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Formal Food-related Networks in Ireland: A Case Study Analysis

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ABSTRACT

Strategic networking is of crucial importance for innovation in small and medium sized enterprises (SMEs) as it enables these companies access external resources and overcome internal constraints. However, SMEs often lack the skills and competencies to engage in and benefit from networks. Consequently SMEs often fail in establishing strategic and efficient networks. To date, there is limited guidance available on the optimal design of such networks. Furthermore, limited guidance is available on the number of networks, and level of engagement therein, that companies should be involved with. Using case studies across a range of formal networks within the food sector in Ireland, insights into the success factors and barriers to network learning are presented, which provide a foundation for such guidelines. Three case studies were selected for analysis in Ireland. Up to ten in-depth interviews were scheduled with the network managers and key informants from the triple helix (i.e. policy, research and industry sectors) within each formal network. Initially, interviewees were identified as a result of a review of secondary sources and personal knowledge of the authors. The snowball sampling technique was then employed to identify additional interviewees within each network. The findings from this study revealed that some formal networks had a strong institutional influence, including significant financial inputs, whilst others had bottom-up origins. Many networks had strong levels of interaction prior to formalisation, which provided solid trust-based foundations. Innovation and/or learning were not the expressed objectives of all networks at the outset. However, interviewees across all three networks felt that positive impacts had been achieved in these areas. Whilst being involved in a broad network can provide access to a wider range of ideas, these case studies suggest that being involved in a smaller, dense network, with high levels of IP protection, may be supportive of high levels of innovation.

Keywords: Case study analysis; Formal networks; Food SMEs; Innovation

1 Introduction

The resource-based view of the firm, which stresses the evaluation of a firm's internal resources and capabilities, and the importance of internal and external sources of information to make informed business decisions, is considered essential to the development and success of organisations (Birkinshaw and Fey, 2005). More so, successfully managing the flow of information between an organisation and its external environment is considered an important antecedent to innovation (Lynn and Reilly, 2002; Carneiro, 2000). That is, organisations that utilise knowledge rapidly and effectively are able to innovate quickly and successfully (Lynn and Reilly, 2002; Lynn *et al*., 1999). Networking is recognised as a way of improving innovation performance within companies. In particular, strategic learning is of crucial importance for innovation in SMEs as it enables these companies access external resources and overcome internal constraints. However, SMEs often lack the skills and competencies to engage in and benefit from networks. Consequently, SMEs often fail in establishing strategic and efficient networks. The aim of this present study is to provide insights into the success factors and barriers to network learning by food SMEs

within formal networks. This paper investigates the organisation, functioning and structure of food-related SME networks, and how these affect network participation, and their contribution to learning and innovation performance.

1.1 The Contribution of Networking to Innovation

Innovation is a knowledge intensive process where the generation of new business opportunities requires the leveraging of both internal and external resources through the inflow of knowledge on products and processes, markets and customers. Sources of ideas for innovations can come from various sources including: internal brainstorming, marketing, production and technical R&D; market analysis and retail audits; tradeshows and food fairs; gap analysis and product tracking; desk research and consumer research; and external sourcing through suppliers, wholesalers, distributors and retailers. In addition, there is growing evidence of the importance of both formal and informal networks for innovation (Rese and Baier, 2011). Formal networking is systematically established and organisationally structured while informal networking is structured by social relationships and personal communication between individuals. Networks can potentially give rise to collaborations where the costs and risks associated with the innovation process are shared, and where learning and information exchange between members create the conditions for increased scope and scale of activities, competencies and organisational know-how and knowledge (Rese and Baier, 2011). The inflow of knowledge from the external environment can therefore augment the internal resources and absorptive capacities of firms, and can play an important role in shortening product development times and speed to market, the exploitation of new market opportunities, and the diffusion and adoption of innovations (Pittaway *et al*., 2005). Indeed, network behaviour has been shown to be significantly associated with improving the innovation output and competitiveness of firms across services, manufacturing and high-tech sectors (Ahuja, 2000). Earlier studies by Gemunden *et al*. (1996) across 6 high-tech industries also showed higher levels of innovations in firms that networked than in firms that did not. Networking could therefore be especially important to SMEs with limited financial and human resources, and sub-optimal competencies in marketing and distribution in achieving successful innovations (Lee *et al*., 2010).

