership

While the co-operative has indeed enhanced members' viability, sustainability and resilience not least because of their transition from price takers to price makers, by increasing their educational and innovative capabilities, and enhanced access to resources through the chain partners, there are certain trade-offs involved in being a member of the co-operative.

One of these includes the need for cattle to be finished in a feedlot. Many respondents felt that the feedlot stage introduces an element of risk which is borne by them, although they themselves are not in a position to control conditions and circumstances once their cattle leave the ranch. Many respondents referred to a 'loss of control', having to rely on feedlot staff to care for their animals, make target weights in a timely manner and market them at the right time, and the merging of different herds in the feedlot often led to illness or possible death of animals. For example:

"*We've had groups of cattle get sick and financially it hurt big-time … if you couldn't get around that or get that fixed, it would put us out of business...there's been several ranches that have had health problems and have had to drop out".*

Many respondents also noted the pressures to remain progressive when supplying premium markets. They are now also subject to undergoing third party certifications which the majority of members interviewed perceived the adoption of these certifications as problematic.

Certification in particular was considered by some members as an ultimatum rather than a choice (which goes against the ethos of co-operatives), as to continue supplying their main retailer into the future made the adoption of these standards mandatory.

"*Oh, I think if we're going to sell to [name of company] which we have to … we're going to do whatever they want. And … the certifications, they're not cheap. There's the dollar cost of it, plus the time that it takes.*"

Likewise, every time the co-operative has added an attribute, they have suffered membership loss. As a co-operative, this has put pressure on the overall sustainability of the operation. In particular, one customer has put a lot of pressure on the co-operative to progress and keep up with their market requirements:

"*[Name of company] is such a huge part of it, it pretty much dictates a lot of the direction we go and we're just trying to catch up and meet what their requirements are to deal with the public".*

While being a member of the co-operative has had a profound impact on members at farm-level, it was clear that this was a 'two-way street'. The ranchers rely on the co-operative to enhance their sustainability, while the co-operative relies on the membership for sustainability. The sustainability and viability of any co-operative relies primarily on membership for investment, governance and supply purposes. In recent years, membership loss has been a significant issue, and this has shown the integration of the co-operative to a VBSC has not made it completely immune to the prices effects of the commodity markets. It emerged that when the generic market prices were high, the co-operative often suffers membership loss. This creates problems when the co-operative is in a system of committing cattle numbers to consumers 18 months in advance:

"*These high prices the last few years have been a real stress on the co-operative, because you could get as much, if not more money by just selling your cattle on the generic market … no meetings to go to, no in-store demos to do, no sitting in a circle and telling others how you feel about being here today … you could just stay at home and do the things you want to do and get better money than you've ever gotten in the history of your ranch. And not only that … you don't have to keep your cattle through the feedlot finishing phase.*"

The purchasing of cattle is a crucial resilience strategy to maintain the sustainability of the co-operative. In 2015, approximately 60% of the cattle sold through the co-operative were purchased outside the co-operative[12]. Many respondents believed that purchasing cattle represents an abandonment of the first principles of the co-operative, which risks diluting the story of their brand:

"*Well it was one of the first attributes that they said was to own the cattle from birth to harvest and I know that they have audits and all this on the people that they buy cattle from … but it's a co-op and the first attribute was that you owned the cattle and this co-op doesn't do that anymore.*"

[12] The purchased cattle have to meet certain requirements including they must be purchased directly from ranches and cannot be third party owned; they must be classified as 'natural', using the same criteria as beef produced by co-operative members (supported by legal affidavits); and they are subject to auditing by the same external certifier as the co-operative.

It is clear that some members feel that this change may not necessarily be reflective of the values they signed up to and mentions of 'risk' based on not knowing where these cattle come from can increase risks. Moreover, these changes along with others raise questions about the long-term direction of the co-operative, with some members stating:

> "*We now purchase a lot of cattle so in its most basic sense [name of organisation] could actually continue to move ahead without the co-operative rancher members.*"

3.2 Study 2: Irish fieldwork

The methodology used in this study relied on content analysis of all fourteen submissions made to the DAFM by Irish beef industry stakeholders during the PO consultation process in 2014 (see Table 2); and additional expert interviews (14) (see Table 1). Representatives of current beef producer groups[13] (7), and meat processors (3) were interviewed. Other interviewees (4) were selected based on their associations with agricultural policy; the meat-processing sector; the co-operative sector; and food marketing.

