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# Competitive or cooperative relationships in clusters: A comparative study of two internationalising agro-processing clusters in Ghana



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# Competitive or cooperative relationships in clusters: A comparative study of two internationalising agro-processing clusters in Ghana

## 1. Introduction

Much literature on international business in Africa and other less developed countries focuses on large corporations or multi-national companies (MNCs) with limited work on small- and medium-sized enterprise, internationalisation, (McCormick 1999; Sonobe et al., 2011; Alfaro et al., 2012; Newman and Page, 2017). However, there is growing interest in business research in Africa exploring the importance of agglomeration of firms or business clusters for local economic development, particularly in terms of their apparent success in supporting enterprises to access international markets (Oyelaran-Oyeyinka and Mccormick, 2007; Zeng, 2008; Ibeh et al., 2012; Sonobe and Otsuka, 2016).

Yet, despite this growing interest in the role that the co-location of firms plays in local economic development as exporting platforms, there is little research on how place-based spatial organisation of economic activities actually occur, and particularly under contexts of weaker institutions and instable economic, and political environments (Schmitz, 1999; Amankwah-Amoah and Debrah, 2010; Primi, 2013; Amankwah-Amoah, 2016) as highlighted in institutional thinking. According to Scott (2004) institutional thinking poses that social, economic, and political factors constitute the institutional structure of a particular business environment (e.g. a cluster) which provides firms that operate within it with a set of context-specific competitive advantages and/or disadvantages. It is well established that institutional weakness such as the lack of enforcement of legal contracts and instable markets and political conditions generally differentiates clusters in developing countries from those in

developed countries, where greater certainty about the business environment commonly prevails (Porter, 2003; Delgado et al., 2014). Schmitz and Nadvi (1999), McCormick, (2000) and Chete et al., (2016) have all shown that institutional weaknesses represent a huge constraint to the international competitiveness of enterprises within clusters, with firms in developing economies often confronted with inefficient market structures (Primi, 2013) and institutional constraints that can result from a range of regulatory, political, social and economic factors.

Notwithstanding the differences in developed and developing economy clusters, business agglomerations or clusters have featured prominently in the business literature since Marshall's (1925) work on industrial districts and the externalities that clustered firms can benefit from. Two key aspects in the study of clusters as mechanisms of spatial organisation and inter-firm relationships are competition and cooperation (Porter, 1998; Martin and Sunley, 2003; Delgado et al., 2010). Porter (1998) for example stated that clusters can be seen as "geographical concentration of interconnected firms and institutions in a particular field [characterised] by an array of linked industries and other entities important to competition" (Porter, 1998, p. 78). He further argues that, in clusters, competition and cooperation are not mutually exclusive since at some level cooperation among actors in cluster is part of winning the competition at other level (Porter, 2000). In a similar vein, Newland (2003) argues that a careful appreciation of the balance and inter-relationship between competition and cooperation is indeed critical for policy direction.

Hence, understanding the relationship of competition and cooperation in African clusters and how it shapes the opportunities for SME internationalisation is critical; yet, it represents a

considerable gap in literature. In particular, the intrinsic elements in clustered businesses that create variations in the extent and nature of rivalry and cooperation between firms alongside the supply chain have not been given proper attention (Schmitz and Nadvi, 1999; Arif and Sonobe, 2012; Sonobe et al., 2011; Rasiah and Vinanchiarachi, 2013).

This paper aims to fill these important knowledge gaps by examining two contrasting exporting food-processing business clusters in Ghana. Drawing upon a mixed method approach combining qualitative and quantitative data, the paper explores the nature of the mechanisms of coordination between co-located firms in order to better understand how clusters can operate within contexts characterised by institutional weakness (Amin and Thrift, 1992; Smallbone and Welter, 2012; Amoako and Lyon, 2013), notably, limited formal mechanisms of coordination of economic activity (i.e. business contracts and enforcement) as those observed in developed countries (Porter 2000; Becattini et al., 2010; Krugman, 2011). The study is informed by the following research questions: What are the main supply-chain relationships in the two contrasting internationalising fruit processing clusters studied? To what extent and how are business relationships in the clusters shaped by competition and cooperation? This research responds to the call by Krugman (2011) for the shift in the examination of spatial organisation to developing economies in order to inform policy-making development in contexts of unstable institutional environments.

