

Small and Medium Sized Food Enterprise Networks in Supply Chains - The Case of Parma Ham -

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ABSTRACT

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Numerous commentators have highlighted the ever-quicken cycle of change in the business environment and in society in general, such factors as technology, political change and changing government role, and the globalisation of markets and the companies supplying them have featured strongly as change drivers (Peters, 1987; Champy and Nitin, 1988; Thompson, 1991). How organisations and society in general actually respond and contribute to this ever-quicken cycle of change is an interesting but inherently complicated question. Networks have often been forwarded as an organisational response to such changing and often contradictory demands, for example fragmenting market segments and globalisation of the market, increased efficiency and flexibility, increased coordination and decentralisation. Indeed in some respects the very existence of small and medium sized firms (SMEs) runs contrary to trends such as increasingly globalised markets dominated by major brands and consolidated retailers. Yet these enterprises can capitalise on niche market opportunities, however access to markets beyond their immediate locality often presents formidable challenges. A case study methodology was adopted to probe into the reasons small and medium sized food firms establish/join networks, how and why these networks evolve and how they perform and respond to internal and external factors especially in food supply chains. This paper reports on the findings of an investigation into the Parma Ham consortium. Enterprises joined the Parma Ham consortium to improve access to resources, in particular they sought to leverage collective economies of scale. The networking process was influenced by member goal congruence, the level and type/content of interaction and in particular the relevance of network services to members needs and expectations. The Parma Ham consortium was found to co-ordinate a series of transaction-transformation chains that enhanced member competitiveness, however from an enterprise perspective such competitiveness is to a large extent based on external collectively owned competencies.

NETWORKS

Thompson *et al* (1991) claim that 'contemporary conditions' have influenced both 'internal reorganisation' of the firm on one hand and re-emphasised external networks on the other hand. These conditions include the pace of technological advance, demand and market characteristics and the break-up of traditional public regulatory mechanisms. These changes have been of considerable interest to 'network' researchers, for example, 'deconstructed' firms that focus on a key competency and area of operation (e.g. manufacturing, design, research & development) and hence rely on co-ordinated relationships with other firms (Verity, 1992). A similar approach has been dubbed 'value-adding

partnerships' whereby firms specialise at one function along the value-added chain, this also necessitates close co-ordination among firms. This approach has been suggested as a viable competitive strategy for SMEs (Johnston and Lawrence, 1992) and in agri-food chains (Wierenga, 1996). The role of institutional arrangements such as inter-professional bodies in agri-food chains have been highlighted by Sauvée and Zuurbier (1998) and they also consider the use of resource-based theories in the study of value chains that are embedded in specific market situations. A number of researchers have adopted the resource-based approach to investigate small firm participation in networks (Ostgaard and Birley, 1994; Sandberg and Logan (1997). These studies concluded that strict reliance on theories of economic exchange inadequately explain the processes by which resources are marshalled, since this is also a social endeavour – especially in the earlier stages of development. Similarly there have been numerous studies of so-called industrial districts or SME clusters that have sought to develop competitive advantage on the basis of collective resources and expertise. These studies have highlighted the role of trust and reciprocity, balance between conflict and participation, and the role of local institutions (Pyke, 1992; Kristensen, 1992; Brusco, 1996; Enright, 1998).

The Interaction Approach (Ford, 1990; Ford *et al*, 1998) has made a major contribution to the study of inter-firm networking, especially dyadic relationships. This approach, which draws on both inter-organisational theory and new institutional economic theory, investigates the dynamic relationships between actors, resources and activities (Håkansson and Snehota, 1995). Activities are performed by actors and these in turn influence how resources are allocated – i.e how resources are combined, developed, exchanged or created by the use of other resources. Håkansson (1987) identifies two categories of activities – *transformation and transaction*. Transformation activities are carried out within the control of an actor, and are characterised by one resource being improved through the use of other resources. Transaction activities link transformation activities, forming chains of activities and creating relationships with other actors. Håkansson and Snehota (1995) argued that an understanding of relationships between network member firms was fundamental to an understanding of the network process. They identified two key characteristics of business relationships – structural characteristics and process characteristics. The main structural characteristics are continuity, complexity, symmetry and informality. The process characteristics identified were adaptations, co-operation and conflict, social integration and 'routinization'. These structural and process characteristics reflect those factors forwarded by industrial district/SME network researchers such as trust and reciprocity, conflict management and local institutions.

