

A natural-resource-based perspective of SSCM in the Scottish food sector: overcoming the theory-practice gap

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Building upon a review of the Scottish food sector, the need for improvements in sustainability is evidenced. An exploration of these issues in literature leads to the natural-resource-based view (NRBV) of the firm (Hart, 1995) which in promoting competitive and sustainable strategies via several innovative strategies resonates with modern business. However in spite of its significance and positive academic support the NRBV falls victim to a twenty year theory-practice gap, limiting its value to the Scottish food sector. Offering some resolve are synergies between NRBV and SSCM strategies, which along with SSCM's prominent position in industry imply some potential in the practical realisation of the NRBV. Adopting a qualitative methodological approach by means of literature and industry reviews and multiple case studies, this paper proposes a study assessing the value of a natural-resource-based perspective of SSCM in the Scottish food sector in an attempt to overcome the theory-practice gap and answer industry calls for competitive sustainability.

1.0 Introduction

The Scottish food and drink sector has witnessed enormous growth in recent years, overcoming industry targets and totalling a value of over £13billion (SF&D, 2010; 2013b). Having established a presence as Scotland's strongest domestic product (SF&D, 2013a) and fastest growing export (SF&D, 2013b), the continued support and development of the sector is of paramount importance, certainly in relation to the country's economic development (Scottish Enterprise, 2013). However, in spite of its triumph, a review of the sector unveils a number of barriers, and in particular the need to establish stronger sustainability standards emerges with relevance (SF&D, 2010). To some extent the call for sustainable improvement is acknowledged via growing legislation and policy (SF&D, 2010), but what remains is a number of highly publicised food chain failures (FHIS, 2013b) contributing to diminished consumer trust and forcing issues of sustainability to the forefront of consumer and stakeholder demand. In particular, opportunities for improvement have been recognised in areas such as climate change, food security, conservation of natural resources, landfill avoidance, pollution, renewables and recyclability (SF&D, 2010; 2011, 2013a; DEFRA, 2013; FHIS, 2013a; 2013b).

However the sectors apparent shortcomings exist paradoxically with the somewhat oversaturated topic of sustainability in literature (Pagell & Shevchenko, 2014) which offers an array of recommendations and solutions (Ashby et al, 2012). Emerging with particular significance is Hart's

(1995) natural-resource-based-view (NRBV) of the firm which in spite of its twenty year age appears to offer some resolution to the Scottish food sector's sustainability needs. More specifically, the NRBV via strategies of pollution prevention, product stewardship and sustainable development promotes the prioritisation of the natural environment and in doing so enforces the support of ecological and societal issues throughout operations (Hart, 1995; Hart & Dowell, 2011). Furthermore, NRBV strategies are intended to render considerable competitive benefits (Hart, 1995) and in particular have empirically corroborated links with financial gain (Russo & Fouts, 1997) encouraging the theory's positive literary representation (e.g. Aragon-Correa & Sharma, 2003; Mencug & Ozanne, 2005; Golicic & Smith, 2013; Wu, 2013; Johnsen et al, 2014). This said the NRBV is not without criticism and of particular concern is its limited presence in industry (Mencug & Ozanne, 2005; Hart & Dowell, 2011). This has been attributed largely to practical inapplicability and misinterpretation (Aragon-Correa & Sharma, 2003; Hart & Dowell, 2011) and consequently has spurred several theoretical developments (e.g. Teece et al, 1997; Aragon-Correa & Sharma, 2003; Mencug & Ozanne, 2005). Nonetheless, Hart & Dowell (2011) contest that the NRBV remains restricted by incompetent academic assessment and extension, and as such call for further research. Certainly, it does appear as though the NRBV, which promised to deliver an 'environmental revolution' (Hart, 1997) to change the way business operated entirely (Mencug & Ozanne, 2005; Svensson & Wagner, 2012), is yet to triumph, and thus opportunities for competitive and sustainable improvement still exist. Not only does this emerge with great potential for the Scottish food sector, but it exposes a twenty year old theory-practice gap in need of resolution.

Of some promise is the school of sustainable supply chain management (SSCM), which having been inspired by the NRBV (Johnsen et al, 2014) encompasses convincing parallels. This is somewhat unsurprising giving the inherent reliance placed on the supply chain throughout construction of the NRBV, which is witnessed via discussions of reverse logistics, integration, total quality management and process innovation (Hart, 1995). However, of greater interest is the more recent links drawn between NRBV strategies and developing fields of SSCM; for example sustainable supply chain collaboration (Vachon & Klassen, 2008; Wu, 2013) lean supply chain management (Hajmohammad et al, 2012; Gealeazzo et al, 2013) and closed-loop supply chains (Ashby et al, 2012; Golicic & Smith, 2013; Jensen et al, 2013; Wu, 2013). Pertinently strategies of SSCM have enjoyed a broad industry acceptance (Johnsen et al, 2014), and as such perhaps imply some ability to assist with the practical realisation of the NRBV. Whilst perhaps this is a weighty assumption, the symbiotic nature of the two schools, along with their sustainability and competitive associations, suggests some value for their unification, and warrant their conjoint study in a contextual setting.