The paper is divided into four sections. The first section reviews the existing literature on cluster dynamics and the role of competition and cooperation as mechanisms of coordination of economic activity. In particular, it focuses on vertical and horizontal relationships between firms and the resulting business cluster dynamics. The second section presents the research

methodology which draws upon an original empirical study of two exporting food-processing clusters in Ghana, focusing on the analysis of inter-firm relationships along the supply chain. Findings are reported and critically assessed in the third section. A final reflection, including implications of the findings for theory and practice, is provided in the conclusions of the paper.

## 2. Literature review

### 2.1 Clusters in less developed countries

Policy makers in conjunction with academics have increasingly promoted the cluster concept as a potent driver for economic growth in developing economies (Schmitz and Nadvi, 1999; Galvez-Nogales; 2010; Sonobe et al., 2011; Sonobe and Otsuka, 2016; Knorringa and Nadvi; 2016). The growing literature on clusters assert that clusters in developing economies are mainly comprised of locally-owned small to medium-sized agro-businesses and low-tech manufacturing artisans with few large-scale multi-national and state-owned businesses (Schmitz and Nadvi, 1999; Galvez-Nogales; 2010). Scholars have predominantly focused on small to medium-scale clusters which, at a certain level of the production chain, operate within close social ties with vertically disintegrated production structures (Schmitz and Nadvi, 1999; Geldes et al., 2015; Sonobe et al., 2011; Sonobe and Otsuka, 2016). Others have focused on large-scale business clusters with more formal structures which develop more vertical linkages that produce commodity products, often in specialised economic zones, and are driven by MNCs or state-owned enterprises (Alfaro et al., 2012; Rasiah and Vinanchiarachi, 2013; Newman and Page, 2017).

Zeng (2008)'s study on knowledge, technology and cluster based growth of eleven enterprise clusters in Africa found that the success of Africa's SME clusters on international markets can be attributed to the upgrade in the 'supply-product-distribution' value chain. This upgrade has lowered transaction costs for businesses and contributed to improving their productivity and efficiency. Ibeh et al's (2012) review of 54 SMEs' internationalisation studies across Africa, also found that proximity to other exporting firms has a positive 'role model' effect on the expansion and adoption of export programmes. They found that SMEs, through their relationship with other co-located firms, were able to acquire knowledge about internationalisation opportunities which was available within the locality and quite often cost-free.

The specialised literature also stresses that businesses in clusters are confronted with several challenges that impede their ability to compete, including institutional and operational bottlenecks (Zeng, 2008; Primi, 2013; Knorringa and Nadvi, 2016). For instance, the study of metal clusters in Nairobi by Sonobe et al., (2011) found that several challenges such as small-sized product markets, oversupply of unskilled labour, and lack of capital, training and innovation, impeded the upgrading process that clustered businesses face. Factors such as limited access to information and distrust of legal contracts were also identified as constraints to cluster upgrades.

These challenges have meant that clustered businesses have had to adjust their institutional environment notably by developing 'parallel institutions' in order to reduce uncertainty and overcome the challenges faced (Welter and Smallbone, 2006; Smallbone and Welter, 2012; Amoako and Lyon, 2013). For instance, deficiency in the legal and regulatory framework

within the Ghanaian business environment meant that entrepreneurs have to resort to trust-based relationships in order to address disputes aroused between co-located firms (Amoako and Lyon, 2013)

Successful coordinating mechanisms which were developed were able to direct the development of collective efficiency and cooperation, which has been the driver of cluster successes (Perez-Aleman, 2005; Clark and Ramirez, 2013). That is the case of the 'salmon' and 'tomatoes clusters' in Chile where collective action and cooperation among businesses led to the establishment of an institutional framework to coordinate production as well as the flow of research ideas and new knowledge among firms (Perez-Aleman, 2005). This expression of collective action which was supported by a government's policy frame, led to the establishment of the product brand and boosted reputation in the international market. The Peruvian 'mango cluster', like the Argentinean 'wine cluster', have also undergone upgrading by using a combination of local-based knowledge, national and multinational research knowledge and institutional support.