Foss (1999) finds that there has been a long tradition which has not viewed competitive advantage at either the micro or the macro level, rather the meso level has proved a useful level of analysis; for example clusters (Porter, 1990), 'technology districts' (Stroper, 1992) and 'industrial districts' (Pyke and Sengenberger, 1992). Foss linked the Interaction Approach (IA) with the resource-based perspective, thus blending sociological exchange theory with more standard economics. He has influenced the theoretical framework adopted for this study, since it draws on both industrial district/SME network and the Interaction Approach literatures. For the purposes of this study, three propositions were forwarded to investigate SME network establishment, process and performance in a food supply chain.

Study Propositions

1. Food SME networks respond to resource related conditions (e.g. create economies of scale and address market uncertainty).
2. Internal and external factors influence network and supply chain structure and process (e.g. member domain similarity, frequency and type of interaction, and socio-economic and institutional context).
3. Food SME networks create and co-ordinate transaction-transformation chains (e.g. co-ordination mechanisms, synergies and credibility).

A network is defined according to three dimensions - purpose, dependence and membership criteria (Human and Provan, 1997). Much of the research to date has focused on networks established to promote transactions of physical goods along the supply chain, which in turn may promote transformation type activities. Many of the SME networks operating in the food sector pursue activities designed to transfer services such as expertise, information and other 'soft' supports, and promote strong horizontal co-operation at the production/processing stage(s) of the food chain. Some networks are also involved in

transactions of physical goods between members horizontally and/or vertically along the chain. Therefore, while this case study focuses on a specific group of enterprises at one stage of a food supply chain (Parma Ham producers), it also considers these supply linkages along the chain.

RESEARCH DESIGN AND METHODOLOGY

The main objective of this research was to gain a better understanding of the ‘networking process’ between small and medium sized speciality food enterprises. A case study methodology was adopted. This method is designed to identify and gather both qualitative and quantitative data and is particularly well suited to network analysis, since boundary specification must be clearly defined when using the case study method (Yin, 1994). This research adopted a two-stage approach. The aim of the first stage was to build a profile of the case study based on a review of available secondary data and feedback from informed respondents. The main fieldwork and analysis was carried out during the second stage, three sources of information were used – depth interviews, member survey and documents. Case study profile data informed both structural (meso level and the extent of population including depth interviewees) and historical (bounded by events associated with the establishment and development of the network) boundaries. The case study profile also furthered the selection of themes and factors, particularly with regard to depth interviews. This research followed an ‘embedded case study design’, since a survey of network members collected detailed qualitative and quantitative data (Yin, 1994). The qualitative data analysis package N-Vivo was used to enhance data management, control for researcher bias and to create hierarchical structured coding schemes (Huberman and Miles, 1994). A range of tactics was used to support conclusion drawing and verification, including comparison/contrast, noting patterns and themes, and confirmatory tactics - triangulation and returning drafts to depth interview respondents for review and comment. Interviews could not be conducted with all consortium members due to their large number. Therefore a stratified random sample of 22 members was selected for interview that represented each member size (small, medium, large), type (specialised, balatori, large multi-product firms) and age/year they joined the consortium. A mail survey of all remaining producers was then conducted using a shorter version of the ‘interview questionnaire’. Twenty-two members returned valid questionnaires, therefore, in total 44 members were surveyed, representing almost half of the membership.