In summary, the sustainable and competitive capacity of the NRBV forces the consideration of its ability to answer calls for improved sustainability in the Scottish food sector. However, the NRBV's twenty year theory-practice gap presents a significant barrier which is yet to be resolved. Emerging with interest in the school of SSCM, which in exposing convincing parallels to the NRBV and

prominent position in industry, implies some potential in overcoming the theory-practice gap. Therefore, this paper proposes a study merging the NRBV and SSCM in an attempt to realise competitive and sustainable benefits in the Scottish food sector. Subsequent sections of this paper provide discussion of the theoretical framework and methodology proposed for the study, along with some discussion of indicative findings.

2.0 Theoretical Framework

The successful completion of this study is dependent on the formation of a strong theoretical framework. Naturally this takes form via comprehensive review of NRBV literature, inclusive of each of its three strategies. In addition, existing attempts at NRBV extension are reviewed and discussed, highlighting the need for further work. The school of SSCM completes the theoretical framework, exposing emergent strategies which may provide some resolve to NRBV limitations and assist with the realisation of competitive and sustainable benefits in modern business. In total, the review of relevant theory as summarised in this section was instrumental in the definition of research aims and objectives, and demonstrates the relevance of this study.

2.1 The Natural-Resource-Based-View

The NRBV is derived from Wernerfeldt's (1984) resource-based-view (RBV) which encouraged a shift away from product-focused competitiveness to argue that the exploitation of existing resources and development of new resources presented the best opportunity for competitiveness. Whilst the theory enjoyed broad acceptance and applicability across a spectrum of academic fields (Black & Boal, 1994; Teece et al, 1997; Galunic & Rodan, 1998; Eisenhardt & Martin, 2000; Fiol, 2001; Gold et al, 2010; Hsu et al, 2011; Chakrabarty & Wang, 2012; Chen et al, 2012; Galeazzo et al, 2013; Wu, 2013; Li & Liu, 2014), it was its neglect of the natural environment which inspired the creation of the NRBV (Hart, 1995). More specifically, the NRBV answered calls for an amalgamation between business and society (Russo & Fouts, 1997; Mencug & Ozanne, 2005; Golicic & Smith, 2013; Johnsen et al, 2014) by expanding the internally focused scope of the RBV to include externalities with an emphasis upon the ecological environment. This encouraged the creation of three symbiotic NRBV strategies, or resources: pollution prevention, product stewardship and sustainable development (Hart, 1995).

In the most part the NRBV has enjoyed a positive literary representation which is most forcefully demonstrated via repeated and empirically tested links with competitive and financial gain (Hart, 1997; Russo & Fouts, 1997; Aragon & Sharma, 2003; Mencug & Ozanne, 2005; Golicic & Smith, 2013; Wu, 2013). In fact such are the links between the NRBV and financial gain that Hart & Dowell (2011) argue they have detracted attention from the other aspects of the theory, limiting theoretical growth and development. Conversely, some studies have paradoxically emphasised the high costs and risks involved in the adoption of ecologically motivated strategies (Aragon-Correa & Sharma, 2003;

Prajogo & Sohal, 2013). However it must be noted that Hart made no attempt to conceal or deny the costs of NRBV strategies, but instead argued that when implemented effectively such strategies would ultimately pay off. It is this perspective which has conquered literary critique, and perhaps which encourages the continued academic interest in Hart's work twenty years on from its conception.

Nonetheless, the NRBV has struggled to transition into industry (Hart & Dowell, 2011) encouraging some assessment of its limitations. Issues of practical inapplicability (Mencug & Ozanne, 2005; Golicic & Smith, 2013) and limited managerial cognition (Andersson & Batemann, 2000; Aragon-Correa & Sharma, 2003; Hart & Dowell, 2011) emerge as common barriers, whilst its origins in traditional resource-based theory raises concerns of adaptability (Chakrabarty & Wang, 2012; Li & Liu, 2014) and contextual variance (Russo & Fouts, 1997; Christmann, 2000; Barenly, 2001). Such discussions force the consideration of the adoption, management and feasibility of NRBV strategies and in doing so has rendered calls for enhanced guidance and clarity (Aragon-Correa & Sharma, 2003; Hart & Dowell, 2011). Pertinently this is not to say that literature has neglected such areas entirely, but that its attempts to date have fallen short. This is demonstrated throughout the following review of each of the NRBV's strategies, in which some practical guidance is provided by implications of capabilities, but the existence of a theory-practice gap is reaffirmed. Pertinently, the contemporary nature of the NRBV is also evidenced via associations with emergent strategies and discussion of recent studies.

2.1.1 Pollution Prevention

The first NRBV strategy is pollution prevention, which in supporting the minimisation of waste and emissions throughout production (Hart, 1995) is presented as a strategy of great significance in modern business (Mencug & Ozanne, 2005; Golicic & Smith, 2013). By shifting the waste management focus away from control towards prevention (Aragon-Correa & Sharma, 2003) firms are expected to benefit from improved efficiency and productivity and lower liability costs (Hart, 1995) permitting competitive cost reduction (Hart, 1997; Christmann, 2000; Hart & Dowell, 2011). Hart implies that this is achieved by improved house-keeping, substitution of materials and recyclability, drawing inspiration from total quality management, and placing an emphasis on innovation and employee involvement. Following on from Hart's work, Russo & Fouts (1997) reinforce employee involvement as an integral pollution prevention capability, highlighting the importance of organisational commitment and learning, cross functional integration and employee skill and participation. Their study also exposes some reliance upon technology, HR, reputation and political acumen.