Through built collective efficiency and intermediary institutions (such as their respective business associations, government institutions and other non-private institutions), new knowledge and innovation was diffused among and accessed by firms in these clusters (McDermott and Rocha, 2010; Clark and Ramirez, 2013). New knowledge and innovation has brought about cluster upgrading in a number of successful experiences such as the automotive firms in Buenos Aires (Argentina), salmon producers in Los Lagos (Chile), electronics firms in Penang (Malaysia) and button firms in Qiaotou (China) (Rasiah and Vinanchiarachi, 2013). Overall, this literature has shown that extensive work has been carried out on cooperation in clustered business relationships in developing economies but less

attention has been paid to examining competition elements within this context, and the actual interaction between competition and cooperation.

### 2.2 Competition and cooperation

Traditional firm agglomeration theory focuses on the analysis of tangible factors that determine the level of competition and cooperation that spatial interaction between businesses produces (Martin, 1999; Newland, 2003). Through the analysis of market signals such as price and cost it is possible to estimate how businesses relate with one another in terms of competition and cooperation practices and dynamics in order to produce external economies that in turn further drives the agglomeration process (Porter, 1998; Krugman, 2011). These relationships which are based on market signals, such as price and cost, generate dynamics of competition and cooperation within the clusters, for example by facilitating links with other businesses, the sharing of businesses services and utilising a pool of labour (Newland, 2003; Porter, 2000; Krugman, 2011).

This paper posits that the standard agglomeration theory gives limited attention to the presence of other factors driving operations in clusters, notably intangible or non-market factors which influence the organisation of economic activities. Research on the 'socioeconomics of co-location' has instead addressed these issues by offering an in-depth account about the role that intangible factors such as social local-based relationship play in underpinning dynamics of competition and cooperation in business' agglomerations (Martin, 1999; Motoyama, 2008; Becattini et al., 2010; Belussi, 2015).

Inspired by recent development in economic geography's institutional thinking (Amin and Thrift, 1995; Storper, 1997; Scott, 2004; Storper, 2011), the proponents of 'socioeconomics of co-location' underscore the presence of intangible interdependences among businesses that operate in clusters and the use of trust in order to develop and sustain interactions between economic actors (Belussi, 2015). Interactions contribute to develop network relationships among clustered businesses and these become the basis for mutual exchange of, notably tacit knowledge, which is essential for their operations (Amin and Cohendet, 1999; Becattini et al., 2010; Balland et al., 2015). The close proximity of businesses in clusters facilitates the establishment of informal social ties among business owners. As a result, businesses cooperating through their ties are able to access resources such as funds, purchase in bulk and jointly engage in research and development (R&D) activities (Belussi, 1996; Geldes et al., 2015). The assumption is that non-market factors such as local culture, friendships, religion, and kinship may play a key role in modifying embedded social relationships in the clusters (Brusco, 1982; Belussi, 2015). These relationships serve as social capital that businesses within the cluster can rely on, for instance, to facilitate business deals, reduce uncertainty and support members in times of difficulty.

The concept of *'coopetition'* has been introduced in order to capture the idea of the interplay between competition and cooperation that occur in clusters. Coopetition is manifested when direct competitors cooperate while remaining competitive (Bengtsson et al., 2016). These multifaceted inter-business relationships have been mainly linked to large-scale businesses (case of IBM and Intel, and GM and Daewoo) where the supplier, buyer, and their associates are themselves major competitors (Gnyawali and Song, 2016). References to the multiple numbers of businesses simultaneously engaging in competition and cooperation along the

value chain have been examined to demonstrate the complexity of coopetition in relation to business networks (Dagnino and Padula, 2002). As a result, cooperative relations may involve large numbers of actors engaged in different activities over time within clusters (Dana et al., 2013). However, the definition and use of the 'coopetition' concept itself is a matter of controversy, not less because its apparent lack of precision and empirical backing (Bengtsson and Kock, 2014; Bengtsson et al., 2016; Gnyawali and Song, 2016). Coopetition as an inter-business relationship concept does not give adequate attention to the intricate nature of agglomeration activities which occur within clusters or the nature of the relationship between competition and cooperation itself. By uncritically grouping the varying elements underpinning competition and cooperation into the concept of coopetition, scholars also run the risk of overlooking key aspects of cluster dynamic such as the surrounding socio-cultural context. This is because factors such as the history and culture of a place, social ties and relationships, aside the market signals, also matters and become critical in explaining dynamics of competition and cooperation developed in placed-based business agglomerations (Martin and Sunley, 1996; Martin 1999; Motoyama, 2008; Storper 2011). This study recognises these issues and takes therefore a better informed approach in examining competition and cooperation in order to unearth the nature of the phenomenon.

