Innovation drivers and barriers in the niche pork sector in an EU context

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Abstract

This paper aims to give insight into the set-up and governance of niche and/or regional production networks in the European pork sector. It provides an overview and analysis of the main innovation drivers and barriers and how those affect performance of these networks in three countries that are investigated by illustrating different trajectories to sustainable pork production, in the United Kingdom, Greece, and Spain. Moreover it provides a research agenda based on the conclusion that effective multi-actor network structures may be a precondition for niche and/or regional pork netchains to enjoy market growth.

Key Words: Netchain innovation, Niche, Region, Governance structures, Societal Embedding, Risk Management.

1. Introduction

Since change has become the rule instead of the exception, strategic decision makers must look for ways to prosper in this new business environment (Omta and Folstar, 2005 in Jongen and Meulenburg, 2005). Already in the early eighties Porter rightly observed that innovation is among the most prominent factors that determine the rules of today's business competition as well as success.
At its simplest, innovation means novelty, new things being done, or old things being done in new ways. The innovation process involves recognition of need, articulation of demand, design of the innovative solution, implementation, replication and up scaling, the latter stages of which in particular have entrepreneurial characteristics (Tidd, et al, 2001). Innovation is a powerful factor behind differences in performance between organizations, countries, and regions (Godinho and Fagerburg, 2004), and requires a continuous search for crucial issues for success.
Innovation tends to cluster in certain industries or sectors which consequently grow more rapidly, implying structural changes in production and demand and eventually organizational and institutional change. The capacity to undertake the latter is important for the ability to create and to benefit from innovation.

Moreover, in the agrifood sector, although it is argued that the "local production-local consumption" model is no longer reality, there is currently strong political desire observed at both European and national scales to "re-localise" food production and supply (Nijhoff-Savvaki, et al, 2009). Less than a decade ago, a new kind of European agro-food geography started to emerge with a topography shaped by the "quality turn" in food production and typified by various strategies to valorise local and/or regional food products (Ilbery, 2000, Murdoch, 2000 Parrott, 2002, Mardsen, 2002, Goodman, 2004, Ilbery, 2005 Maye, 2006, Nijhoff-Savvaki, et al, 2008).
This assumes a new kind of regional economic space, built around specialist dimensions of the food economy, including organic, local and regionally branded food products. The pork sector in particular is confronted with many and diverse challenges in the context of availability of pork meat at all times and at all places, for a reasonable price, and with guaranteed food safety. To meet these expectations the pork sector has gone through a major consolidation and shifted from relatively small family farms to large businesses that are

strongly connected within the chains in which they operate. However, present societal and market concerns, such as food safety, animal health, animal welfare, the environment, as well as convenience, are crucial issues challenging the present system. It is now widely accepted that sustainability of today's agri-food system is questioned and that some of it's characteristics, such as large scale production, are viewed as responsible for the unsustainable character of this system (Nijhoff-Savvaki, et al, 2009). While in the emerging literature on innovation the focus is mainly on the food industry at large (Batterink et al, 2006, Fortuin et al, 2007), or at a company level (Fortuin and Omta, 2009), this paper takes a holistic perspective by looking at the niche pork sector as a netchain, a recently introduced perspective (Lazzarini et al, 2001) which emphasises that firms are part of multiple networks that are sequentially arranged based on the vertical ties between firms in different layers, instead of as individual steps made by different organisations, which may prove particularly suitable in the case of regions.

We believe that this is a necessary approach in order to tackle the complexity of this sector as well as to meet the challenge of accurately responding to institutional, organisational, as well as market changes, which is largely unexplored. It is the purpose of this paper to fill this gap by exploring which factors form the drivers and barriers to innovation in the niche pork sector, and how these relate to its performance, namely by scaling-up such netchains.

For these reasons a field research has been performed in the UK, Greece, and Spain. This study is the first part of an extensive research in the context of the EU-FP6 integrated Q-Porkchains Project: *"Improving the quality of pork and pork products for the consumer"* (www.q-porkchains.org), and aims at defining Critical Success Factors (CFSs) for innovation management in niche pork chains.

The structure of this paper is as follows: Section 2 elaborates on the major theoretical and empirical considerations for this study, and addresses the major drivers and barriers to innovation in general, and the pork sector in particular. Section 3 explains the conceptual model that this study is based upon, its translation into a questionnaire, and the methods used for the data collection. Section 4 lists the results of the field research performed in the UK, Greece, and Spain with twenty nine experts. Section 5 elaborates on the results, and presents the main conclusions of this study, as well as further research.

2. Theoretical background and study domain

Theory recognises a number of different types of innovations including product, process, organisational, business model, and marketing innovations. A sound definition that we will use in this paper is the one of Schumpeter (1934) who defined innovation as *"the creation of new combinations"*. These innovations can be new products, new methods of production, new sources of supply, the exploitation of new markets, or new ways to organise business (Schumpeter, 1934; Batterink, et al, 2006).

Effective innovation management has gained a lot of research interest (Cooper & Klein-Schmidt, 1996, 1995; Griffin & Page 1996; Souder, 1987; Rothwell, 1972), particularly in studies exploring the factors that distinguish between success and failure. Success relates to the overall innovation process and it's ability to contribute consistently to growth (Tidd et al, 2001). Nevertheless there are intervening factors that are of great importance to innovation performance. Such factors might reside in the way processes are designed, activities are organised and conducted, resources are allocated, and strategic objectives are pursued (Huizenga, 2000).