1.2 Factors influencing Network Performance

The structure of a network and the quality of relationships between members are believed to have a significant impact on learning and knowledge diffusion between firms, and are considered important determinants for the proper functioning of networks (Caniels and Romijn, 2008). In particular, close relationships are considered especially essential for the sharing of tacit and informal knowledge between members of a network (Freeman, 1991). In social network theory, the connectionist view of networks stresses that dense networks can potentially lead to improved innovation performance since they are expected to promote knowledge and learning more effectively than less dense networks (Borgatti and Foster, 2003). This is based on the premise that better-connected networks facilitate knowledge diffusion more rapidly where members with high levels of direct relationships have greater opportunities to access a larger pool of information. In contrast, the structuralist view of the network stresses network configuration as a determinant of network performance with open networks generating more diverse ideas and ways of thinking than dense networks (Borgatti and Foster, 2003). However, Pittaway *et al*. (2005) argue that consensus has yet to be reached on the optimal network configuration that can positively contribute to the development of innovations within firms. Instead, a more strategic view of the role of networks suggests that network configurations can potentially change and adapt according to the requirements of members, the actions that the network structure seeks to facilitate, and the context in which networks operate in (Pittaway *et al*., 2005; Ahuja, 2000). For example, Birkinshaw and Fey's (2005) study of 103 R&D intensive firms across Great Britain and Sweden revealed the extent to which learning occurred depended on the strategy of firms towards external knowledge sourcing.

A large body of research has examined the factors that can promote or inhibit the establishment and performance of networks. For example, network-specific factors such as network governance in terms of under or over formalisation of networks exert a strong influence on their effectiveness and contribution to learning and innovation (Coles *et al*., 2003). Uncertainly amongst members regarding a network's role, objectives, and activities were also found to exert a negative influence on network performance (Pittaway *et al*., 2005; Cullen *et al*., 2000). Indeed, the contribution of networks to innovation performance was found to be low where learning was not an explicit objective of the network, and where systems and

procedures to manage knowledge flow were also lacking (Scozzi *et al*., 2005). In addition, firm-specific factors such as limited organisational capabilities related to financial and human capital constraints, access to institutional expertise, the experience and ability of firms to absorb knowledge, learning intent and lack of strategic vision have all been cited as factors impacting on the learning and innovation performances of networks (Gellynck and Kuhne, 2010; Gellynck and Vermeire, 2009; Pittaway *et al*., 2005; Scozzi *et al*., 2005; Avermaete *et al*., 2003). The quality of relationships can be influenced by a number of chain network-related factors including organisational cultural norms, levels of integration, interpersonal relationships, collaboration, compatibility of network partners, dependency levels, power, reputation, satisfaction and trust (Rese and Baier, 2011; Jonsson and Zineldin, 2003; Harrison and Carroll, 2002; Cullen *et al*., 2000). Successful networks are believed to be based on information sharing across members, cooperative behaviour, communication of goals and expectations, and the sharing of risks and benefits amongst members (Gellynck and Kuhne, 2010; Pittaway *et al*., 2005). Indeed, the level of investment in relationships and the commitment of network members have long been considered important antecedents to building trust and cooperation within networks. Trust and cooperation are necessary to foster a greater willingness to share resources and knowledge, minimise potential for opportunism, and enhance innovation through inter-firm collaboration (Rese and Baier, 2011; Hoang and Antoncic, 2003). Most recently, a study of 271 networks across medical, IT and engineering and biotechnology sectors revealed that trust, commitment, dependency of network partners on each other, compatibility and ability to cooperate were important success factors for innovation within networks (Rese and Baier, 2011). In contrast, unreliability, unfairness, opportunistic behaviour, inter-firm conflict, external disruption and lack of network infrastructure can all have a negative effect on network performance (Pittaway *et al*., 2005; Coles *et al*., 2003; Cullen *et al*., 2000).