Clusters, it is argued, are the product of competition and cooperation, but considering the fact that no two spatial organisations observe the same factors influencing how these variables interplay, there are bound to be variations in the levels of competition and cooperation. This paper argues that a more holistic appreciation of the most essential sources of rivalry and cooperation within clustered businesses in developing economies can be achieved by examining both measurable and non-measurable variables underpinning business operations

along horizontal and vertical networks between firms, providing thus an African perspective to the extant debates on cluster competition and cooperation dynamics and their outcomes in terms of business internationalisation.

## 3. Methodology

The study adopts a mixed method research approach which comprised a survey of 99 firms and 17 semi-structured interviews in the two selected food-processing clusters in Ghana (Table 1). The methodology adopted is informed by theory, with research questions focusing on business relationships along the supply-chains and the influence that competition and cooperation have on such relationships. Survey data was used to examine quantifiable variables such as frequency of interaction, acquisition of outputs, and marketing relationships. Three main types of interfirm relationships, with a focus on food-processors, were examined: (1) farmers-processors; (2) processors-processors; and (3) processors-distributors/markets. Information about actors' views, behaviour, perceptions and experience of actors was collected through in-depth interviews and participant observations. The use of both qualitative and quantitative techniques in data collection and analysis ensured that evasive phenomenon such us beliefs and social ties are captured (Tashakkori and Teddlie 2010; Yin, 2012; Creswell, 2013).

The two Ghanaian clusters (i.e. palm and pineapple) were primarily selected due to the degree of successes they have experienced in recent years in terms of exporting to international markets (Osei-Amponsah et al., 2012; Indexmundi.com 2015) and the different approaches that they apparently adopted in relation to inter-firm competition and cooperation. The palm cluster is situated in the Kwaebibirem district, a predominantly farming community

which plays a critical role in supporting the local economy (Osei-Amponsah et al., 2012; Ghana District, 2014). The pineapple clusters in turn is located in Nsawam in close proximity to Accra, Ghana's capital, and therefore benefits from the nearby sea and international air ports. The cluster is dominated by MNC and private investors who primarily produce for the international market (Jaeger, 2008; FAOSTATS, 2009; Ghana District, 2014). The expression 'pineapple' is adopted because of its dominance in the Nsawam study area although there are other fruits processed in the cluster. Estimates show that there are more than 300 processing palm businesses concentrated within the Kwaebibirem district of the eastern region, mostly dominated by small-scale processors (Ghana District, 2014).

For the telephone survey with processing businesses, a simple random sample was adopted to select firms from the 225 registered palm processing business association members and the 18 pineapple fruit processing businesses in Kwaebibirem and Nsawam respectively (Table 1). The sample was significant for the study since 82 firms in the palm cluster responded to the survey, representing a 34 per cent response rate, (at a 95 per cent confidence level) and has an approximately 8 per cent error limit (Yamane, 1967). Similarly, 17 firms in the pineapple cluster responded to the survey, representing a 94 per cent response rate, (at 95 per cent confidence level) and has an error limit of approximately 10 per cent. The level of confidence and the error limits are in consonance with the requirements of social science research (Gaur and Gaur, 2009).

A sample of 17 face-to-face structured interviews with farmers, processors and distributors were undertaken in the two clusters alongside the survey. Participants were purposively selected during the survey with processing business owners for in-depth interviews. This was to provide rich qualitative data which corroborated results for the survey. As most businesses

were not responding to requests for face-to-face interviews, key informants from the palm processing association and the Ministries of Trade and Industry and Agriculture assisted in purposively linking the researchers to relevant processors, farmers and distributors. Only two processors and one farmer rejected the invitation. The interviews were conducted in 2015 and each lasted 35 minutes on the average. Interviews were conducted by the researchers either in English or Akan (a local language mostly known as 'Twi'- mostly in the palm cluster) and all participants permitted the use of audio recorders in the interviews. The final sample of participants included: farmers (n=2), processing business owners (n=13) and distributors (n=2). The approach offered the researchers a rich pool of information which had not been captured by the survey questionnaires and thereby strengthened the internal validity of this research (Johnson et al., 2007; Yin, 2012).