A number of important areas for CSFs are defined in recent literature, including the industry or service sector, competitive strategy and industry position, environmental factors, temporal factors, and functional management factors (Huizenga (2000), while at firm level the firm's innovation strategy, the business culture, the innovation system, as well as product superiority,

proficiency of marketing and technological activities, market potential, and organizational relations are the most crucial factors that drive innovation at firm level. (Omta 1995, 2002, Fortuin et al 2007)

In supplier dominated industries such as the agrifood industry, food safety and quality are the most important drivers for innovation (Omta et al, 2003, Batterink et al, 2006, Fortuin et al, 2007), as well as product superiority and cooperation. (Pannekoek et al 2005). However, Batterink et al (2006) argue that cooperation may create vulnerabilities, as firms become increasingly dependent on outside sources for their product and process development, and cooperation is not related to performance for innovation, but that it is the market orientation and adequate organizational requirements that contribute to innovative output.

Notwithstanding the above, research indicates that the place of innovation is no longer the individual firm alone but increasingly the network, such as a supply chain, in which the firm is embedded (Gellynck, 2008, Pittaway et al, 2004, Omta, 2002, Powell et al, 1996). Supply chain actors are involved in upstream as well as downstream flows of products, services, finances, and information (van der Vorst, 2000). Inevitably the supply chain is the place where both internal and external resources of a firm are combined and transformed into innovation output (van der Vorst et al, 2007), and supply chain objectives can be measured via output performance of the supply chain, namely the degree to which a supply chain fulfills the demands of the chain actors as well as the consumer regarding performance indicators (Trienekens et al 2008).

Supply chain integration is hindered by a numbers of barriers such as lack of visibility of true consumer demand, collaborative relationships, lack of trust and sharing information, no shared targets, scalability and getting critical mass and insufficient information technology to communicate relevant data throughout the supply chain. (Van der Vorst, da Silva, and Trienekens 2007).

Recent empirical research results show that the above mentioned factors are comparable to those in the European pork sector. Although there is a substantial number of innovations identified in the pork chains investigated, unfortunately there is still a number of serious barriers that hinder market performance and therefore innovation in the pork sector.

While regulations to a large extent shape the quality management systems chain actors implement, innovations enable the chain actors to improve quality management systems through new integrated information systems or governance forms (Trienekens et al, 2008). Moreover, different quality management systems lead to different quality performance, and thus make different types of product-market combinations accessible for chain actors (Trienekens et al, 2008, Trienekens et al, 2009). These results have led to the following identification of barriers in the pork sector:

Regulations : There seems to be general consensus that the wide range of legislative demands for food safety as well as capital shortage of some European members to comply with, forms a barrier for innovation, and that the higher demands are set by the local and/or European governments the more harmful this might be for creating and sustaining a competitive position, inevitably affecting market performance.

Quality : Although sound quality systems from farm-to-fork are in place such as the Dutch IKB (Integrated Chain Control), the German QS (Quality and Security), or even the PDO regulations such as those in Spain, there are still factors that hinder quality, namely the conflict of interest between chain actors, which in turn creates lack of confidence among consumers (due to food scandals). This might possibly lead to non-transparent production process, applicable in cases where self-regulation by industry is in place.

Governance : Consolidation of the pork sector in most countries counts responsible for a number of up-scaling and concentration trends in all links of the pork chain. Although the type of governance structure might differ per country studied, and there is an increasing focus on formalisation of relationships, it is observed that contractual relationships are not common. Rather than through contracts, vertical coordination is achieved by means of product and

process standardisation: widely accepted, private quality standards, like IKB and QS, implicitly align chain-wide activities. (Trienekens et al, 2008).

Technology (Information exchange and use) : Although inter-organizational information systems especially in the case of farm and slaughterhouse are developed in various countries, traceability forms a major obstacle, namely in the case of feed as well as in the slaughterhouse where loss of information occurs in tracing parts of the animal.

As it may be seen innovations in the pork chain so far do not provide an integrated solution. Moreover, global competition combined with these strict requirements at product and production level both present opportunities and threats for sustainable development in the pork sector.

Therefore, overcoming the present barriers for development will also create the ground for innovation in the pork sector as a whole. CSFs are due to derive from new products and packages, new production techniques, new market approaches, and new ways of organizing supply, production, distribution, and sales. Taking the above empirical results into account, as a result of enforced regulations, economic pressures and societal concerns, certain CSFs are defined sofar which are expected to lead to supply chain and market performance and to enhance operational excellence as well as product leadership and differentiation (Nijhoff-Savvaki, et al, 2008), as depicted in Figure 1:
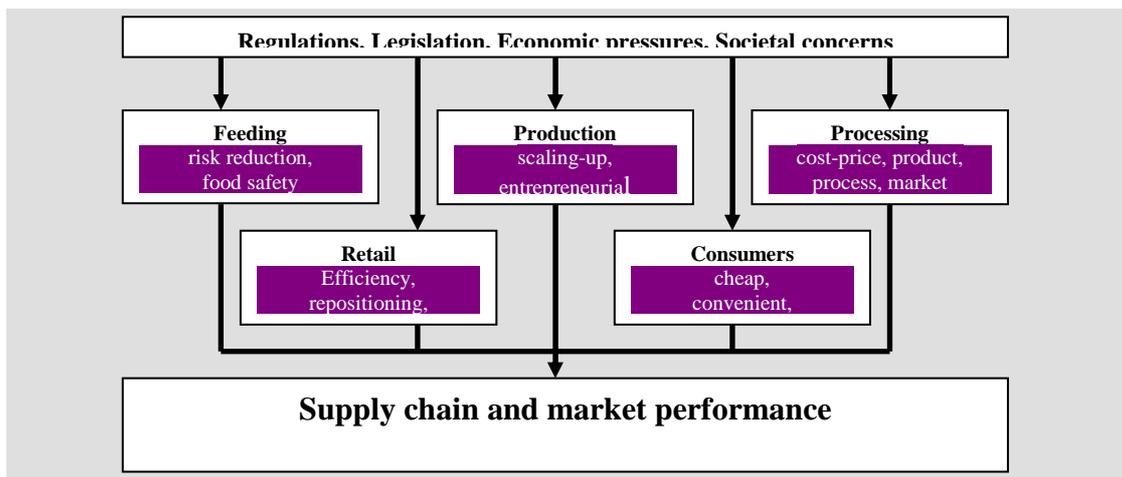

Figure 1: Critical Success Factors for the European pork sector

A sustainable pork sector therefore requires working towards integrated solutions that balance the roles of the various actors involved. This study considers the regional impact as a driver of innovation as well, since in this changing environment of societal pressures an economically viable and market-driven niche market may be seen by many producers as a feasible next step. At the same time, with the pork sector facing increasingly high costs of production (e.g. as a result of higher costs of feed and other inputs, as well as due to stricter legislation), the niche of regional and/or organic pork production may show improved business opportunities. While being less dependent on fluctuating input costs and/or increasingly strict legislation, regional and/or organic high-quality producers will at the same time target the growing demand for such produce (Nijhoff-Savvaki, et al, 2008).