Pollution prevention continues to enjoy academic attention in more recent literature and retains innovative connotations (Christmann, 2000; Aragon-Correa & Sharma, 2003; Vachon & Klassen, 2008; Golicic & Smith, 2013). The contemporary relevance of the theory has encouraged links with

corporate social responsibility (Mencug & Ozanne, 2005; Chen et al, 2012; Walker & Jones, 2012; Golicic & Smith, 2013) and environmental management systems such as total quality environmental management, lean and ISO 1400 (Gealeazzo et al, 2013; Hajmohammad et al, 2014). As such it seems that twenty years on from its conception pollution prevention still resonates and infers value to modern business. Perhaps it is for such reasons that pollution prevention has dominated the study of the NRBV, establishing the strongest presence of the three strategies (Russo & Fouts, 1997; Hart & Dowell, 2011). However criticisms of practical inapplicability (Golicic & Smith, 2013) and academic incompetence (Hart & Dowell, 2011) remain and warrant further study, reinforcing a theory-practice gap.

2.1.2 Product Stewardship

Following on from pollution prevention is the second NRBV strategy of product stewardship, which gives further nod to the significance of externalities (Mencug & Ozanne, 2005) by enforcing the prioritisation of the natural environment throughout each stage of a product life-cycle or its supply chain (Hart, 1995; 1997; Ashby et al, 2012; Golicic & Smith, 2013). From this perspective, the natural environment itself is presented as a key stakeholder, forcing issues such as conservation, the avoidance of harmful substances and recyclability to the forefront of supply chain strategy (Hart, 1995). This is intended to render both economic and environmental advantages for the firm via the creation of wholly sustainable, harmless products, which when communicated to target markets facilitate the creation of a competitive advantage via differentiation (Hart, 1995; Mencug & Ozanne, 2005; Ashby et al, 2012; Svensson & Wagner, 2012; Golicic & Smith, 2013). Additional competitive merits are proposed via access to scarce resources such as raw materials, locations or markets as a result of stakeholder and supply chain integration required of product stewardship (Hart, 1995). As well as integration, Hart places a considerable reliance upon lifecycle analysis, including that of toxic and non-renewable materials, replenishment of living resource and the recyclability, reusability or biodegradability of finished goods.

In spite of the literary focus on pollution prevention (Hart & Dowell, 2011), product stewardship has too benefited from some academic extension and development. In the most part this relates to Hart's emphasis of the product lifecycle and the supply chain, which has encouraged links with supply chain collaboration (Vachon & Klasse, 2008; Hart & Dowell, 2011), reverse logistics (Ashby et al, 2012; Wu, 2013) and closed-loop supply chain management (CLSCM) (Golicic & Smith, 2013; Jensen et al, 2013). In addition, the restructuring of production systems and development of new, lower-impact products as required by product stewardship has rendered discussions of innovation, new product development and entrepreneurship (Hart, 1997; Mencug & Ozanne, 2005; Johnsen, 2014). Thus again there exist some implications for the contemporary application of product

stewardship, which in conflicting its minimal presence to date (Hart & Dowell, 2011), further enforces the theory-practice gap.

2.1.3 Sustainable Development

The third NRBV strategy is that of sustainable development, which in inclusion of environmental, social and economic issues on a global scale (Hart, 1995) is Hart's largest but least understood strategy (Hart & Dowell, 2011). The intention is both to minimise harm and to improve conditions in struggling or degrading spheres (Hart, 1997), prioritising issues such as global populations, food security, ecological resources and industry (Shrivastava & Hart, 1995). This enforces the continuous support and economic development of emerging market, encouraging the creation of new specifically designed products and placing a reliance on innovation, new product development, total quality management, leadership and shared vision (Hart, 1995).

Of course given the enormous scope and expectation of sustainable development, misinterpretation is hardly surprising (Hart & Christensen, 2002; Abbasi & Nilsson, 2012; Miemczyk et al, 2012; Walker & Jones, 2012; Hart & Dowell, 2011), but nonetheless exists in paradox to the growth of sustainability literature and research (Gold et al, 2010). Certainly it seems that the growth of global industrialism, which is believed in many cases to worsen conditions in struggling and degrading spheres (Abbasi & Nilsson, 2012), ought to force improvement and developments of sustainable development, both in literature and in practice. But on the contrary Hart & Dowell (2011) argue that academia has virtually neglected the study of sustainable development in its entirety, and in doing so had failed to provide any practical guidance (Hart & Dowell, 2011). This is reinforced by Ashby et al (2012) via the suggestion that sustainable development has remained under-developed in both theory and practice, and certainly remains ambiguous and confused as to its adoption or management.

Such is the degree of confusion towards sustainable development that the theory was later divided into two definitive strategies of clean technology and base of the pyramid (BoP). Clean technologies encompass the development of new competitive competencies, the reduction of material and energy consumption, and the promotion of innovations such as biotechnologies, bioengineering and renewables (Hart, 1997). BoP focuses upon the alleviation of social ills via stimulating economic growth through entry into and support of emerging markets (Hart & Christensen, 2002). Such strategies are today still perceived as innovative and modern (Chakrabarty & Wang, 2012) but again fall victim to the theory-practice gap (Hart & Dowell, 2011; Ashby et al, 2012).