CASE STUDY – PARMA HAM CONSORTIUM

This case study is set in the province of Parma, in the Emilia Romagna region of northern Italy. A number of successful networks of small and medium sized enterprises (SMEs) support specialised local economies known as industrial districts throughout the region. One of these industrial districts is based on food processing in the province of Parma and the production of Parma Ham by about 200 companies is one key aspect of this district (Arfini and Mora, 1997). The establishment of a consortium in 1963 has been central to the success of this industry. This consortium successfully lobbied for protection under Italian Tutelage legislation, which was granted in 1970¹. One hundred of the Parma Ham producers are members of the Parma Ham Consortium, these producers must produce at least 75% of their total ‘dried raw ham’ output as Parma Ham. Therefore, only these producer can influence the composition of the Board and subsequent consortium policy, however all producers must follow Consortium production rules, pay a fee for use of its collective brand and benefit from the services provided. The legislation (1990²) delegated to the consortium the power to regulate the production of Parma Ham and clearly sets out the membership criteria, ‘production prescriptions’ and structures required. The legislation also stipulates that an inter-professional commission of breeders, slaughterhouses and Parma Ham producer representatives advise the consortium. Thus the legislative framework provides for a coordinated approach throughout the supply chain and the Parma Ham Consortium guarantees full traceability of the product. The consortium inspectors control³ each stage of production and each step along the supply chain is certified with a stamp - the Parma Ducal Crown Brand is the final stamp. In addition, the Consortium provides market promotion and promotes scientific research and development, however producers are responsible for the

¹ Tutelage sets out specific practices by which products of that have characteristics specific to a certain area may be produced and specifies product name. Such products can only be produced within the designated area.

² This law updated the original 1970 law and has since been updated (1998) under EU PDO (Protected Designation of Origin) legislation (Regulation (EEC) No 2081/92).

³ More recently these inspectors report to a separate organisation - Istituto Parma Qualità (IPQ).

sales and distribution of their own products. At the time of fieldwork Parma Ham commanded a price premium in the region of 20 to 25% over generic hams in the Italian marketplace.

Network Establishment And Evolution

Reasons For Establishing/Joining The Network. Case study findings supported the proposition that small food enterprises join networks to enhance enterprise capacity through improved access to resources (economies of scale) and there was some evidence to support the proposition that enterprises establish/join networks to deal with market uncertainty⁴. The most important factors influencing members to join the network were related to SME capacity, such as product differentiation (86%), promotion (86%) and ‘to increase consumer demand’ (82%), furthermore these activities all promote a collective brand name. However, market access and information were also important, for example factors such as access to new markets (82%), market information (64%) and flow of information from the trade (71%) influenced most members to join the network. Four main phases of network evolution were identified – establishment, growth, consolidation and re-organisation. Only one difference was found between those that joined during the 1960s (founding/early members) compared to the rest. All of the founding/early members (with one exception) identified uncertainty as an important factor influencing their decision to join the consortium, while only 27% of the rest identified uncertainty as important. The impact of the institutional environment also emerged as an important influence on enterprise decision to join the network, for example the importance of ‘access to regulatory information’ reflects the setting of the Parma Ham network within the Italian legislative framework for consortia. Therefore, the main reasons were market related – branding, promotion and market development (initially domestic and more recently export markets). However these market factors are embedded within a legislative framework that provides ‘tutelage’ or protected denomination of origin. The very essence of this collective brand required autonomous enterprises to join forces and work together, therefore the proposition small food enterprises establish/join networks to improve access to resources is supported, in that enterprises found it necessary to pool resources in order to build and promote a brand. But this collective effort is reinforced within a legislative framework.

Network Evolution. Considerable development has taken place since the establishment of the consortium. The number of producers using the Parma Ham brand has increased from 23 to 201, similarly production has increased from 53,535 hams marketed in 1964 to 8,925,300 hams sold in 1999. In 1999 the sector employed about 3,000 people and was valued at 1.24 billion euro. The number of firms peaked at 247 during 1985 and slowly declined during the following ten years to 1995, since then the number of firms has stabilised at around 200. Figure 1 illustrates the growth in membership and output. This highlights membership growth during phase 1 (*establishment*) and most of phase 2 (*growth*) and the rapid increase in production during phase 2.