Studies focusing on SME networks are relatively limited, and fewer still investigate the determinants of innovation performance in food SME networks (Gellynck and Kuhne, 2010). To date, there is limited guidance available on the optimal design of such networks. Furthermore, limited information and guidance is available on the extent to which the adoption of innovations relate to the different characteristics of the structure and functioning of food SME networks, and especially in terms of the number of networks, and level of engagement therein, that companies should be involved with. This paper contributes to an improved understanding of the nature of the learning process within formal food-related networks. Using case studies across a range of formal networks within the food sector in Ireland, insights into the success factors and barriers to network learning are presented, which provide a foundation for such guidelines.

2 Methodology

2.1 Case Studies of Formal Networks

This research was based on a set of three case studies: Plato Ireland, Food for Health Ireland, and Cáis, The Irish Farmhouse Cheesemakers Association (See Table 1). Case studies were chosen as the research strategy to provide insights into the success factors and barriers to learning within formal networks. Case studies were chosen for this study given the descriptive nature of this research in terms of documenting the evolution of each formal network, and the dominance of research questions relating to the nature and dynamics of inter-firm relationships within each network. These cases were selected to provide diversity in terms of age of the networks, envisaged purpose of the networks, origins (i.e. bottom-up versus top-down), geographic focus, and food sub-sectoral orientation. All networks were formal networks. These formal networks all contribute to the development of the Irish food and drink industry and to knowledge transfer in pivotal areas germane to each network.

Table. 1
Network Profiles

	Plato Ireland	**Food for Health Ireland**	**CAIS**
Date Established	1996	2008	1983
Legal Status	Limited	University-based centre	Unlimited
Geographic Scope	All-Ireland	Republic of Ireland	Republic of Ireland
Network Description	An owner-manager focused business-led network that is locally based with a bottom-up and group learning approach to networking	An industry-focused public-private partnership between four public research organisations and four leading dairy processing companies	Farmhouse cheese manufacturers association that represents the needs and interests of speciality farmhouse cheese producers in Ireland
Sectoral Focus	Pharma, engineering, services, manufacturing (food/non-food)	Dairy processing/ingredients	Farmhouse cheese
Network Size	500 SMEs (grouped according to skills/development stage) & 120 MNC facilitators	4 Universities/Institutes and 4 dairy processors	43 producers of varying size, stage of development, and production capacity
Membership Type	Network open to SMEs in growth stage; sub-groups open by agreement	Open by agreement of board	Open to farmhouse cheese producers
Executive Employees	4	7	None: voluntary organisation
Funding at Inception	Seed capital from enterprise boards; support/goodwill from industry e.g. cooperation of MNC as mentors, boardroom facilities	Seed capital from Enterprise Ireland (€19.3m) and processors (€3m); Institutes/Universities contributing time, knowledge and expertise	Members contributed premises for meetings; public bodies supported training and overseas market development initiatives
Current Funding	Public funding and member fees	As above	Support from public bodies and member fees
Network Life Cycle	Short (20 months)	Short-medium (5 years)	Long (undefined)

2.2 Data Collection

Data were primarily gathered through semi-structured in-depth one-to-one interviews with network managers and key informants from the triple helix (i.e. policy, research and industry sectors) from each formal network. A semi-structured interview guide was developed to ensure comparability between case studies. The semi-structured interview guide was divided into seven parts: network profile; network inception; network evolution and network membership; qualitative analysis of network configuration and network ties; network activity; network management and governance; and performance. However, given the diversity of interviewees and the potential to get information from several different respondents, all questions were not asked of all interviewees. Up to ten in-depth interviews were scheduled with respondents from each network. Initially, interviewees were identified as a result of a review of secondary sources and personal knowledge of the authors. The snowball sampling technique was then employed to identify additional interviewees within each network. Potential respondents were initially contacted by letter, and subsequently, followed up with a telephone call. The in-depth one-to-one interviews were conducted in respondents' own business environments where possible in order to put them at ease and to encourage openness in discourse. An experienced moderator conducted all in-depth one-to-one interviews, which were audiotape recorded, and lasted approximately sixty to ninety minutes.