**Insert Table 1 Here**

The strategy for analysing the data comprised a number of stages. The first stage involved the initial analysis of qualitative data from which the quantitative survey was developed. Subsequently there was analysis of responses from the surveys using Chi-Square and t- tests of differences/independence. In parallel, there was analysis of the qualitative interviews using NVivo with the generation of codes (or nodes) identifying the key themes relating to relationships, competition and cooperation in the two clusters (Appendix C). Further analysis was conducted to determine differences and similarities between actors within the two clusters. The detailed analysis of the qualitative and quantitative data served to identify areas of insight for the research questions. A further set of analysis by all three authors,

triangulating key themes from the interviews and survey was carried out in order to facilitate corroborations and identify possible contradictions in the findings. As a result, the validity of the findings of this study was strengthened (Johnson et al., 2007; Creswell, 2013).

## 4. Findings and analysis of empirical evidence

### 4.1 Supply-chain relationships in the clusters

Both respondents to the survey and interview participants in the two clusters were first asked about their relationship with other businesses in the cluster, the nature of such activities and the frequency of the interaction. They were then asked to explain how their relationships have been modified by different forms of cooperation or competition that took place among them in their operations. There were considerable differences reported in the way the actors relate to each other, which conforms to the argument that networking relationships are not cast in stone but are continuously evolving through the actors' interactions (Granovetter, 1985; Borgatti and Halgin, 2011). The differences observed in terms of the forms of competition and cooperation were mainly in relation to two key variables: the acquisition of raw materials, and marketing of produce.

***Farmer–processor relationships***

The farmer–processor relationship shows that palm processing businesses are most likely to be dependent on farmers to meet their raw material needs. All the 82 palm processing businesses surveyed have a relationship with farmers for accessing raw material and 31 per cent of these businesses are processing palm only, with no farming activity developed. As a

result, there is competition in the sale and distribution of palm fruit among processing businesses which has the capacity to improve the price of palm fruit in the cluster and encourage more farmers to diversify into palm fruit cultivation. For larger-scale processing businesses, this competition for palm nuts may lead to under-utilisation of their operational capacity and a reduction of their per unit profit.

The interview data further supports the finding that businesses in the palm cluster are more likely to be dependent on farmers for fruits. The findings show that for most of the palm processing businesses interviewed, large- and medium-scale processors (aside from their plantations) had commissioned out-grower farmers via formal contracts, to supply palm fruits. These out-grower farmers develop horizontal relationships amongst themselves through both their associations and also social ties. However, findings from most of the palm processors show that because the number of processing businesses was increasing there was a growing need to build close ties with farmers in order to overcome the high demand for the raw material. Thus, business relationships between farmers and processors showed fierce competition in the sale and distribution of fruits in the palm cluster. The manager of a medium-scale processing business explained:

> There are so many processors now so if you do not talk to the farmers you deal with, they are easily convinced by other buyers and they go ahead to sell [their products] to them even when you have a contract. So, you try to collate the phone numbers of other farmers, bearing in mind that the harvesting period is between three weeks and one month, so after three weeks if you have not heard from them, then you call them [...] [those in contract] may say "Someone came to buy it because I was broke". So, in that case your order will not be met.

> Because there are a lot of small-scale processing units springing up in the area which encourage farmers to directly process palm fruits, so you must constantly engage the farmers so that you know what is going on that will help you. If you are quiet and not in touch, you may be competed out from procuring the fruits (Palm case 4; Kwaebibirem, 2014).