3. Conceptual model, questionnaire construction, and data collection

The way in which the factors discussed in the previous section are expected to affect niche netchains and their performance, is visualised in the conceptual model in Figure 2, which formed the basis for the construction of the research questionnaire. The basic assumption is that innovations can no longer depend on an individual firms alone. For niche and/or regional netchains to become sustainable economic drivers, better understanding is needed of how netchain actors (such as policy makers, firms, civil society, consumers) influence the rate and direction of innovations.

There are a number of key drivers for innovations in netchains, and there are always barriers that hinder implementation of these innovations. While the internal innovation drivers are found at netchain actor level, the external drivers are forces caused by regulations, changes in the sector, or societal pressures.

For this research five questions have been used to investigate what are the main innovations in the countries investigated, what aspects of the niche pork netchains have been improved, and what are the sources for both drivers and barriers for innovations in the pork niche netchains.

Jointly, innovation drivers and barriers influence the potential for innovations and, ultimately, the up-scaling of a netchain. We argue that the design of the netchain determines its effectiveness.

For this research the concept of the netchain design has been split into three sub-concepts, namely the governance mechanisms, societal embedding, and the balancing of risks and uncertainties influencing the netchain as well as it's future opportunities and returns:

1. *governance mechanisms* are operationalised with seven questions as (formal vs informal) collaborations forms in the netchain and how those stimulate innovation, opportunistic trading in the pork netchain, chain coordination, as well as the importance of information and network management tools in the netchain and their impact on innovation.

2. *societal embedding* is operationalised by using two questions as the importance and priority of consumer preferences, as well as the importance of the attributes (locality, price, taste, freshness) of the niche pork products, and how these are communicated to the consumers.

3. *risks and uncertainties* are operationalised with three questions as the impact of laws and regulations on scaling up netchains, as well as presence and/or impact of other institutional issues such as society, NGOs, and any incentive programs that could stimulate innovation in the niche pork netchains.

On the other hand, continuous *feedback and improvement* is needed to arrive at an optimum netchain design, providing opportunities for scaling up of a sustainable netchain, which for this research has been operationalised with a question on the criteria of selecting a partner in a niche pork netchain, in terms of contributing to the upscaling of the netchain.
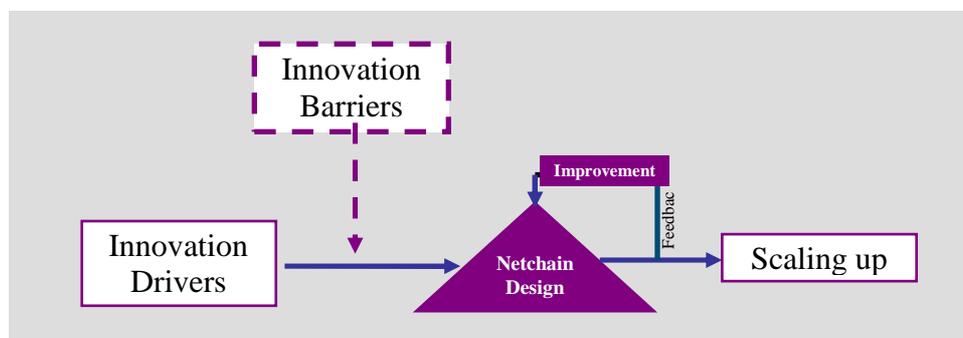

Figure 2: Conceptual Framework

The above eighteen mentioned questions has been used to perform semi-structured interviews with twenty-nine respondents from the pork sector, and the answers have been categorized as follows: the role of government and society in the pork chain, pork chain orientation and operation, pork chain business processes, pork chain marketing processes, pork chain organization and survival, and pork chain innovations for scaling up niche pork netchains. The questions were based on theoretical insights derived from Social Network theory, and Innovation Adoption Theory, as well as initial empirical research results of the Q-Porkchains project (with the major ones being mentioned in Section 2). The questions covered a range of aspects affecting innovation management and performance. In addition another twelve questions have been used to gather extra information on more general issues which also help the validity of the results. The respondents have been contacted by phone, an appointment has been booked at their premises and a face-to-face interview as well as discussion took place.

The research took place during spring 2009, in three countries with different economic and market characteristics: United Kingdom (organizational), Greece and Spain (tradition, culture). The rationale for the selection of these countries was to include a country as front-runner (UK), a follower (Spain), and one lacking behind (Greece), and show that there are different trajectories possible that contribute to sustainable pork production.

The sample per country got divided into two groups: chain experts versus chain actors, and the results got analysed in this way as well, together with a comparison of the three countries combined. A four-point Likert scale has been used ranging from not important (1) to very important (4). Table 1 presents a baseline description of the sample which includes a total of eighteen chain experts and eleven chain actors. The chain experts ranged from senior researchers and governmental officials to representative of sector organizations and journalists involved in the pork sector in Europe.