2.3 Data Analysis

The qualitative data generated from the in-depth one-to-one interviews was content analysed. The data generated from the in-depth one-to-one interviews was also complemented with analysis of a range of secondary documents (e.g. annual reports, brochures etc) made available by the network organisations and external published documents (e.g. trade magazines, newspaper articles etc). In that sense, the multi-stranded approach of seeking the perspectives of the different triple helix respondents supplemented by published secondary data facilitated methodological triangulation. This approach helped minimise any inaccuracies in post-factual accounts, thereby increasing internal validity of the qualitative data.

3 Results

The in-depth discussions revealed that food SMEs generally used their networks to access knowledge and training, and all three networks contributed to formal learning and skills transfer to SME members through the provisions of workshops and seminars. In the case of Cáis, it is evident from Table 2 that new knowledge was brought into the network from external sources primarily. In contrast, FHI and Plato Ireland leveraged both internal and external sources of knowledge. For example, in the case of FHI, inter-firm knowledge transfer was facilitated through an education and outreach programme with meetings/workshops held quarterly where invited speakers from within FHI educated attendees from both academia and industry on aspects of their respective research activities. The formal learning gained by FHI stakeholders through attending these meetings/workshops was also augmented by the high levels of formal and informal communication and continual learning gained through participation in programme committee meetings, as well as working groups both within and across work package programmes. Similarly, a key characteristic of Plato Ireland related to its contribution to knowledge transfer through peer-to-peer learning where SME owner-managers could meet in a safe and confidential environment to discuss issues or common obstacles to SME performance.

Each network contributed to innovativeness amongst members, although again, the extent and nature of the innovations varied between networks. In the long-term, FHI was expected to have the greatest impact on the nature of product and process innovations given the technological orientation of the network. In the short-term, the industry partners were most interested in using the expertise and facilities afforded by FHI to scientifically substantiate the health benefits of their existing functional ingredients (See Table 3). In contrast, food SME members of both Plato Ireland and Cáis did not believe that the activities of their respective networks contributed directly to product or process innovations. In particular, food SMEs felt that Plato Ireland's contribution to product and process innovations lay at the new product development strategy level only. This could be attributed to the focus on learning and improving management skills within their network, as well as the cross-sectoral composition of the Plato groups. Instead, the food SME members of both networks used external consultants or their informal contacts within universities and institutes for the purposes of product or process innovation. Conversely, the food SMEs in both Cáis and Plato Ireland believed the activities of their respective networks contributed most to market innovations (See Table 3). In contrast, the industry partners believed FHI's contribution to market and organisational innovations lay at the strategy level. From a market innovation perspective, the industry partners believed FHI was perceived positively by their corporate customers in terms of demonstrating their commitment to high levels of science and technical innovation in the long-term, and that this would provide the basis by

which their corporate customers would choose to work with them in the long-term. In terms of organisational innovations, the industry partners believed FHI, if successful, could become the preferred R&D partner of their corporate customers in the long-term in terms of delivering the next generation of functional dairy ingrdients.

Table 2.
Knowledge Transfer and Learning across Networks

Plato Ireland	Food for Health Ireland	CAIS
▪ Peer-to-peer learning on basic management skills; problem solving; advice from past experiences ▪ New approaches to SME management ▪ Address deficiencies in business planning and marketing, strategic management, accounting and taxation, leadership skills, human resource management and personal development ▪ IT system for sharing relevant business-related documents ▪ Formal seminars and courses organised at a group, regional or national level	▪ Innovative, multi-faceted and multidisciplinary approach to: screening milk for novel bioactives; understanding and scientifically validating their functional properties; and developing the necessary process capabilities for commercialisation ▪ Exposure to advanced analytical techniques ▪ Exposure to the methodological rigour of academic research ▪ Training for institutional researchers and company employees ▪ Sharing of knowledge/expertise through workshops, working group and meetings	▪ Collective access to training in food safety; food quality; cheese manufacture and new technological processes; starter cultures; NPD; and packaging and labelling ▪ Bespoke short-term training programmes with external consultants ▪ Seminars and workshops to disseminate the findings of consumer and trader/market insight reports on specific overseas markets for farmhouse cheese ▪ Insights into overseas customers through overseas study trips, trade shows etc