The interview data also shows that farmers and small- and medium-scale processors often belong to the same social groupings in the community. As noted, most farmers are themselves processors and have overlapping associations in their respective horizontal relationships. This has created a web of strong linkages between these groups of small and medium processors and farmers (See figure 1), whose operations are creating shortages in raw materials for the large- and medium-sized processing businesses. The relationship between farmers and small-scale processors offers farmers the opportunity to process their own fruits in order to provide a livelihood for their families. The situation has been necessitated by the operational cost involved and the relative minimal returns in the fruits sold to large and medium-scale processors. A farmer (Palm case 9) in the palm cluster explained:

> In this town, farming is the main job we do, so at any point in time we are in various associations [...] we have several associations that have emerged in the area where I operate [...] The work involves a lot of money and time, but the gains are small [...] That is why I have [to] send my palm fruits to the mills to process in order to support my family. Had it not been [for] that, farming in itself is not an activity that helps us that much (Palm case 9; Kwaebibirem, 2015).

The findings from the pineapple cluster show instead that the local processing businesses have multinational links (e.g. partners in Europe) and as such they are capable of cultivating enough raw materials to meet their processing needs. The situation is evident in the fact that 65 per cent of the pineapple processing businesses are engaged in farming to support their operations. In addition, 12 per cent of processing businesses interviewed produce fruit on large-scale plantations for export and they all deal with farmers who mostly operate medium- to large-scale farms (Appendix A). The evidence also shows that most processors in the pineapple cluster own plantations and also develop vertical relationships with out-growers who purposely produce to meet their requests. As a result, the pineapple cluster has relatively minimal levels of competition in the acquisition of raw materials. A farm manager in the pineapple cluster commented:

> We supply to Blue Skies Ghana Limited [...] even though they have their own farms, located at Nsawam, Dobro. They have been buying our fruits for fruit processing, juice and fresh cuts, which they export to multinational companies in UK. To be precise we are committed to them only, and every one of us has a relationship with a given supplier (Pineapple case 8, Nsawam).

Compared to the palm cluster, there are fewer farmers supplying fruits in the pineapple cluster (Appendix A). This is due to the fact that the pineapple processing businesses themselves have vast plantations that support their outputs and the farmers have relatively larger plantations as well. This is best illustrated by the comments from the manager of one large-scale pineapple processing business:

> We normally depend 60% on the external farmers..., large farms... [such as] ... Adom Orchards and Jie River Farms ... who normally supply us with oranges and pineapples (Pineapple case 6; Nsawam, 2014).

In addition, processing businesses in the two clusters valued the farmers differently in their operations. 98 per cent and 82 per cent of the processing businesses in the palm and pineapple clusters respectively said their relationships with farmers were 'Very Important' to their operations. These findings support the argument that processing businesses in the palm cluster observed higher levels of vertical competition, while the pineapple processing businesses observed more vertical cooperation in terms of the sale and distribution of raw materials.

**Insert Figure 1 Here**

***Processor-processor relationships***

Processor-to-processor (horizontal) relationships were more commonly observed in the palm cluster than in the pineapple cluster. A total of 93 per cent of palm processing businesses reported they have a relationship with other palm processing businesses. This is manifested in the more cordial relationship observed among palm processors in the cluster. In turn only 12 per cent of the businesses in the pineapple cluster interacted with other processors in the course of their operations. This is not surprising since the findings further show that most large-scale businesses are partly owned by a multinational company or external investor; as a result, they seldomly interact with other actors (See figure 1), and when they do, it is to solve a specific problem. A few large- and medium-scale processing businesses occasionally

cooperate with one another e.g. in sharing ideas and services. Pineapple case 1 explains how processing businesses have occasionally relied on each other for the supply of fruits and to keep a shared office for processing their paper work. The comment by the manager of Pineapple case 1 sums up this issue well:

> We are all free-zone companies with external investors, Bomart, Hans Peter, Blue Skies and the others ... [So] ... we are not competing. You will be surprised [that] we even on occasion supply HPW [Hans Peter] fresh cut to export ... [Also] ... Bomart is into big-time farming and they sometimes even supply us with pineapple [...] [the processors] have even built the office for the [Ghana Custom Service] on our premises so if anything, they will rather come to our factory to certify their documents before export and import (Pineapple case 1; Nsawam, 2014).