	Research	(Non) Government	Industry
United Kingdom	1	5	5
Greece	5	3	3
Spain	2	2	3

Table 1. Number of interviews per country with different stakeholders

The chain actors interviewed included integrated regional pig producers, processors, as well as two retailers. The regional pig producers were of medium size with an annual turnover ranging from €3.000.000 to €9.000.000 a year, and with a capacity ranging from 700 to 1,200 breading sows. One retailer was the 4th largest in the country with 223 stores, and an annual turnover of about €4.6 billion; the other the 1st largest in the country with 160 stores, and an annual turnover of about €1.3 million. Although itseems that there is a variation in the sample, this division has been proved to be very useful, since the participated countries do show different characteristics as well. For example, the choice to interview less researchers and more (non)government and industry experts in the UK, derives from the fact that in the UK organizational issues within supply chains have been the focus for a long time already, while Greece seems to be a "new" country trying to restore the pork sector for which science plays a major role, and Spain remains a traditional yet, strong pig producer country.

4. Results

Innovation drivers and barriers

In all three countries investigated, the main driver for innovation observed are economic pressures. Due to rising feed prices farmers are forced to innovate. In the UK for instance, farmers change diets by reducing protein levels as well as cutting on waste production. Although consumers still prefer traditional home produce, due to imported pork products there is increasing pressure among SMEs to reduce costs in the chain. Another innovation driver observed mainly in the UK and Spain, among both farmers and processors, is economic risk management. To be less dependent on the price offered by retailers and to improve margins, they seek ways to differentiate and sell to other channels as well. Although there are hardly any tax reliefs or subsidies for such niche chain activities, there are certain grants to help develop innovative ideas. Also, as a result to try to diminish risks in the chain, long-term contractual agreements were found to be a main driver for innovation. Processors and farmers that are engaged in contracts supported by a retailer tend to be more innovative. Contracts that include retailers, such as those promoting outdoor-bred meat to its consumers based on one specific breeding line and on one source of feed (UK), or organic as well as high nutrition pork meat (Greece), provide certainty, training and other incentives that lead to innovation among producers and processors. As a result, the retailers involved were supplied with high quality meat, at the required consistency level and of the right quantity.

Netchain Design
a. Governance Mechanisms

Regarding chain orientation and operation, in all three countries there was a major concern expressed about competition among the various chain actors. This remains too strong and hampers collaboration, innovation and chain integration. About half of the experts interviewed observed the problem of knowledge gap: farmers are at times considered old-fashioned and not market-oriented, and processors are at times qualified as "butchers" without business skills and unwilling to change. As a result of this retailers are often still in control of the whole supply chain.

Among the respondents, the questions concerning collaboration forms in the pork chain showed a strong consensus that niche pork chains lack an integrated approach. Those chains that include processors and retailers often work without focus, while increased competition requires new and innovative approaches. As a result, collaboration between chain actors is reported as often being based on informal relationships rather than on professional and long-term partner selection, with the exception of two closed chains in the UK and Greece respectively.

Especially the use of contractual agreements was reported in all three countries by all twenty nine respondents as having a strong influence on innovation and performance of the chain. However, especially in the case of the UK, it was mentioned that many processors have contractual arrangements with farmers, but not with retailers. This creates a big gap in chain coordination and a barrier to innovation, and to operational excellence in the chain. A key element observed is that the retailer does see the benefit of investing in a complete (closed) niche chain. To achieve operational excellence some retailers such as the ones interviewed in the UK and Greece use the concept of working with dedicated processors. The dedicated processor produces meat products solely for this retailer, and in return is contracted by the retailer. Below there are two examples mentioned from the retailers interviewed:

…."we combine the convenience of a supermarket with the expertise and service of a specialist shop. We have worked with producers and growers, pioneering 1700 local and organic products (many of which are Fair trade) and championing sustainable sourcing, to build a network of 223 stores around the country known for the freshness, quality, safety and provenance of the food we sell".

(4th largest British Retailer)

> *…"Our private-label line …Close to the Greek Nature includes at the moment 80 traditional, local products from small producers supplying our organization on an exclusive basis, and our …Choice private-label choice has now expanded to 160 items.*
>
> *(1ˢᵗ largest Greek retailer)*

Interestingly, the response on "Key conditions that are listed in formal written contracts" (length of contract, quality aspects, production aspects, delivery aspects, price aspects, and risk aspects) was identical in all three countries, although with chain actors scoring higher (in terms of importance) than chain experts. This shows that concerning conditions for contractual agreements the perception and presence of terms is not an issue.

Yet, while contractual agreements are found to be common, they are, in all three countries, considered as rather weak and easy to break. In some cases experts interviewed considered them as "rather invisible"**.** Opportunistic trading by farmers, processors and retailers is believed to be the major cause of this. It is remarkable that most respondents especially in the UK indicated processors as being reluctant to enter long-term relationships with farmers, including on aspects as knowledge gathering and transfer activities. They seem eager to have the opportunity to be able to change supplier. This was not reported as such in Greece and Spain, where retailers, dominating supply chains, are even less eager to commit, even though effective forecasting often fail and would benefit from such commitment. However, retailers did seem to play an influential role in the UK as well.

Concerning chain organization and survival, the majority of the respondents confirmed that insufficient collaboration and information sharing using network management tools between retailers, processors and farmers results in ineffective forecasting, resulting in overproduction and high costs. Concerning the issue of overproduction was especially the case in Spain:

> *"In Spain we produce 130% of meat, and the 30% of the meat we export sets the price of the 100% of meat that stays in Spain for consumption. Farmers should either reduce the pork production, or they will go bankrupt"*
>
> *(Statement of a Spanish Expert)*

On the question "is the exchange and sharing of information important in niche pork chains, in terms of: type of information, reason for exchange, and frequency of exchange", it shows that all respondents equally agree on the importance of these issues. It also shows that chain actors do consider this issue more important than chain experts, and that among the actors of the three countries those from the UK score highest. This is probably due to the fact that UK pork chain actors are more accustomed with the concept of sharing information especially with actors from other chains, as a way to exchange best practices and, as they responded, do benefit from this.