Table 3.
Innovation Activities across Networks

	Plato Ireland	Food for Health Ireland	CAIS
Product/Process Innovation	▪ Contribute to product/process innovation at the strategic management level only ▪ External informal contacts in local universities/institutes, and public bodies for the purposes of product formulation and new food product development, new product shelf life testing, and market analysis (non-Plato activity)	▪ Identification of over 36 novel lead functional compounds ▪ Scientifically substantiate the health benefits of existing commercial functional ingredients (non-FHI activity) ▪ Commercialisation of potential bioactive ingredients more likely to happen using existing technologies	▪ Internally focused (non-CAIS activity) ▪ Unlikely to collaborate with other cheese producers for purpose of product/process innovation ▪ Cáis activities contributed indirectly to: improvements in product quality; line extensions; optimising the capacity of processing equipment
Market Innovation	▪ Activities of Plato groups facilitated improvements to SME businesses in areas such as generating new business ideas, market development, brand development, customer orientation	▪ Helped industry partners focus on their future core scientific capabilities and where growth could be expected in the long-term	▪ Development of overseas markets through facilitating participation at trade fairs, buyer events etc ▪ Development of a HACCP (hygiene) handbook to assist implementation of British Retail Consortium (BRC) standards
Organisational Innovation	▪ Proactive network management in identifying and fostering innovation clusters (non-food SMEs)	▪ FHI as a potential extension of corporate customers' R&D capabilities to deliver the next generation functional ingredients	▪ Joint ventures e.g. Irish Cheese Direct (non-CAIS activity)

The Cáis network could best be described as open in nature with informal links to state agencies and universities/institutes. Since the inception of the network, Cáis has proactively developed and cultivated strong long-lasting relationships with various state agencies, and has successfully leveraged their goodwill for the benefit of its members (See Table 4). In contrast, while members of Cáis readily shared knowledge and provided assistance to each other when needed, higher-order collaborative relationships, both formal and informal, appeared to manifest only in groups or cliques that naturally emerged within the network over time. Specifically, a number of producers took the initiative to establish a legal entity called Irish Cheese Direct to facilitate the distribution and promotion of their brands outside of the framework of the Cáis network. A different grouping of two further producers was also collaborating to achieve synergies in consumer taste testing and market research, as well as to reduce pest control, distribution, and laboratory and packaging costs. In addition, both producers collaborated in bringing a consultant from the UK to conduct an in-company pre-audit for the British Retail Consortium (BRC) certification (a quality assurance system commonly used by the retail multiples). In the case of FHI, the respondents from both academia and industry reported that strong relationships existed between the different partners prior to the inception of the network. However, the industry partners subsequently reported a cultural shift towards higher levels of co-operation between the dairy processors beyond the scope of FHI, which was evident from the in-depth discussions (See table 4). For example, the industry respondents believed the contacts and relationships developed through FHI made it easier for them to informally contact each other to discuss problems and technical issues outside of the FHI programme, and to look for assistance where possible. Within FHI, the industry partners also accepted the need to understand and accommodate each other, and to make joint decisions on FHI activities. To that end, the industry partners reportedly met prior to FHI meetings to raise and discuss issues of concern, and to reach agreement and consensus on various topics for discussion with the CEO and within the overall group.

Similarly, the food SMEs in Plato Ireland felt that their relationships with other members of their respective network sub-groups had developed to the extent where they could informally assist each other outside of the Plato group programme in problem solving issues of relevance to their businesses (See Table 4). For example, one food SME owner-manager reportedly visited the premises of another SME for assistance in costing and evaluating an IT system. Similarly, another food SME owner-manager seeking a listing with the large grocery retail multiples received assistance and advice from another SME owner-manager with experience of the British Retail Consortium (BRC) auditing process. The regional network managers and MNC mentors in Plato Ireland often sought to introduce new members to existing groups, to merge smaller groups or to encourage complementary groups to meet where they felt benefits were to be gained by group members. However, the food SME owner-managers, and SMEs generally, were not receptive towards enlargement of their respective groups. Overall, members of FHI and Plato Ireland clearly exhibited a high degree of dynamism in terms of network participation, networking and formal/informal knowledge sharing/learning. These two networks also demonstrated high levels of inter-firm collaborations both within and outside of the formal activities of their respective networks. In an attempt to explain this phenomenon, the three networks were compared and differentiated across the following network-related dimensions: network origins and inception; network governance; network management; and network configuration.