Increased membership inevitable led to increased production during phase 3 (*consolidation*) and an associated downward pressure on prices. Thus, the consortium membership agreed to impose production quotas, ostensibly to maintain the quality of fresh hams since increased production created a shortage of suitable hams and may influence producers to compromise and buy lower quality fresh hams. Quotas were first approved by the Annual General Meeting of June 26th 1993 and were based on the producer’s production the previous year. There was also provision for some increase in production depending on circumstances. The Consortium legislation (article 30, 1993) empowered the consortium to impose such production quotas, however, not all producers agreed with this approach. These production quotas annoyed farmers and slaughterhouses since they capped the number of pigs entering the Parma Ham supply chain.

⁴ n=22 since only interviewed respondents were asked about the reasons why they established/joined the network.

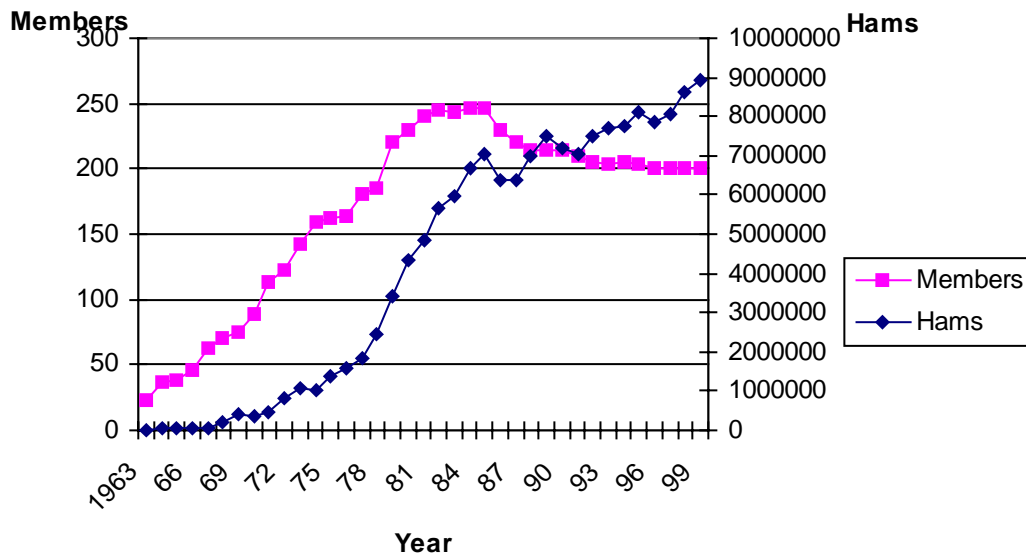


Figure 1: Parma Ham Consortium Membership and Output (1963-1999)

It appears that the inter-professional body was unable to resolve this issue and in 1996 the Italian Competition Authority⁵ ruled against the Consortium, however they allowed a transition period up to 1998 after which no production quotas could be used. The Consortium applied for a further extension after 1998 in order to allow enough time to implement breeding programmes required to produce suitable pigs for Parma Ham production. The Competition Authority denied the appeal. This ruling favoured ‘open competition’ over consortium legislation⁶ and also highlighted the difficulties involved in reaching consensus at one stage in the supply chain (curing) and along the supply chain. Given the abolition of production quotas the Parma Ham Consortium faced new challenges at the end of the 1990s. In particular the supply-demand balance and pricing emerged as a key issue. Increased emphasis was placed on export markets, since the Italian market seemed to be near saturation point. The international standing of the Consortium was enhanced during this period with the recognition of Parma Ham under EU PDO legislation. Further to this EU legislation an independent certifying body IPQ (Istituto di Parma Qualita) was established on the 1st of January 1998. This is in compliance with article 10 of the EEC Reg. 2081/92 that requires the establishment of independent Control Bodies to ensure that European foodstuffs that hold Protected Denomination of Origin status meet disciplinary regulations contained in the EN 45011 regulation. This heralded the beginning of phase four – *re-organisation*.