Table 2: Stakeholder submissions and interviews:

Stakeholder submissions (14)	**Stakeholder interviews (14)**
Farmer representative groups (5)	DAFM (1)
Current producer groups –various sectors (3)	Representatives of current beef groups (7)
Extensions agents (1)	Representatives of meat processors (3)
Sector associations and representatives (4)	Co-operative body (1)
Statutory body (1)	National Food Board (1)
	Meat processing association (1)

A semi-structured interview approach was adopted, using open-ended questions to ascertain participants' views in relation to the potential, structure, governance, role and remit of beef POs. All interviews were recorded and transcribed. The transcripts together with the written submissions to DAFM were analysed thematically (Boyatzis, 1998; Marshall and Rossman, 1999). Reflecting the interviewing strategy employed, themes arising in the data mainly corresponded to the topics on which the questions used in the DAFM PO consultation process were based (see Table 3).

Table 3: Questions used by the DAFM's Beef PO Consultation Process

[13] Producer groups are different to POs because they are not recognised by dedicated legislation. Producer groups may be registered as private companies or co-operatives.

1. What should be the minimum *number of members* in a PO? Should there also be an upper limit fixed on the number of members involved?

2. What are your views on the *structure and governance* of producer organisations? This includes commercial entities versus non-commercial groups, leadership structures, boards of directors, governance etc.

3. What do you see as the main *role of producer organisations* (see Article 152)? Should they have a particular focus on for example, Research and Development at farm level, initiatives in the field of marketing and promotion, focus on on-farm efficiencies, progress sustainable farming techniques, climate change mitigation and other aims set down in Regulation 1308/2013 Article 152?

4. Do you see a role for POs becoming involved in *contractual negotiations* between producers and processors?

Source: DAFM (2014)

3.2.1 Size of producer organisations: membership, volume of production and market share

There were varying views among stakeholders in relation to the number of members a PO ought to have. While two submissions suggested there should be no minimum membership, others suggested specific minimum numbers, and even having no upper limit on membership. Others suggested that it should be based on *"tonnage or volume produced rather than the number of members".* One representative of an existing beef producer group highlighted that market share was most appropriate, stating:

> *"If [a] group want to set up they need to have at least 25% of the market share in order to kick start it…in order to have some clout".*

Currently the legislation stipulates that, in order to be exempt from competition law, a single beef PO's output must not exceed 15% of total national production. However, one submission highlighted that, considering only 10% is consumed domestically, one PO could potentially satisfy total domestic consumption and still fall under this 15% limit.

3.2.2 Structure and governance

The co-operative model was identified by the submissions (7) and interviews as being the most suitable structure for POs.

One producer group representative, however, stated that if farmers had a say all the time, it could make negotiations laborious. It was also suggested in one submission that professionals in marketing, distribution and co-ordination should be contracted by POs if needed, similar to the structure of the US based case study co-operative. Similarly, the need for a clearly defined set of rules emerged strongly from the findings as being pivotal to ensure group commitment, trust, cohesion and loyalty:

"Clarity needed on whether or not members of a PO can negotiate individual deals…also there should also be rules in relation to the minimum period of membership to ensure that the structural validity of the PO is not compromised".

With regards to group cohesion, one existing beef producer group representative pointed out that the farmers themselves could represent a barrier stating, *"You know either the meat factories will break it up, or they will break it up themselves by not really adhering to it".*

There is a view that, even if processors do engage, POs could be destabilised by:

"Factory [may] decide…to offer one or two of the group an extra 10 cents a kilo, and that's all it will take…holding the group together is going to be very difficult… especially because it's in a start-up phase".

3.2.2.1 Existing vehicles for PO development

Unlike the US case that started from the ground-up there was recognition in the submissions and interviews that pre-existing networks, most particularly discussion groups (including those supported/established under the BTAP[14] and KT Groups) could provide a forum for establishing POs. POs will be able to draw down up to €3,000 worth of advisory and consultative services under the Rural Development Programme in order to become established

[14] The BTAP (Beef Technology Adoption Programme) funds beef farmers to come together for group discussion on the areas of financial management, grassland management, herd health, animal breeding / welfare and producing animals to market specifications. The scheme has now been replaced by Knowledge Transfer (KT) Groups.