2.2 Extensions of the NRBV

The preceding discussion argues the existence of an NRBV theory-practice gap, which given the contemporary relevance of the theory, requires resolve. In spite of suggestions of academic neglect (Hart & Dowell, 2011) there exist several explicit attempts at overcoming this gap: the dynamic

capabilities perspective, a proactive environmental strategy and the natural environment orientation (NEO). However, whilst such theoretical developments provide greater insight in the NRBV and are worthy of recognition, they have so far fallen short of the practical realisation of the NRBV.

2.2.1 The Dynamic Capabilities Perspective

Resource-based theory has commonly been criticised for lacking adaptability (Fiol, 2001; Mencug & Ozanne, 2005), conflicting the argument that competitive resources must continuously evolve (Eisenhardt & Martin, 2000) to avoid irrelevance on invalidity in turbulent external markets (Barney, 1991; Black & Boal, 1994). Such an argument suggests that neither the RBV nor the NRBV would feasibly function in markets of high unpredictability (Eisenhardt & Martin, 2000). If anything this is magnified by the NRBV's focus on the ever-changing natural environment, which makes competing off the back of a static sustainability resource implausible (Chakrabarty & Wang, 2012). In response to this, an amalgamation between the NRBV and dynamic capabilities is proposed, and has become common place in literature (Eisenhardt & Martin, 2000; Fiol, 2001; Mencug & Ozanne, 2005; Hart & Dowell, 2011).

Dynamic capabilities were produced by Teece et al (1997) and presented as a means to overcome competitive rigidity (Fiol, 2001). Defined as “*organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve, and die*” (Teece et al, 1997), dynamic capabilities have been broadly accepted throughout literature (Hart & Dowell, 2011). In fact, as a result of the increasingly erratic nature of modern business markets (Aragon-Correa & Sharma, 2003) dynamic capabilities are commonly presented as competitive necessities (Chakrabarty & Wang, 2012; Blome et al, 2013; Johnsen et al, 2014; Li & Liu, 2014). More specifically, dynamic capabilities allow competitiveness to be maximised (Eisenhardt & Martin, 2000) by the exploitation of existing resources and development of new resources (Crossans & Apaydin, 2010).

Whilst the amalgamation between dynamic capabilities and the NRBV is accepted and exists with logic (Crossans & Apaydin, 2000; Chakrabarty & Wang, 2012; Johnsen et al, 2014; Li & Liu, 2014) it is yet to facilitate the practical realisation of the NRBV (Hart & Dowell, 2011). Perhaps this is because it only addresses one of the NRBV's flaws via the facilitation of adaptability (Teece et al, 1997). More likely it is a result of the confusion, ambiguity and tautology surrounding dynamic capabilities which limit their own practical applicability and value (Aragon-Correa & Sharma, 2003; Hart & Dowell, 2011; Johnsen et al, 2014). Of course such criticisms are not wholly accepted (Eisenhardt & Martin, 2000) but nonetheless render concern.

2.2.2 A Proactive Environmental Strategy

Upon identification of flaws in both the NRBV and dynamic capabilities, Aragon-Correa & Sharma (2003) produced a proactive environmental strategy. The intention was to assist the realisation of

competitive and environmental strategies by presenting proactivity as a dynamic capability. More specifically the strategy argues that a proactive approach towards the natural environment allows managers to effectively manage uncertainties and to actually derive benefit from them. Managers who continuously assess the natural environment and seek out opportunities for change are expected to benefit from improvements in efficiency and productivity, reduced costs, waste minimisation and increased environmental commitment to target markets (Aragon-Correa & Sharma, 2003).

The proactive environmental strategy benefits from strong foundations given that several earlier studies had exposed the significance of adopting a proactive approach to environmentalism. In fact, over a decade earlier Russo & Fouts (1997) compared proactive environmentalism and reactive environmentalism, concluding that proactivity is fundamental to achieving competitive and sustainable business strategies. Sharma & Vredenburg (1998) further enforce this, arguing that in order to be deemed sustainable firms must proactively invest in environmental strategies on a continuous basis. In their paper, firms who adopted such an approach were found to benefit from lower costs, increased innovativeness and improved reputation and relationship with stakeholders. Further confirmation comes from Aragon-Correa (1998) who exposed a positive correlation between strategic proactivity and responsiveness to the natural environment, placing a reliance on stakeholder integration and relationship management, higher-order learning and continuous innovation.

However, in spite of its good intentions and weighted theoretical underpinnings, the proactive environmental strategy has had little impact on the NRBV, and remains in its infancy (Li & Liu, 2014). This comes as little surprise given that it focuses principally on pollution prevention (Aragon-Correa & Sharma, 2003) and thus requires further division and refinement according to each NRBV strategy (Hart & Dowell, 2011). Furthermore the proactive environmental strategy makes no attempt to address concerns of excessive costs, knowledge and skill which were identified in earlier attempts of proactive environmentalism (Aragon-Correa & Sharma, 2003) and as such may struggle to install confidence in wary practitioners.

2.2.3 The Natural Environment Orientation

Arguably the most explicit attempt at extending the NRBV comes from Mencug & Ozanne's (2005) natural environment orientation. The natural environment orientation expands the NRBV's original framework in an attempt to ease the practical applicability of Hart's work. In doing so CSR is added to pollution prevention, entrepreneurship is added to product stewardship and organisational commitment to the environment is added to sustainable development. Such additions are made with the hope of providing measurability and clear guidance for managers in pursuit of competitive and sustainable strategies.