3.1 Antecedents to Network Performance

The first network-related dimension concerned the origins and inception of the network. All three networks emerged in response to various challenges faced by its constituent members. However, the rationale behind the creation of each network was different. For example, Plato Ireland and FHI were characterised as short life cycle networks created as a means of transferring much needed knowledge and skills. In contrast, Cáis was established to represent its constituent members, and evolved into a quasi-trade association for farmhouse cheese producers. The origins and evolution of these networks had a profound impact on the objectives and goals of the networks, and critically, their contribution to network performance, and similar findings have been reported elsewhere (Pittaway *et al*., 2005; Cullen *et al*., 2000). Again, in the case of Plato Ireland and FHI, learning and knowledge diffusion underpinned the objectives, goals and activities of these networks. Indeed, the findings from this case study analysis suggested that FHI and Plato Ireland lay within the early growth and late growth stages of the network life cycle framework respectively on the basis of the levels of innovation and collaboration between their respective members. In contrast, trade and market development underpinned the objectives, goals and activities of Cáis (See Table 5). In addition, it could be argued that the original objectives of the Cáis network have largely been accomplished, and that the strategic vision for the network in the future, beyond its role as a representative body remains unclear. Not surprisingly, Cáis appeared to lie within the

mature stage of the network life cycle framework. This assessment was based on: the age and cyclical nature of the network's current activities; the infrequency of new initiatives instigated by the network; a diminution in the role of marketing activities in the network; and the emergence of sub-groups engaged in activities outside those of the network. This suggested that formal networks might need to realign their objectives, goals, activities and strategies over the life cycle of the network as the needs of members evolve. This would appear to be particularly true in the case of formal networks with long life cycles.

Table 4.
Inter-firm Collaboration and Network Ties

	Plato Ireland	Food for Health Ireland	CAIS
Relationship between Institutes and Industry Partners/SMEs	▪ Informal external links to local education/research institutes e.g. short-term business (non-Plato activity) ▪ Consultancy-based services for QA, NPD etc (non-Plato activity)	▪ Informal collaboration prior to FHI ▪ Integration across formal programme ▪ Vehicle for brainstorming/problem solving (non-FHI) ▪ New formal/informal relationships outside geographic sphere of influence: new areas of expertise (non-FHI)	▪ Established informal relationships: education, training, consultancy ▪ Research project collaboration ▪ Proactively engage with government dept/agencies on policy/legal issues
Relationship between Industry Partners/SMEs	▪ Formally (collectively) and informally assist each other in problem solving issues ▪ SMEs not receptive towards enlargement of groups ▪ Vehicle for social referrals, self-promotion, and a source of trusted service providers ▪ Formal and informal face-to-face contact	▪ Relationships established prior to FHI: i.e. dairy policy, structural changes ▪ Discussions prior to formal FHI meetings ▪ Joint visits to clients: promote FHI ▪ Informally discuss technical problems and issues of mutual interest; provide assistance on request (FHI and non-FHI) ▪ Further (non-FHI) collaboration envisaged ▪ Frequent face-to-face contact; integration between work packages	▪ Share trade information freely on suppliers, distributors, and retailers; reducing overheads ▪ Informal problem solving ▪ Small cliques collaborate in: distribution, promotion, consumer research, QA, (non-CAIS activity)
Group Dynamics between Network Members	▪ Structured sub-groups: no direct competitors	▪ Structured work programmes: members interact formally with each other at different stages	▪ Unstructured