In the context of questions asked on innovation for scaling up, it was found that visual network management tools have a strong influence on innovating and scaling up in a niche pork chain as it shows in Figure 5. On a range of different issues, risk management and compliance to standards are viewed by chain actors as the most important management tools that contribute to upscaling. Meanwhile, key issues related to knowledge sharing to improve skills are viewed as less importance, with an exception of UK actors and experts that scored all aspects equally high. It was interesting to see that also the Greek retailer scored all aspects as very important, which is in accordance with the strategy they implement (by means of knowledge sharing within their supply chain).
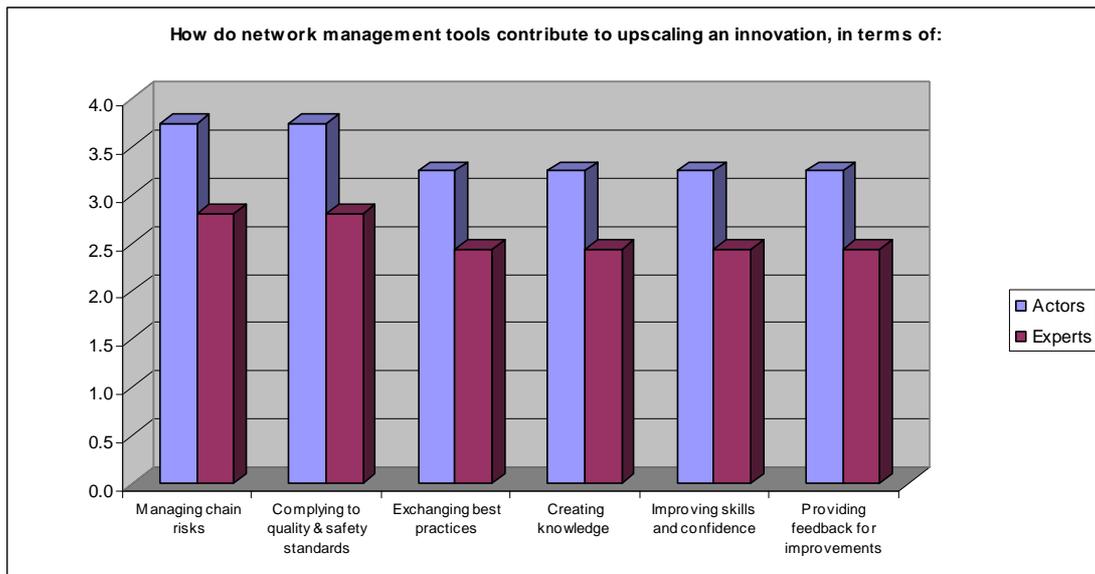
How do network management tools contribute to upscaling an innovation, in terms of:

Figure 5: Contribution of management tools to upscaling

An interesting view was expressed by two experts in the UK who underlined that the potential for upscaling niche pork chains can be found in linking niche farmers to retailers. In order to upscale, niche pork products cannot be limited to local niche chains and local shops. This can be confirmed by the low performance of local-regional initiatives, such as Regional Food Groups in the UK. According to one expert *"they come up with good ideas trying to persuade local people to buy local products, and one out of these ideas really sells"*. However, according to one representative of the Regional Food Group interviewed, they :

.."are dedicated to promoting, developing and supporting all companies involved in the food and drink industry in our region by providing assistance on: food technology, networking, skills and training, marketing and communications, and export."

Except the two experts a couple of more respondents feel that sales of niche products through retailers can work. This will require innovative and long-term business models between retail, processing and production. In most cases these models are still non-existent. While UK chain actors do see the value added on this issue, Greek chain actors are more skeptical about entering such chains mainly due to what they consider high entry costs on – for example - shelf occupancy.

On coordination or leadership in the chain and its impact on chain's performance, there is great consensus among all experts and actors interviewed, indicating the importance of one chain actor taking responsibility for coordinating chain activities and working towards best practices throughout the niche chain. Yet retailers are not interested in playing this coordinating role – as reported they see their role as "selling products". Among experts it is felt that the challenge is to arrive at best practices for feedback on optimal design of netchains as well as chain coordination.

b. Societal Embedding
Concerning chain marketing processes, consumers in all three countries consider locality, taste and freshness of the product as much more important issues than price. However, this view seems to change once other external factors appear, such as the impact of the recent economic crisis which was very clear in the UK.
In Greece and Spain price was not reported as an issue. One major concern, especially among respondents in Greece and UK, was how consumers can really be sure about the meat's origin?

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In the UK processors are viewed as very opportunistic buyers and traders rather than real processors, as it also showed from responses in the previous section. With consumers and retailers focused on labeling of the product and less on the origin of the product, a product labeled as 'processed in UK' does not necessarily mean that it is produced in UK. The processor is considered the real controller of origin. A similar problem occurs in Greece, where the implementation of the Agro 3.5 certification on traceability of origin is in place, but often does not get implemented by butchers, that still are the most preferable source for the Greek consumer. In this case it is interesting to consider that 90% of the Greeks do believe that they buy Greek pork products, while the domestic production only satisfies the 35% of the demand. According to the retailer interviewed:

"...our permanent competitor is still the butcher, since the Greek consumer believes him rather than a leading retailer, while it is the butcher who is refusing to officially state the origin of the meat, and while in the supermarket this is already standard practice. On the other hand recent statistics have shown that the meat performance of a store which is located nearby a butcher, is higher than that of a store without any butcher nearby. This means that that the Greek consumer learns to compare.."

Another issue observed in Greece is that meat from organic producers is difficult to be traced to its origin due to outsourcing activities by organic farmers to other (non-organic) farmers. In general, there is a great consensus that good quality production in terms of origin as well as better image building of niche produce is needed.