The Networking Process

The brief review above identifies the reasons why enterprises established/joined the consortium, the growth in membership/production and brand establishment and illustrates the impact of this on consortium strategy. This section further investigates the impact of member similarity, level and type of interaction and institutional environment on network form and process.

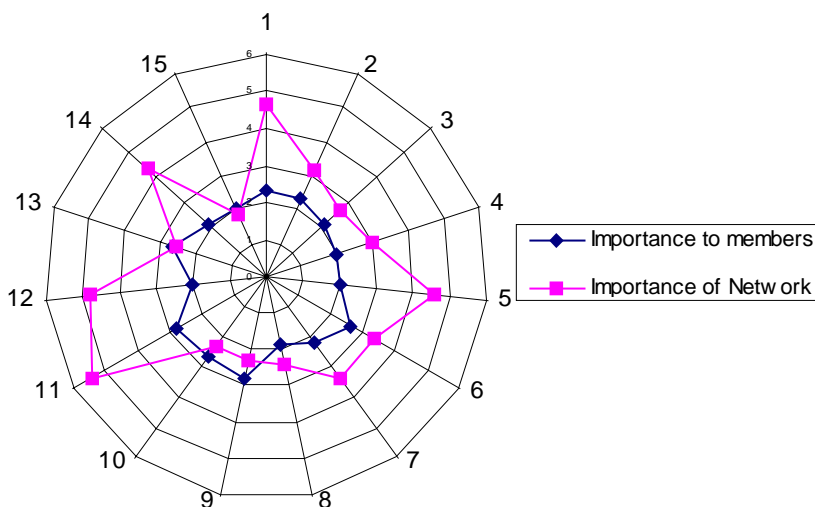
Member Similarity. The investigation of network antecedents above highlights some similarities among the membership. The membership appear to have clear views on why they joined the consortium and what they expected it to deliver, only minor differences were found between ‘founding/early’ members and other members. An investigation of depth interviews and documentary data supports these findings in that the ‘consortium group’ set out with clear objectives and the subsequent legislative framework unambiguously established the role of the consortium. When asked if they thought that they had goals similar to other members 84% of respondents agreed, only 2 respondents disagreed while a further 5 were

⁵ At this time the Competition Authority successfully challenged a number of Consortia that had imposed production quotas – one case was taken against both Parma Ham and San Daniele Ham (Decision no. 3999 (I138), *Consorzio del Prociutto di parma, Consorzio del Prosciutto di San Daniele*, Bolletini 25/1996); another case was also taken against both Parmigiano Reggiano and Grana Padano cheese (Decision no. 4352 (I168), *Consorzio del Parmigiano Reggiano*, Bollettino 43/1996); and another case against Gorgonzola cheese (Decision no. *Consorzio del Formaggio Gorgonzola*, Bollettino 46/1998) (Esposito, F.M., 1999:54-55)
⁶ Decision no. 6814 (I138bis), *Consozio del Prociutto di Parma, Consorzio del Prosciutto di San Daniele*, Bollettino 3/1999.

unsure. Those that disagreed or were unsure were concerned about maintaining a high level of quality given the rapid expansion in output.

Frequency and Type of interaction. Over the preceding 12 months 24% of members reported at least monthly contact with the office, however most of this group (64%) had at least weekly contact. Therefore, 76% of respondents had less than monthly contact with the consortium office. Phone (90%) and meetings (72%) were the most important means of contact and most members discussed both business/marketing issues (78%) and technical issues (81%) with office staff. In contrast there was quite a lot of interaction between members⁷, with 51% of respondents involved in bilateral interaction with at least 20% of the membership, however the remaining 49% were only involved in direct contact with 10% or less of the membership. Therefore, two contrasting groups emerged. Neither group displayed any distinguishing characteristics except that all the very large producers (turnover of 15-34 million euro per annum) were involved in very significant levels of bilateral contact. However, a more detailed investigation of the type and importance of interaction with network staff sheds more light on the networking process and is a useful indicator of network contribution to enterprise competitiveness - i.e. its role and member dependence on it. Respondents were presented with a list of 15 'possible success factors' and were asked to indicate the importance of each to the competitiveness of their enterprise and the role of the network. Thus the specific network activities were identified and their relative importance to the members was investigated. Figure 2 presents the results.