Table 5.
Network Inception andEevolution

	Plato Ireland	Food for Health Ireland	CAIS
Objectives at Inception	▪ To promote SME management development ▪ Group learning through the exchange of knowledge and experience between members ▪ Management training and development	▪ Build genuine, long-term industry-academic collaborations and networking ▪ Development of industry-focused world-class capabilities and competencies in health and wellness	▪ Representative body ▪ Networking and social forum ▪ Grant aid for cheese production ▪ Education and training courses in cheese, microbiology and hygiene ▪ To create awareness of Irish farmhouse cheese at home/abroad
Current Objectives	▪ To promote SME management development ▪ Group learning through the exchange of knowledge and experience between members	▪ As above	▪ As above with prioritisation on representation, as well as the networking and social aspect of Cáis membership
Envisaged Benefits	▪ Provide support, advice, solutions and friendship ▪ Facilitate peer group learning by sharing experience and expertise ▪ Provide specialist wider parent management expertise and advice ▪ Develop personal/business skills ▪ Expose MNC mentors to SME environment ▪ Formal qualifications in business mentoring up to MSc level	▪ Strategic building of national capabilities within an internationally recognised functional foods centre ▪ Improve R&D capabilities of dairy processors ▪ Build stronger links between academia and industry ▪ A vehicle for pre-competitive fundamental research with commercial applications	▪ Easier access to the services of state agencies in terms of technical and research and development (R&D) knowledge, regulations, and market intelligence ▪ Education and training that would otherwise by inaccessible to individual producers ▪ Improved access to national and international markets

The second network-related dimension concerns governance of the networks, which is posited to exert a strong influence on network performance (Coles *et al*., 2003). Both Plato Ireland and FHI have formally structured governing bodies, which coordinate and control the activities of each network. In contrast, the governance structure of Cáis could best be described as a committee that cooperatively represents the views of its members to government and public bodies (See Table 6). Indeed, a number of farmhouse cheese producers stressed that Cáis as a representative body always sought unanimity in the decision-making of the network, which was believed to have significant implications for the activities of the network. Specifically, cultural and perceptual differences between business-oriented and environmental/lifestyle-oriented members were believed to stifle collaborative marketing and business development initiatives in the past, particularly when unanimity was required at committee level.

The third network-related dimension concerns network management, and is strongly related to the objectives of the networks. The findings from this study suggested that the composition of the networks influenced the performance of these networks. For example, the industry partners in FHI were dairy processors of similar size with similar levels of absorptive capacity. This was believed to facilitate the development of an agreed research strategy between members. In addition, a senior manager was chosen from within each company as a 'gatekeeper' between the network members and their respective organisations. Importantly, these 'gatekeepers' were believed to share characteristics conductive to working in a collaborative environment such as flexibility, open-mindedness, affability, and willingness to compromise and contribute positively within a group. Similarly, the management of Plato Ireland implemented a vetting process of both MNC mentors and SME owner managers. In particular, SME owner managers of similar size, stage of development and growth, from different sectors were grouped together. In contrast, Cáis comprised members of different size, stage of development, and perceptual orientation with regard to the growth of their businesses.

As learning-oriented networks, both Plato Ireland and FHI implemented formal codes of conduct, systems and processes, which were believed necessary to create cohesive groups, minimise perceived risks to participation, build confidence and trust; foster a culture of learning; and build quality relationships between members. These included mechanisms such as the use of confidentiality contracts and IP agreements to minimise potential risks/barriers to participation, and instil fairness (See Table 6). Similarly, the Irish Cheese Direct group also used formal measures of protection. In addition, FHI and Plato Ireland both endeavoured to facilitate openness in dialogue and knowledge sharing. However, the strategies adopted by both formal networks were different. In the case of FHI, the pre-competitive nature of the research programme was believed to reduce competitive pressures between the dairy processors. In the case of Plato Ireland, potential members were pre-screened and members from the same sectors are put into different groups. Other elements of network management believed to promote collaboration within FHI and Plato Ireland included: network leaders with the necessary interpersonal and mediating skills to facilitate connections and bridge diversity between members; a leadership style committed to team building; a shared vision and commitment from all members; clearly defined goals and objectives to create a common purpose and strategic orientation for the network; communicating and continually emphasising the importance of collaboration, and the interdependence of members, to instil a shared sense of purpose and team spirit, in order to achieve the objectives and goals of the network (See Table 6). In addition, given the multi-disciplinary nature of FHI, the management of the network activities were structured to promote collaborations and interdependency to achieve the short-term and ultimately long-term objectives of the network. Finally, high levels of communication and face-to-face contact within FHI and Plato Ireland at a formal, informal and social level were also believed to contribute to the creation of an environment conducive to openness, honesty and trust.