(Hubert, 2017). However, policy-driven and funding-led incentives were observed as, in the past, having negative implications.

> *"We had working discussion groups already and then a scheme came out to try and encourage people and you got a very, very diverse range of people joining those discussion groups from people with loads of ability to people with no ability all in the one group. The same thing…could potentially happen with these POs…everybody will sign up to them…what criteria do you set for joining them, how do you manage it, what are the requirements for being in it…producer groups that came about organically, came about because a desire already existed".*

The issue of beef POs potentially undermining the mart structure also arose. Currently, the mart provides a spot market for selling cattle, and *"at the present time the amount of finished cattle being sold through marts has declined and could further decline if POs become established".* Considering that beef POs will be established with the specific aim of negotiating with processors, the livestock mart system could become obsolete. However, some submissions and interviewees alluded to the potential of livestock marts operating as POs and could potentially organise into an APO or federated structure (see Figure 2) considering they are widespread and are set up administratively and organisationally to do so.

3.2.3 Role of producer organisations

Over half (8) of all submissions noted that the "raison d'être" of POs should be negotiating with processors on price. Other submissions pointed to the fact that there is scope for POs to undertake roles other than price negotiations and they should not be *"set up solely to focus on selling output"*. Just two submissions mentioned the potential of POs in adding value to beef, with one outlining the potential to use:

"Our world advantage of grass-based beef production and image… consists of over 1 million suckler cows and their progeny constitutes the bulk of our marketable image of grass fed Origin Green beef".

Many of the current beef producer groups operate with some element of value added to their product, i.e. breed based or organic. One beef producer group had previously considered pursuing the route of product differentiation but did not proceed based on associated costs involved and lack of skills. For example, one noted that they were not planning to go down this route as it "*involves a whole other layer of management. I mean there is a sales element to that*

and other expertise that we don't have". Even in the creation of a branded value-added product, there is a need in the premium markets to remain progressive. In the experience of one producer group representative:

> *"What we were providing within a few years became standard for the industry and now we need to look for the next differentiation".*

The creation of a brand in the Irish beef sector also represents a difficult task as currently retail brands dominate the Irish meat sector.

3.2.4 POs and Contractual negotiations

While the potential scope of beef POs spans several purposes, the role most commonly cited related to the establishment of sales contracts between farmers and processors. By utilising sales contracting, both processors and farmers can reap the security and advantages of co-ordinating cattle supply that would meet market specifications at "*the right…times of the year when they would be most in demand".* For processors to engage in sales contract negotiations with POs, it was stated by processors that they would need to see the ability of the PO to respond to market and industry demands, as well as consumer demands by supplying:

> *"A critical mass, a minimum number of people in a producer group and, as importantly, a minimum number of cattle and you'd need to see when they are going to come through…So, there would be quite a bit of work to be done to get the right mix within a group to match the market requirements".*

Only one submission noted that POs should be able to partner with all 'agents' in the chain rather than just processors, similar to a VBSC. Incidentally, findings indicate that one of the biggest challenges for prospective POs is entering into agreements with processors. More than half of interviewees (8) held the pessimistic view that for as long as processors can access cattle supplies outside of POs, there will be little incentive to enter into negotiations. While one of the processors interviewed already works with producer groups, other processors were questioned on their openness to working with these new beef POs, with one stating:

> *"We wouldn't really see the need for a producer group because…in our opinion from what we would have seen in the past…is that all it would have led to is an extra cost really".*

While processors may not see the need to engage with such POs in the immediate term, the market situation and cattle supply issues appear to be determining factors for engagement. The

use of contracts was perceived as pivotal to the success of beef POs but developing such contracts would require more market price transparency and while prices paid to producers and retail prices are reported there is *"no reporting of wholesale prices in the trade".* In the US, for example, beef trade prices are reported at the farmer, wholesale and retail level which enables effective contracting.