The 5 most important 'enterprise success factors' were quality control systems, regulatory measures (such as certificate of origin), business plan, training and product differentiation. The 'top 5' Consortium activities were regulatory measures (such as certificate of origin), regulatory information and analysis, promotion, quality control systems and market information. In general network activities reflect the reasons why enterprises joined the consortium as reported above, such as market access factors (market information), 'enterprises capacity' factors (promotion and quality control) and institutional factors (legislation and regulatory information). Furthermore the importance of the network role with respect to



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| <ul style="list-style-type: none"> 1. Distribution 3. Access to technical information and analysis 5. Training 7. Product development 9. Access to regulatory information and analysis 11. Financial assistance 13. Access to market information Regulatory measures such as certificate of origin | <ul style="list-style-type: none"> 2. Market Planning 4. Product differentiation 6. Linkages to landscape, cultural traditions, etc. 8. Quality control systems 10. Promotion 12. Business planning 14. Technical assistance & analysis 15. |
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Figure 2: Business Success Factors and Network Role

⁷ Respondents were asked to indicate direct contact with other members, other than that organised by the network office staff, e.g. meetings, seminars, etc.

all five 'success factors' closely reflects the importance of these to enterprise competitiveness. Many members viewed information dissemination as a Consortium activity, indeed technical information was also an important network activity (ranked 6th) for the vast majority of members (79%).

These findings highlight dependence within the network and the importance of the collective brand and 'image'. One of the most interesting findings in this regard is the importance placed by enterprises on the success factors and Consortium activities that also reflect the reasons why they joined. This suggests that this network has to a large extent met member expectations. However, since many producers have been members for some time, it is the changing member needs and the evolution of the networking process that is of particular interest. The next section investigates network performance in more detail.

Network Transactions and Transformations

The above analysis suggests that members had clear expectations when joining the network and that the operation of the network is related to specific network services. The broader institutional and legal environment in turn has influenced these to a large extent - indeed these legal provisions underpin network rationale and operation. In order to assess how the network has performed members were presented with a set of 18 possible outcomes and asked to rate their relevance. These outcomes were presented as statements, which included 6 transactions and 12 transformations; these were based on the findings of Human and Provan (1997). Once respondents had indicated the relevance of each a short discussion on their reasons revealed more detailed information on these outcomes.

Access to new markets was a very relevant 'transaction outcome' for Parma Ham members and 'increasing sales in existing markets' was of some but less importance. The provision of information, in particular market and regulatory, also emerged as important network transactions. These transactions have contributed to a number of 'general transformations', in particular 'competitiveness', 'quality' and 'joint activity'. Increased sales (especially new markets) and market information contributed to improved 'competitiveness'. Quality emerged as a central network theme, indeed it defines much of what the network represents, and a number of network transactions have resulted in a sub-set of transformations which in turn support 'quality'. These linkages highlight the influence of the institutional environment at supranational, national and local levels. The establishment of IPQ as a separate entity is a recent example of change emanating from the institutional environment, in this case from the EU. However, strong links exist and are likely to continue to exist between the consortium and IPQ. The creation of IPQ is but one example of the linkages between various organisations that form an extended network beyond, but centred on, the consortium. The local experimental/research station and inter-professional body are examples of formal institutions whereas the equipment suppliers are an example of 'informal associations'. Other transaction-transformation chains also support this notion of 'embeddedness in the environment'. Figure 3 highlights some of these inter-linkages supporting the overall transformation 'quality'.