However, whilst Mencug & Ozanne make a good case for their natural environment orientation, and remain true to the NRBV's intentions, the strategy appears to have made little impact. Again there

exists some need for refinement and definition (Hart & Dowell, 2011) which is evidenced by the NEO's disregard for the division on sustainable development into clean technologies and BoP. Not only does this render the addition of organisational commitment to the environment somewhat obscure, but its emphasis on measurability is perhaps ill-fitted with the intangible nature of social sustainability strategies (Ashby et al, 2012) such as BoP. It is of further notability that the NRBV is already a daunting task for managers (Hart & Dowell, 2011) and as such perhaps expanding its framework further is unwise. In particular this refers to the addition of CSR, which is in its own right a complex tripartite construct shrouded in conflict (Friedman, 1970; Drucker, 1984; Golicic & Smith, 2013). Thus, as with dynamic capabilities and the proactive environmental strategy, the natural environment orientation has failed to facilitate the practical realisation of the NRBV, leaving the theory-practice gap unresolved and in need of further attention.

2.3 The Role of Sustainable Supply Chain Management

It is evident from the previous discussion that the NRBV suffers from a twenty year theory-practice gap that literature has thus far failed to overcome. Implying some potential for resolve is the school of SSCM, which benefits from existing NRBV influences (Johnsen et al, 2014) and substantial presence and acceptance in industry (Seuring & Müller, 2008; Gold et al, 2010; Ashby et al, 2012; Johnsen et al, 2014). As with the NRBV, SSCM adopts a long-term perspective of business and its role within social, environmental and economic spheres (Johnsen et al, 2014). This has transformed the operation of supply chains from simply logistical tools into innovative processes which can directly influence sustainability and competitiveness (Soosay et al, 2008; Vachon & Klassen, 2008, Ashby et al, 2012; Walker & Jones, 2012; Blome et al, 2013; Golicic & Smith, 2013; Jensen et al, 2013; Prajogo & Sohal, 2013; Wu, 2013). In fact, such is the prevalence of SSCM that scholars have argued it should render traditional supply chain management obsolete entirely, as a supply chain without sustainability has no role in modern business (Pagell & Shevchenko, 2014). This section provides an overview of prominent SSCM strategies which possess robust connections with the NRBV and consequently imply some potential in the theories practical realisation.

2.3.1 Sustainable Supply Chain Structures

It comes as little surprise that the prioritisation of sustainability in the supply chain renders some modifications to supply chain structure, and accordingly literature presents an array reconfigurations which largely fall out with the scope of this paper. However emerging with significance is the recent emergence of closed-loop supply chain management (CLSCM), which although still in infancy (Ashby et al, 2012) is presented as an exciting opportunity for the realisation of competitive and sustainable operations (Vachon & Klassen, 2008; Ashby et al, 2012; Golicic & Smith, 2013; Jensen et al, 2013; Szekeley & Strebels, 2013; Wu, 2013). Offering a radical alternative to traditional linear

supply chain management, CLSCM asserts that products do not begin and end at either end of the chain, but that they flow in a continuous loop. Put simply, instead of disposing of by-products, unsold products, emissions or effluents they are reincorporated into the supply chain as renewables or reusables (Ashby et al, 2012), making links with sustainability obvious. Notably, this has invited the paradoxical argument that downstream return of goods incurs additional emissions and greenhouse gases and therefore may in fact contribute to ecological degradation (Abbasi & Nilsson, 2012), but such an argument is perhaps more akin to reverse logistics which deals solely with responsible disposal of goods as opposed to the value-creating intentions of CLSCM (Jensen et al, 2013).

Topics of the NRBV and CLSCM have been linked already as a result of product stewardship's emphasis on reverse logistics and life-cycle analysis (Vachon & Klassen, 2008; Ashby et al, 2012; Golicic & Smith, 2013; Jensen et al, 2013; Wu, 2013), but such discussions have failed to enforce quite the relevance of their unification. More specifically, CLSCM possess great capacity with the minimisation of waste, avoidance of landfills, protection of natural resources and facilitation of renewables, as is forcefully demonstrated by a CLSCM case-study by Jensen et al (2013). This is further enforced by Szekely & Strebel (2013, p471) who praise CLSCM as an effective sustainable innovation with abilities of '*minimising toxicity and emissions and maximising productivity and life-span*'. Thus taking all this into consideration along with a growing industry presence (Asby et al, 2012) CLSCM implies potential in the practical realisation of NRBV strategies and their competitive benefits. However this is yet to be empirically assessed and warrants further study.

2.3.2 Sustainable Supply Chain Collaboration

Collaboration is presented as a fundamental capability of SSCM (Vachon & Klassen, 2008; Walker & Jones, 2012; Ashby et al, 2012; Blome et al, 2013; Golicic & Smith, 2013; Johnsen et al, 2014). Links between collaboration and sustainability are derived from the assumption that a firm cannot achieve sustainability without a contribution from its partners (Abbasi & Nilsson, 2012; Gimenez & Tachizawa, 2012; Miemczyk et al, 2012; Jensen et al, 2013) forcing the development of environmental collaboration strategies (Ashby et al, 2012). In particular, firms are encouraged to plan jointly for environmental management and solutions (Vachon & Klassen, 2008), and consequently are expected to benefit from reduced costs, risk and liability and increased innovativeness, performance and efficiency (Von Hippel, 1988; Soosay et al, 2008; Ageron et al, 2013; Johnsen et al, 2014). It is for these reasons that literature presents SSCM's collaboration as competitive tool (Soosay et al, 2008; Ashby et al, 2012; Blome et al, 2012; Ageron et al, 2013; Golicic & Smith, 2013; Johnsen et al, 2014), inviting comparisons with the NRBV (Wu, 2013). In the most part, such comparisons are a result of the NRBV's emphasis upon stakeholder integration and construction of product stewardship (Hart, 1995; 1997; Aragon-Correa & Sharma, 2003; Johnsen et al, 2014). Pertinently, the emphasis is not just on suppliers, but is inclusive of inclusive of NGOs, governments, shareholders and customers as well (Seuring & Müller, 2008; Wu, 2013).