Finally, the forth network-related dimension concerns the network structure and configuration. The findings from this study suggested that network configurations can evolve over the network lifecycle, and that different configurations may be appropriate and adapted for different learning and innovation objectives and strategies which is consistent with some of the literature (Birkinshaw and Fey, 2005; Pittaway *et al*., 2005; Ahuja, 2000). For example, involvement in closed, dense networks such as FHI, Plato Ireland and the sub-groups within Cáis may be a necessary condition to high levels of inter-firm collaboration in formal networks. The importance of institutional involvement in networks for promoting radical innovations was also highlighted in this study given that FHI was the only network where universities and research institutes were formal members of the network (See Tables 3 and 4) (Kaufmann and Todtling, 2001).

Table 6.
Network Governance and Management

	Plato Ireland	Food for Health Ireland	CAIS
		Network Governance	
Governance Structure	Network administrative	Participant governed	Participant governed
Role of Board	Adhere to codes of conduct/policies	Adhere to codes of conduct/policies	Representative body
Board Composition	Chairperson; regional managers; representatives from IBEC, CEBs	CEO; representative from each constituent organisation	Farmhouse cheese producers
Frequency of Board Meetings (per year)	Twice	Four times	Annual
Board Membership	Indefinite	5 year fixed term	2 year fixed term
		Network Management	
Leadership Qualities	Skills of MNC mentors in stimulating group interaction, communication and learning, and group management	Impartiality, facilitation and interpersonal skills of network leadership	-
Network Involvement	Commit to participation	Commit to research programme	Commit to participation (sub-groups)
Network Ethos	▪ Interdependence for group knowledge sharing ▪ A mutual respect between members for their openness	▪ Interdependence to achieve network goals ▪ Recognition cultural gap between academia and industry	▪ Mutual support; interdependence in areas of policy ▪ Mutual respect for each other as artisan cheese producers
Network Goals	Clearly defined objectives and goals	Clearly defined objectives and goals	-
Approach to Group Learning	Goal driven exercises; well-structured and well-planned meetings	Structured approach to knowledge sharing	-
Group Composition	Screening of potential SME members e.g. skills set/stage of development	Personalities and characteristics of members conducive to collaboration	-
Methods of Protection	▪ Non-competitive members ▪ Confidentiality agreements	▪ Pre-competitive research ▪ Confidentiality agreements	-
Localised Activities	Locally delivered and administered	-	-

4 Conclusions

This paper has contributed to an improved understanding of the dynamics of formal food-related networks in Ireland through an investigation of the organisation, function and structure of such networks, how these factors affected inter-firm collaboration, and their contribution to learning and innovation performance. This research was based on a set of case studies entailing semi-structured in-depth one-to-one interviews with network managers and key informants of three formal networks in Ireland: Plato Ireland, Food for Health Ireland (FHI), and Cáis. Overall, the findings from this study suggested that a more formal and strategic approach to the organisation and management of networks could contribute to the proper functioning of formal networks in terms of knowledge diffusion, learning and performance in innovation. The mechanisms by which network managers could improve network performance were also highlighted in this paper. The need for guidelines to help companies identify the types of networks they should be involved with, and the time and resource input that they would be required to make to obtain benefits from the network were also highlighted. Finally, the policy implications of this research lie in the practical actions that policy makers can take to support the running of formal SME networks. These should include education/training for network managers in such areas as relationship management given their important mediating role in networks, and governance best practice. In addition, training in network skills development for network members is warranted given the importance of socialisation and informal networking to formal networks as highlighted in this study.

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