Information emerged as an important transaction supporting further sales related transactions. These in turn increase added-value and credibility (due to brand strength and market share) and thus improve competitiveness. The evolutionary nature of transaction-transformation-transaction chains is evident from this process. This constant feed-forward activity, such as 'competitiveness' influencing new branding and research activities, initiates further transactions and strengthens the network and further embed it in its broader environment.

Each member is dependent on the behaviour of other members, particularly with regard to maintaining quality standards and competitiveness and ultimately added value and credibility. The role of credibility is of particular interest since it appears vital to network operation, since the brand itself has achieved a certain standing in the marketplace and this in turn supports each member's standing in the marketplace. However, credibility is a 'double edged sword' in that while an individual's credibility or standing may be enhanced by association with a 'credible network' it may in the same way be damaged if the network loses credibility due to the actions of one or more members or network staff.

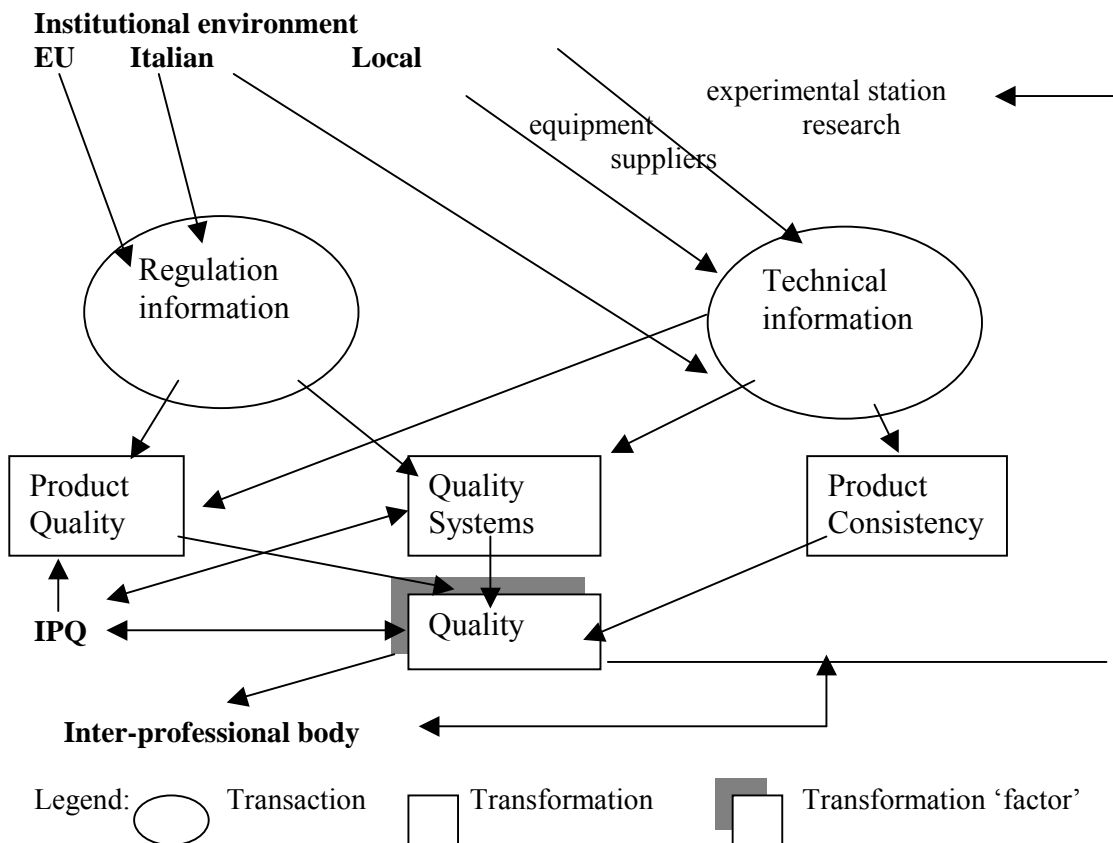


Figure 3: Transaction-Transformation Chain: Quality

In sum, these findings support proposition 3 that ‘food SME networks create and coordinate transaction-transformation activity chains’. There is some support for the sub-proposition that food SME networks support the synergistic use of resources, in that many respondents mentioned the need to join forces with other producers and network operation has resulted in a number of transformations. There is strong evidence supporting the sub-proposition that food SME networks strengthen ‘legitimation’ or organisational ‘credibility’, but how such credibility is maintained and more specifically how and why members trust other members and network staff requires further investigation. Therefore, network governance and co-ordination mechanisms are of the utmost importance. While the network relied on procedural type governance mechanism (e.g. inspection, rules, procedures), there was also evidence of strong ties among producers and these ties influenced behaviour and acted as ‘relational’ and ‘social’ governance mechanisms. The Parma Ham network has pursued very specific objectives that have required certain transactions that in turn have led to specific transformations. The importance of quality has heightened member dependence on each other and this continually reinforces the need for joint activity, if quality and competitiveness are to be maintained. Therefore, in one sense the brand is a resource external to each individual enterprise but internal to the ‘collective’. In conclusion these findings support the relational approach to networking, highlight the role of SME networks in building ‘external’ economies of scale and the influence of the institutional environment on network and supply chain activity.

CONCLUSIONS

Three underlying antecedents to the Parma Ham consortium establishment were identified; market access, information and enterprise capacity. Collective branding, promotion and sales/new market development have been important network objectives. These in turn have been influenced by market demand and supply over the lifetime of the consortium. Furthermore, research and dissemination of results, in particular collective problem solving related to quality, has become an important consortium activity. These findings provide empirical evidence that supports the ‘general’ theoretical proposition that network membership facilitates small enterprise specialisation and competitiveness through the provision of