Of course, SSCM collaboration is not without criticism, and in particular concerns are raised as to the creation, management and feasibility of such close, mutually-beneficial, honest and open supply chain relationships (Pagell & Shevchenko, 2014). However whilst complexities can certainly be expected (Walker & Jones, 2012), Johnsen et al (2014) contend that firms joining together based solely upon sustainability motivations has become a reality, and go as far as to claim it is common place in industry. If this is true, then perhaps there exists potential to realise the NRBV's stakeholder integration via SSCM's collaboration, again warranting study.

2.3.3 Lean Supply Chain Management

When it comes to the study of supply chains and sustainability the topic of lean supply chain management emerges with prevalence, with the 'lean and green' school is presented as an extension of SSCM (Hajmohammad et al, 2013). Lean is quite simply a waste reduction strategy (Dües et al, 2013) and is defined as '*a set of inter-related, complimentary and mutually reinforcing operating practices*' (Hajmohammad et al, 2013, p313) such as collaboration, integration and environmental management systems (Dües et al, 2013; Galeazzo et al, 2013; Hajmohammad et al, 2013; Johnsen et al, 2014). Some criticisms are notable with regards to skill, time and investment involved in the adoption of lean SCM (Dües et al, 2013; Galeazzo et al, 2013) but nonetheless lean enjoys a predominantly positive literary representation. Links with sustainability commonly revolve around the suggestion that one acts influentially upon the other (Dües et al, 2013; Galeazzo et al, 2013; Hajmohammad et al, 2013; Pagell & Shevchenko, 2014). In fact, not only are lean and SSCM believed to be mutually influential, but the conjoint adoption of their strategies has been found to render cost and time savings above and beyond their implementation in isolation (Dües et al, 2013; Galeazzo et al, 2013). Adding further enforcement is Dües et al (2013) who by means of a systematic literature review conclude that synergies between lean and SSCM outweigh any potential conflict.

However of greater significance are the existing links between lean and the NRBV, which are noted through literature as a result of their common goals in waste reduction (Galeazzo et al, 2013; Hajmohammad et al, 2013). In particular correlations between lean and the NRBV's pollution prevention are demonstrated (Dües et al, 2013). Given that lean benefits from practical appeal as a result of it being conceived of in industry rather than academia (Pagell & Shevchenko, 2014) this suggests further potential in the practical realisation of the NRBV.

2.3.4 Environmental Management Systems

Environmental management systems are identified as an integral component of SSCM (Seuring & Müller, 2008). They provide systematic processes intended at the realisation of environmental and economic goals (Ferenhof et al, 2014) and can help to reduce risk and costs whilst promoting performance improvement and competitiveness (Seuring & Müller, 2008). Links between the NRBV

and environmental management systems are largely a result of the NRBV's reliance on total quality management (Hart, 1995; Aragon-Correa & Sharma, 2003) which is in its own right an environmental management system (Hajmohammad et al, 2013). However more recently links have been drawn with environmental management systems such as ISO 14001 ((Hajmohammad et al, 2013; Ferenhof et al, 2014), supplier management inventory (Ageron et al, 2013), vendor managed inventory (Jensen et al, 2013) and just-in-time (Galeazzo et al, 2013).Such systems allow for the modification of activities such as procurement, packaging or distribution (Abbasi & Nilsson, 2012; Ashby et al, 2012; Svensson & Wagner, 2012) in a fashion which reduces waste, thus making links with pollution prevention feasible.

Of course the adoption and implementation of environmental management systems is not easy, and in particular concerns are raised with regards to knowledge and expertise, high costs and investment, heavy reliance on internal and external cooperation and long term value (Ferenhof et al, 2014). But such concerns are somewhat overruled by the presentation of environmental management systems as a competitive opportunity, and one which yields potential to provide measurability and analysis to the often obscure pursuit of SSCM (Hajmohammad et al, 2012). Certainly this, along with existing links with pollution prevention, renders some query as to the value of environmental management systems in the practical realisation of the NRBV. Further promise arises from the suggestion environmental management systems assist in the implementation of environmental strategies in firms with low sustainability awareness (Ferenhof et al, 2014) and are highly sought after by both suppliers and customers (Johnsen et al, 2014).

3.0 Research Aims and Objectives

The need for improved sustainability in the Scottish food sector results in the identification of the NRBV as a theory of great significance in modern business. However, an exploration of NRBV literature, whilst instrumental in demonstrating the relevance of the NRBV, exposes a twenty-year theory practice gap and warrants further study. Presenting an opportunity for resolve is the school of SSCM, which in encompassing convincing synergies to NRBV strategies and enjoying wide acceptance in industry implies potential in the practical realisation of the NRBV. As such this study proposes a natural-resource-based perspective of SSCM in the Scottish food sector in an attempt to overcome the twenty year theory-practice gap. The following objectives have been set:

- Identify synergies between the NRBV and SSCM strategies;
- Explore these strategies in practice
- Assess the value of merging the NRBV and SSCM;
- Provide recommendations for overcoming the theory-practice gap and promoting competitive sustainability in the Scottish food sector.