Concerning responses to the question whether "products meet the important issues" (locality, price, taste, freshness, other) in terms of: distinctiveness over conventional products; communication of characteristics to consumers; and provenance (on-pack information)", chain actors and experts in all three countries answered positive. However the attribute that scored lowest is the communication of special attributes to consumers, which seems to lack in all three countries, as it is shown in Figure 6 below:
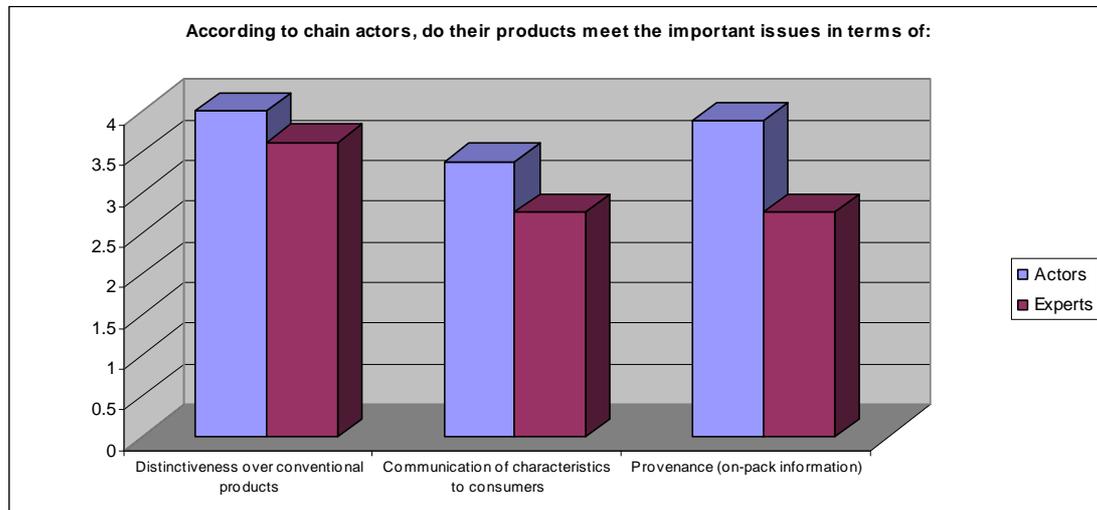

Figure 6: Attributes importance of pork niche products

In this respect, there was a great consensus, especially in Greece and UK, that for upscaling niche pork chains through retail channels, chain actors need to look for more innovative ways of branding by offering consumers products to which they can identify. This needs commitment from retailers since most brands are that of the retailer, making it difficult for individual farmers to communicate their products´ benefits. Producers in the UK for example aim for direct links with retailers. Retailers may then introduce different value lines, offering different levels of ´sustainable´ products to different groups of consumers, thereby providing them with choice. For example the retailer interviewed in the UK is offering niche products pre-packed as well as from a butchery corner, thereby offering different breeds of meat:

"what's the secret of good pork? We think is the attention to detail in the choice of breed and the care taken of the pigs. All our pork is reared by British farmers who we know personally. Every pig in our store is born outside, where they have plenty of space to run around and do what pigs like to do: root around in the earth and, when the weather is hot wallow in the cool mud. Each farm works to the high welfare standards of the RSPCA's Freedom Foods scheme, which covers everything from where the pig sleep, to the way they are transport. That means happy, healthy pigs, which give tender, fine-grained meat, with just the right amount of fat and plenty of flavour, available in three types: British Outdoor Bred Pork, British Free Range Pork, and British Organic Pork".

Moreover, the present focus on labeling is perceived risky by most respondents in all three countries: in most cases origin of the product is more important to consumers than taste and freshness. This shows once more that besides offering good quality, also image building is important. The idea behind creating awareness for the consumer is that there are two types of quality: that of the product and that of the process. For instance four UK experts from a sector organization have stated that especially the quality of the process is not clear for the consumer who tends to still get confused, and often abandon the wish for high quality pork meat since that does not show in the – sometimes – remarkable difference in price.

According to a UK expert, *"in today's pork production the consumer is able to choose from a number of different value lines according to his wishes and budget – from commodity products, to outdoor bred, outdoor reared (the cost difference in these lines is not so big), and free range – 100% outdoors production – in which a small percentage is organic (here the cost really goes high). What is important here, is that while in the past we had to make one big step to come to the top, now there are several steps possible, which gives a choice for the consumers between levels of welfare, and for the sector to be able to target different consumer groups."*

Rather than using traditional marketing of a niche product, the complete niche chain should be promoted. In the UK, for example, a sector organisation involved the celebrity chef Jamie Oliver to promote traditional-forgotten cuts which assisted farmers in being able to market less popular cuts, by initiating a TV program which got broadcasted in December 2008. It was reported as a great success for the sector as it is shown in the Box below:

British Pork Sales Soar post Jamie

He has managed to achieve in one short documentary what years of campaigning have singularly failed to do – seemingly turn around the fortunes of the British pig industry. In January 2009 the major supermarkets reported astonishing increases in sales:
- Asda: pork leg up 860%
- Waitrose: belly pork up 66%, and shoulder joins 270%
- Tesco: pork shoulder joints up 50% and belly 20% week on week
- Sainsbury's: pork shoulder up 52%, belly 74% and mince 83% week on week.

Consumers are now buying a wider range of British pork meat than before. The opportunity is there for the pig industry to successfully market the whole carcasss – clearly good news for profitability.

(Adopted from Focus - Freedom Food News, May 2009)

In Greece the concept of sustainability is seen as an important image factor to the retailer interviewed. It focuses on making consumers more sensitive about environmental issues and healthy food choices, and plans a pilot for a 'green supermarket' that may provide real opportunities for upscaling niche chain activities.

In Spain, it is considered a cultural and societal issue to consume high quality ham, deriving mainly from the wish of the citizens to profile themselves, while eating out with friends in a restaurant, or treating guests at home. However it seems that the same consumers do buy lower quality of ham for daily use.

c. Risk Management

As it is mentioned above, a main barrier for innovation is perceived by most respondents to be the lack of interface among chain actors. The challenge is to overcome this barrier and to persuade retailers (that are often not willing to participate in information exchange initiatives) to become drivers for chain coordination. This can be done, for example, by establishing chain driven task forces, such as those in the UK.