complementary services (resources/activities) and enhanced member capacity. Furthermore, the consortium has served the members well in that sales have increased and margins are well above industry average, in addition relatively few members have left and membership has been stable over recent years.

These findings also support the proposition that this network is embedded within a broad social, political and economic context, in particular the influence of policy/legislation has provided this network with a clear rationale and modus operandi. This legal/regulatory framework has also provided clear procedural governance mechanisms, however there is an interesting interplay between the ‘institutional’ and ‘social/local’ influences resulting in a complex set of procedural and ‘relational’ mechanisms. Dependency on other producers was also found to influence governance mechanisms and the networking process. This behaviour reflects that the regional clusters concept proposed by Enright (1991), since many important resources and capabilities are found not within a single firm nor are they available from another ‘member firm’⁸ but involve network activities that are shared across firms within the network. Therefore, individual members gain scale and competitive advantage from collective activities – in this sense these resources are ‘external’ to each individual member firm (Foss, 1999). The activities linking actors and resources also reflect Håkansson’s (1987) network concept. It is likely that small firm competitiveness will increasingly depend on their ability to build such key competencies, not internally but in association with other actors. For example, the Parma Ham network currently faces numerous challenges, in particular pressure on margins from increased production. It is likely that greater interaction along the supply chain, both in the context of the inter-professional body and downstream buyers will be required in order to address such challenges. In general the establishment, evolution and governance of such inter-firm activity offers considerable scope for further research since such ‘external competencies’ are likely to become increasingly important, for example cross-case analysis could provide a useful insight to various network strategies employed by food SMEs.

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⁸ This is an important difference between this case and most empirical network studies – the latter are typically value chain or industrial marketing networks and are based on the view that a firm is dependent on resources controlled by other firms, thus following resource dependence theory (Pfeffer and Salanick, 1978). For example, Johanson and Mattsson (1987) claim that this is a basic assumption underlying our understanding of networks. While this study adopted this view, it also forwarded the overall proposition that SMEs in networks are further dependent on each other due to the collective investment and development of resources. Therefore, this is rather more complex than bilateral interdependence and dyadic relationships.

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