The value of this study is threefold. Firstly it attempts to answer calls for the transference of the NRBV from academia to industry (Mengug & Ozanne, 2005; Hart & Dowell, 2011) by merging it with SSCM strategies. Secondly it adds definition and empiricism to the value of both SSCM and NRBV strategies by assessing their benefits in a real-life context. Thirdly it promotes the adoption of competitive and sustainable business strategies in the Scottish food sector, thus contributing to the sector's continued development.

4.0 Research Methodology

The research methodology proposed in this section attempts to meet the defined research objectives, and consequently facilitate the creation of new knowledge. This section provides a brief overview of philosophical assumptions and methodologies employed in the proposed study, each of which has been selected as a result of its suitability to the intentions of the study.

4.1 Research Philosophy

According to Saunders et al (2012, p127) a research philosophy is concerned with the '*development of new knowledge and the nature of that knowledge*' and as such plays a critical role in any research project. This study adopts a philosophy akin to critical realism, allowing the Scottish food sector, the NRBV and SSCM to be viewed as unpredictable realities to be observed and analysed (Adamides et al, 2011). Pertinently, this conflicts the body of supply chain research in which positivism assumes some dominance (Wolf, 2008; Adamides et al, 2011), but nonetheless is suited to the proposed study. More specifically, a critical realist ontology supports the collection of real-life data from real-life contexts (Sayer, 2004), which supports the pertinence of context in valuing NRBV and SSCM strategies (Russo & Fouts, 1997; Chrismann, 2000; Barney, 2001) and the study's emphasis on the Scottish food sector. A critical realist epistemological stance allows for the analysis of data in a descriptive and explanatory fashion (Sayer, 2004) thus allowing the researcher to discuss a natural-resource-based perspective of SSCM and to draw conclusions about the value of the amalgamation between the two schools. As a result critical realism provides effective philosophical guidance for the successful completion of this study.

4.1 Research Methods

The study of business welcomes an array of research methods (Sayer, 2004) whilst critical realism supports methodological pluralism (Ackroyd, 2004; Jepsen, 2005; Adamides et al, 2011). Accordingly the research methods employed in this study are chosen solely as a result of their suitability to research aims and objectives. Whilst recent years have witnessed a penchant for mixed methodology combining both quantitative and qualitative methods in an attempt to add strength to research results (Bryman & Bell, 2011), this study adopts a solely qualitative approach. This

comprises three sections: an academic literature review; an industry review of both secondary and primary data; and a multiple case study and interview approach.

The first stage of research takes form via an academic literature review which has already been briefed throughout this paper's discussion of the theoretical framework. Literature reviews are a common starting place in business research (Bryman & Bell, 2011) where prominent themes or topics can be drawn out for further study (Saunders et al, 2012). This study conforms to such an approach, where the review of NRBV literature has demonstrated the relevance and limitations of the theory, highlighting areas for study. In the most part this refers to the identification of a theory-practice gap, inspired review of and comparison to SSCM, defining strategies for empirical testing. Completion of the literature review addresses the first research objective by identifying synergies between NRBV and SSCM strategies.

The intention of this study, as is often the case in business research (Saunders et al, 2012) is to engage with both theory and practice, and as such a comprehensive industry review addresses the second research method of this study. Firstly this takes place via review of openly available secondary data from governmental, research body and media sources, and ultimately aims to identify parallels with the literature review findings. This is followed by the collection of primary data from informal exploratory conversations with firms operating in the Scottish food sector, who are purposefully selected according to theoretical parameters. The qualitative and informal nature of these conversations allows respondents to control the conversation (Jobber, 2005), so that any parallels with literature findings are not subject to researcher bias. Pertinently, the industry review is not intended to provide methodological rigour but rather is a tool for validating and identifying prominent areas for study. It also addresses the second research objective by investigating the existence of NRBV and SSCM strategies in the Scottish food sector.

Whilst the literature review is credited with the construction of the research question, and the industry review validates the study, it is the case study in which empirical analysis of the NRBV is undertaken. Case studies are popular amongst business research (Eisenhardt, 1989; Saunders et al, 2012) and are praised for their provision of exploratory, explanatory and descriptive data (Yin, 1994) and versatility (Iacono et al, 2011) in both qualitative and quantitative studies (Dul & Hak, 2008; Saunders et al, 2012). However, it is their '*investigation of a particular contemporary phenomenon within its real-life context, using multiple sources of evidence*' (Saunders et al 2007, p592) which encourages their application in this study. More specifically where the 'contemporary phenomenon' is NRBV and SSCM strategies, the 'real-life context' is the Scottish food sector, and the 'multiple sources of evidence' are firms chosen for study, a case study approach permits analysis from a lucrative, outside-in position (Bryman & Bell, 2011) free from manipulation (Dul & Hak, 2008). Further supporting the suitability of a case study approach in this study is Iacono et al (2011) who promote the value of case studies in revising, extending and testing existing theory, which of course is the very intention of this study with regards to Hart's NRBV. Of course case studies fall victim to