This is confirmed by most respondents in the context of the questions asked concerning chain business processes. Here one main challenge in all three countries is the problem of effective demand management due to inadequate forecasting, which often results in overproduction at farmer level and of produce not being bought.

Especially in the UK, seven out of eight experts as well as the producer interviewed, have repeatedly mentioned that niche chains often fail because of a lack of certainty for farmers concerning their return on investment costs. It often happens that once farmers invest in adding value and lowering costs of production, this cost quickly becomes a standard to the retailer. Although this issue was not reported as a problem in Greece and Spain, innovation in the area of pricing arrangements is seen as crucial by all respondents in all three countries.

> *"..for me as a producer, is important that the price mechanism works. This pricing mechanism exists for 9 years, is a very sound and sustainable model, which gives me the confidence to invest and develop my business further.."*
>
> *(Statement of a regional producer affiliated with the UK retailer)*

An interesting result that derived from the responses on the role of government and society is that although all EU member states have the same regulations, the cost of compliance depends on how much the regulation is enforced. Consumers demand high standards but also cheap produce. At this point there was a great consensus from all respondents that while government imposes standards on the pork sector, and is aware of the increased costs that they bring to chain actors, it often does little to control imports of cheap produce that is not produced according to these strict standards. Specifically the answer to the question "whether laws and regulations do impact on profitability in the chain", in terms of being able to control costs; to preserve financial margins; to collaborate within the chain; and to collaborate with external parties, it became clear that government has a strong influence on the performance of the chain. This is especially the case when it concerns collaboration inside or outside the chain, as is shown in Figure 7:
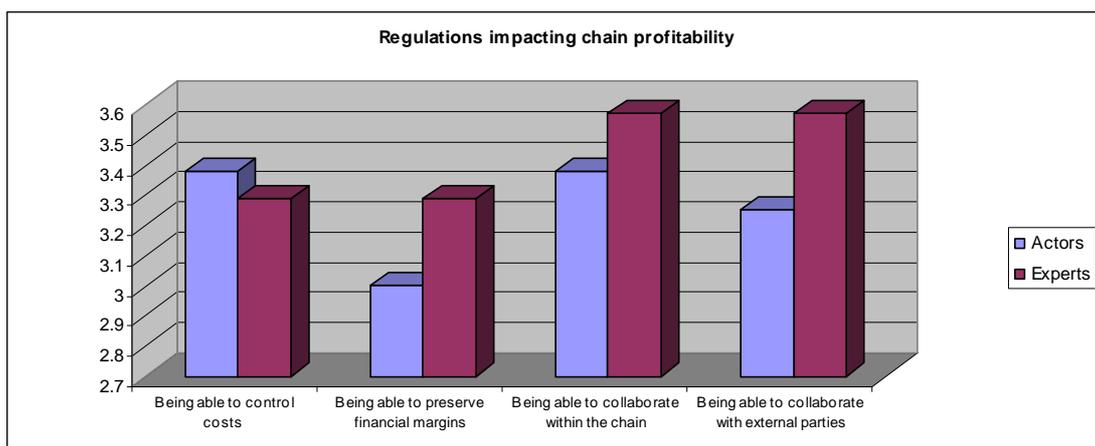

Figure 7: Impact of regulations on chain profitability

In the context of the questions asked concerning chain marketing processes, the majority of respondents commonly agreed that retailers are expected by consumers to offer a range of products. But meanwhile, with most consumers not really concerned where the pork meat comes from (as long as the meat is correctly labeled), it is difficult for niche pork chain actors

to communicate their specific image attributes and become part of this product range. At retail level, the premium that consumers pay for niche pork products is often double than that of standard produce. This difference is simply too big for most consumers.

Feedback - Improvement for Scaling up

Sector organizations in the UK mainly focus their knowledge gathering and dissemination initiatives on improving farmer and processor returns. Partly as a result of this, innovations in niche pork chains are focused on cost reduction through benchmarking and best practices in production. Small groups of farmers or processors are involved in these activities. But for niche pork chains to upscale, more effective chain-wide learning is needed. Research and knowledge should continue to focus on enabling niche produce to be marketed effectively through retail outlets, using collective action. Figure 8 indicates that access to knowledge (as well as improved business processes and risk sharing) is indeed an issue for chain actors and experts when selecting a partner.
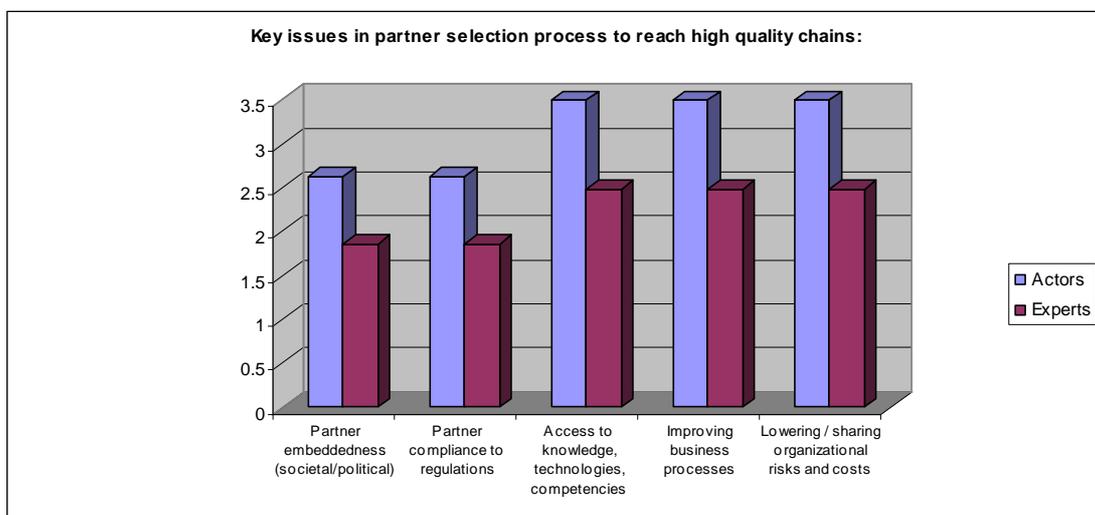