4.0 Discussion and Conclusions

Given the current situation with the Irish beef sector, the introduction of the beef PO legislation is largely welcomed. Other policy objectives to add value to Irish beef and the PO legislation together, largely match the structure of the US based case study co-operative and VBSC. There is no doubt that this co-operative has had a profoundly positive impact on farmer members' viability, sustainability and resilience. This has manifested in increased profitability through pricing structures and market orientation; increased sustainability through education and innovation; and resilience through access to greater resources. However, problematic issues have also emerged such as membership loss, and despite the co-operative success it is clear some decisions taken have led to disengagement among members, threatening the reputation and long-term sustainability of the co-operative.

Furthermore, while the integration of the co-operative to a VBSC has been largely positive and led to improved access to markets and resources, these relationships have too been fraught. Power differentials and dependencies have arisen in the VBSC, leading to tensions within the co-operative. The mandatory introduction of animal welfare standards and external certification are examples of decisions taken by the co-operative causing dissatisfaction among members. Therefore, it is fair to say that co-operatives embedded within VBSCs can become even more exposed to industry demands than traditional supply chains as they are expected to respond to and grow with chain partners. Pressures exerted by chain partners on the co-operative to change and adopt certain decisions have made members question the extent of their own influence on the co-operative. This, in turn, has led to a decline in the membership of the co-operative, compromising the stability of the co-operative. Therefore, while co-operatives are adaptable models suitable for integration to VBSCs, which results in potentially positive impacts on farm-level viability, sustainability and resilience, there is a need to caution against dilution of co-operatives' internal values and objectives. This is an important lesson for the Irish beef context where POs are expected to address the power symmetries that currently exist within the supply chain.

While this US model may have the ability to address some of the problems experienced in the Irish beef sector, engagement with the PO policy will depend on the attitudes of beef industry stakeholders. The PO policy offers opportunities for the establishment of farmer-driven collective organisations of beef farmers and allows farmers to become 'part owners' of the chain (Kirschenmann *et al.*, 2008; Hooks *et al*., 2017c). However, the operationalisation of new PO institutions poses challenges for all beef industry stakeholders who are accustomed to the existing supply chain and its existing power relations. POs have been likened to potentially having 'the same transformative effective on the beef industry as the co-ops had in the dairy sector in the 1920s' but 'there will be resistance to a change in the status quo'.

As outlined by Van Herck (2014) benefits include the creation of economies of scale thereby strengthening farmers' bargaining power; reduction of risk and transaction costs; enhanced profits; and access to new markets among other benefits. The livestock mart system was identified in stakeholder submissions as having the potential to facilitate POs, or even Associations of POs, due to their co-operative structure and national reach. The potential roles of marts to engage and the practicalities of such arrangements will require further exploration. The tradition of the co-operative model in the dairy sector, and indeed other grass roots movements including discussion groups, provide a backdrop for the successful establishment of beef POs.

However, submissions made to the DAFM during the consultation phase identified potential stumbling blocks to the establishment of POs, specifically poor member commitment and processor engagement. In the context of Ireland's successive beef 'crises', the main goal associated with POs is a rebalancing of power in the supply chain and to improve the bargaining power of farmers in dealing with other chain actors, particularly processors. Stakeholders indicate that this will represent a major challenge. In order to be successful, a sufficient proportion of beef output and farmers must be represented by POs because, otherwise, processors will not need to engage with POs.

While adding value to products is identified as enhancing profitability of POs, there was poor awareness of this in submissions. Some beef producer group representatives cited lack of expertise in sales and marketing as a reason for not adding value to their products. However, Irish beef (sold by processors) is already promoted by schemes such as Origin Green and branded as grass-fed and is often considered sufficiently premiumised. Attributes of smaller-

scale beef farms which are largely unprofitable yet attractive to consumers from socio-cultural and environment perspectives, could be valorised by using branding and marketing strategies on part of a co-operative. Smaller farms, currently operating approximately 56% of total Irish farmland, have particularly favourable characteristics (Dillon *et al*., 2017; Macken-Walsh, 2017).

Knowledge gaps were also evident in submissions and interviewees. PO legislation has not received widespread attention in the farming media nor has it been highlighted prominently by farming organisations to date. However, the current focus is on establishing individual POs, the longer-term vision for the establishment of APOs must be maintained to gain traction in the marketplace. A crucial lesson from international experience is that POs operating alone may languish. If supports such as those provided by APOs are likely to be unavailable, farmers may justifiably judge with scepticism the future sustainability of POs.

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