criticism, and perhaps most commonly this relates to their qualitative nature which forces a heavy reliance on the interpretation and influences of the researcher (Iacono et al, 2011). In an attempt to minimise this case studies are also inclusive of or complimented by interviews (Eisenhardt, 1989; Saunders et al, 2012) which will be the case for this study. This allows the researcher to study the same phenomena in the same context but from a different angle, providing some assurance for validation (Saunders et al, 2012). Again cases will be purposefully selected according to theoretical parameters, and the employment of a multiple case study approach rather than single case study further enforces results by permitting triangulation (Eisenhardt, 1989; Yin, 1994; Iacono et al, 2011). Upon its completion the case-study contributes further to the second research objective of exploring NRBV and SSCM strategies in practice, and by allowing for assessment of the value of merging such strategies also addressed the third research objective. By focusing on the potential to overcome the theory-practice gap and promote competitive sustainability in the Scottish food sector, cumulative results from each research method address the fourth research objective, ultimately answering the research question.

5.0 Indicative Findings

Fifteen months into the study some indicative findings are notable. The review of NRBV and SSCM literature has confirmed synergies between the two schools. This is reinforced by existing links between NRBV strategies and emergent SSCM strategies, such as collaboration (Vachon & Klassen, 2008), CLSCM (Ashby et al, 2012; Jensen et al, 2013), lean and EMS (Hajmohammad et al, 2012; Galeazzo et al, 2013). The fact that such SSCM strategies enjoy widespread acceptance in industry adds optimism to this studies propensity in overcoming the NRBV's twenty year theory-practice gap. The industry review is underway and appears to correlate with the findings of the literature review. More specifically, the Scottish food sector displays a growing awareness of the competitive benefits of sustainable strategies, and as such attempts at adopting strategies akin to the NRBV and SSCM are notable. Firms who display such tendencies have been individually reviewed and contacted for informal and exploratory discussion. So far, seven firms have participated, and when discussing their sustainability strategies have exposed commonalities which relate to literature review findings. In the most part pollution prevention appears dominant, and practitioners appear to relate SSCM strategies with its realisation. As it stands the case study is yet to begin, but sample selection and initial contact is planned for completion within the next six months.

6.0 Conclusions

Calls for improved sustainability in the Scottish food sector forces the review of sustainability literature, in which the NRBV emerges with prevalence. Whilst the significance of the theory is forcefully demonstrated, mostly by its presence in modern literature, a theory-practice gap is also

exposed as result of practical inapplicability and misinterpretation. This in turn inspires the review of SSCM literature, in which convincing parallels with NRBV strategies are notable. The fact that SSCM enjoys a prominent position in industry invites query as to its propensity in realising the NRBV in practice and overcoming the theory-practice gap. Consequently the NRBV, albeit merged with SSCM, presents an opportunity to promote sustainability in the Scottish food sector. Thus, a promising theoretical framework is established and this paper proposes the study '*a natural-resource-based perspective of SSCM in the Scottish food sector: overcoming the theory-practice gap*'.

The study adopts a qualitative methodological approach comprising of three stages: academic literature review; industry review of both primary and secondary data; and multiple case study and interview approach. This paper has argued the suitability of these methods in comparison to the research aims and objectives. Ultimately the research methods employed, along with influences of critical realism, are intended to guide the researcher towards the successful completion of this study.

Only fifteen months into what is intended as a three year study, indicative results provide some assurances to the successful completion of this study. In particular, results of the literature review and industry review appear to correlate suggesting that NRBV strategies, particularly pollution prevention, are being realised via implementation of corresponding SSCM strategies. Certainly there appears growing industry awareness of the competitive benefits of sustainability strategies and attempts at their implementation in the Scottish food sector, implying the relevance and timeliness of this study. Of course the industry review is far from completion having only gathered primary data from just seven firms, but nonetheless reveals promising results.

Upon completion this study attempts to contribute to both theory and practice. In the first instance it attempts to overcome the twenty year theory-practice gap by merging the NRBV with SSCM. In doing so it adds definition and empiricism to the unification of such strategies and their competitive and sustainable rewards. This allows for the promotion of competitive sustainability strategies in the Scottish food sector, and provides a substantial basis for future research.

5.1 Difficulties and Limitations

The proposed research is subject to a number of difficulties and limitations which must be considered. Perhaps most predominantly is the scope of the study, as it is mentionable that both the NRBV and SSCM are vast and complex bodies of knowledge, to such an extent that their amalgamation may be ambitious for just one study. As a result, it is hoped that the industry review will highlight the most prominent and relevant topics to be studied. The qualitative case study approach of this study supports this, as it permits the collection of data on a continuous and paralleled cycle (Iacono et al, 2011) permitting the researcher to further probe emergent or unexpected areas of interest. Eisenhardt (1989) refer to this as 'controlled opportunism' presenting it as an advantage which other research methods lack. Furthermore, the successful completion of this study will pave the way for subsequent studies focusing on areas which are perhaps neglected in this study. The heavy focus on the Scottish food

sector may also warrant some concern, given that issues NRBV falls victim to contextual inconsistencies (Russo & Fouts, 1997; Christmann, 2000; Barney, 2001), implying that a strategy which is beneficial in one sector may be irrelevant in another. For this reason it seems logical to study just one sector, and the Scottish food sector with its need for improved sustainability (SF&D, 2010) and close ties with the natural environment (FHIS, 2011) is a justifiable choice.

7.0 References

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