Figure 8: Key issues in partner selection

Chain actors and experts in all three countries indicate that learning (access to knowledge) should focus on improved and long-term relations between processors and farmers. Also pricing mechanisms and improved forecasting by retailers is seen as key. Inadequate forecasting results in overproduction at farmer level and produce not being bought. Key issues identified at processor level focus on working towards efficiency (layout and processes of the plant). The example of a master class on management, process control and learning was mentioned by UK experts and reported as successful. This should stimulate processors to earn money on processing, not on buying cheap and trading.

Besides advising on policy issues, a main challenge of task forces is to carry out risk analyses throughout the entire chain by working towards increased transparency and consumer attractiveness. With the retailer (coordinating niche chains) joining such Task Forces, it can work closer and select its own suppliers and introduce own standards and quality inspections. Communication with its suppliers is in this case crucial in order to ensure continuous innovations that satisfy the retailer and its consumers. This results in long-term relations. Frequent workshop-style meetings with suppliers to share information and best practices is seen as crucial by some dedicated retailers in the UK and Greece.

5. Discussion, conclusions and further research

Although recent scientific literature and empirical research mainly focuses on food safety and quality and on product superiority aspects as being the main drivers for innovation in the agri-food sector at large (Omta et al, 2003, Batterink et al, 2006, Fortuin et al, 2007), the case of the niche pork sector is interestingly different. This research shows that effective chain design and coordination highly influences its effectiveness to upscale but is still often lacking. These findings are also in line with our main argument that the niche pork sector should be looked from a netchain perspective, and confirm the theory that innovations enable the chain actors to improve quality management systems through new governance forms (Trienekens et al, 2008).

Concerning the questions raised on innovations drivers and barriers in the niche pork sector a number of interesting results have been delivered. The research shows that the main drivers for innovation are economic pressures (rising costs of inputs and waste), as well as aiming to be less dependent on prices offered by the retailers. Meanwhile, once contractual arrangements with retailers are in place, farmers and processors tend to become more innovative. Taking our conceptual framework into consideration, we can conclude that there are two levels of drivers for innovation resulting in upscaling: the macro-economic and the chain-level. Based on findings from this research, the role of retailer as a driver for innovation requires further research.

The research also shows that EU niche pork chains are often affected by a number of innovation barriers (external risks and uncertainties) that impact on their performance in various ways. Interestingly, these are very much related to institutional collaborative and chain design issues. The research provides insights in options for preventing such barriers for upscaling through, for example, interventions of chain-driven task forces that aim at advising on how to minimize such barriers to innovation (e.g. implementation of legislation). Regarding the aspect of innovation barriers in our conceptual framework, this is an interesting entry point for further exploration as it is still a relatively new area that deserves further investigation.

Concerning our argument that the design of the netchain determines it's effectiveness and enhancing scaling up, the present research findings provide a clear indication, that this is indeed the case.

The questions raised on the aspect of netchain design provide insight in the importance of managing uncertainties and risks through improved collaborative action. The research shows that inadequate retail forecasting mechanisms result in overproduction at farmer level and produce not being bought, and of farmer investments in adding value or lowering production costs only to become new retail standards, thereby lowering farmer's return on investment costs and financial sustainability. It is argued that although there is an increasing focus on formalisation of relationships, it is observed that contractual relationships are not common. Rather than through contracts, vertical coordination is achieved by means of product and process standardization (Trienekens et al, 2008). More insights is needed on the effectiveness of such standardization (versus formal contracts), its effect on the level of innovation, and on the crucial role of retail in effective chain design and coordination.

The research also argues that successful communication of the niche product's qualities, including in terms of provenance, is key to accessing new markets. There is a clear space observed for further improvement of (new types) of marketing communication strategies that effectively focus on public and societal consumer awareness, and that enhance image building of niche pork chain products. This confirms the argument that through such improvement regional and/or organic pork producers may see improved business opportunities by being less dependent on fluctuating input costs and/or increasingly strict legislation will at the same time target the growing demand for such produce (Nijhoff-Savvaki, et al, 2008). This requires further research.

The research findings thus underline the important role the retailer plays in reducing the risk of farmers and processors in investing in long-term niche pork chains and in creating sustainable, chain-driven business models through effective governance mechanisms.

Finally, niche pork chains prove to be small and vulnerable to a number of barriers. More supportive roles of both government and non-governmental (NGO) actors is crucial in lowering these barriers. Considering the role of these actors in the design of netchains, further research should provide more detailed insights on what this role can (separating niche pork chains from conventional pork chains) and how this can be done.

Last, our argument that continues feedback and improvement is needed to arrive at an optimum netchain design has been confirmed from the research findings. Therefore, and according to most respondents that were interviewed for this research, one key challenge is to arrive at best practices for feedback on optimal design of netchains, thereby influencing the niche chain's effectiveness. This confirms the argument that innovations should enable the chain actors to improve quality management systems through new integrated information systems or governance forms (Trienekens et al, 2008).

An overall conclusion of this research concerning scaling up of the niche pork sector is that network management within chains tend to focus on the 'hard side' of collaboration (on issues such as risk management and complying to standards) and less to the 'soft side' such as on knowledge and skills. For niche pork chains to upscale, more effective chain driven learning is required, which deserves further attention and exploration. This confirms Tidd's argument that success of effective innovation management relates to the overall innovation process and it's ability to contribute consistently to growth (Tidd et al, 2001).

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