The greater levels of inter-business relationship observed in the palm cluster can be attributed to the highly socialised nature of the businesses' interactions in the cluster. The evidence reveals that small-scale processors, accounting for 93 per cent of processing businesses in the palm cluster (Appendix A), belong to similar social groupings such as business associations, churches and community memberships. They have therefore developed more horizontal relationships with strong ties. Most small- and medium-scale farmers are engaged in the processing of fruits and their numbers are growing within the cluster due the presence of 'artisans' who produce bespoke processing machinery at a relatively affordable price. The manager of a medium-sized palm processing business in the palm cluster who stated, 'the rising number of small processors worries us. At first it wasn't like that but now people can get machines. Now [there are] so many [fruit-processing] mills so the number of fruits that

we used to get has reduced, so we are unable to produce to capacity' (Palm case 3; Kwaebibirem, 2014).

The survey data also shows that 88 per cent of the processing businesses in the palm cluster interact with other palm processors on a daily basis. According to 76 per cent of the processing businesses, the relationship they have is 'Very Important' for their operations as it ensures that there is cooperation among businesses in the processing activities. The nature of the relationship among small-scale processing businesses in the palm cluster has been well captured in the interview with the owner of a small-scale processing business:

> We, the small-scale processors [at Kwaebibirem], we know each other. We are either from the same town or are in close proximity; as a result, we are able to interact and relate with one another. We are able to identify other millers and those who come to extract palm oil here. So, we are like a family and we love each other such that when one has any difficulty we all support them. For instance, we go and support our members in times of bereavement as a group (Palm case 5; Kwaebibirem, 2014).

Findings from the interviews in the pineapple cluster show that processing businesses are well equipped; for instance, they have their own R&D laboratories and agronomy departments which facilitate their operations. It is therefore understandable why 88 per cent of pineapple processing businesses said that their relationship with other processors is 'Not Very Important' for their operations. Each business operates independently to meet the needs of its customers, who are mostly in the international market (See figure 1). These businesses

do not belong to any social groupings and are in competition with one another in the sale of their output in the domestic economy. These relationships in the pineapple cluster are explained by the manager of a pineapple processing business who states, '... the competition is keen in the sale of fresh juice in the local market … we are building new brands to always overtake some of [our competitors]. But when it comes to relationship, there is no direct relationship; we are all focussed on our business' (Pineapple case 1; Nsawam, 2014).

The findings support the argument that the palm cluster has more processor-to-processor relationships, which breeds cooperation, compared to the pineapple cluster, where there is a minimal to no relationships among processing businesses.

***Processor-distributor relationships***

The findings show that palm processing businesses are most likely to rely on distributors or intermediaries or agents in carting their products to the market than the processing businesses in the pineapple cluster. Whilst a significant number of palm processing businesses surveyed (95.2%) acknowledged that they deal with distributors and exporters in taking their produce to the market, none of the processing businesses in the pineapple cluster use distributors or exporters to fulfil this function. The respondents in the palm cluster interacted with distributors or exporters on a weekly basis (Figure 1).

Findings also show that most distributors in the palm processing businesses are too part of the community and often have purchasing units located at central points. Due to strong competition for the acquisition of fruits, the distributors have in general a good trust-based relationship with processors to maintain their operations. This is because most distributors

belong to similar social groupings as the palm processing businesses do, which allows them to develop informal relationships generating stronger ties. The close relationships observed between distributors and small-scale processors means that they better appreciate the processors' circumstances and they have built trust in the face of shortages in fruit supply. This ensures that they cooperate with each other and accommodate each other's limitations. This is captured in an interview with a distributor in the palm cluster:

> If you work with someone in a business, like he is to supply me [with] three drums, even if he is [only] able to supply me with two and half drums I will take it like that and take note in the next consignment from that processor. It is not possible that they won't produce at all, so I take what I can have at a point in time. (Distributor 1; Kwaebibirem, 2014).

The situation in the palm cluster appears to have contributed to establish more cordial social networks which is fostering the supply of palm oil in the cluster. Considering the fact that most processors are detached from the marketing of their output, they do not compete in the sale of their palm oil within the cluster. They rely instead on the social networks with distributors to market their produce in both local and international markets.

In contrast, processors in the pineapple cluster are directly in charge of their marketing activities (Appendix B). Pineapple businesses deal directly with their customers in both domestic and international markets, and may be able to adopt market orientation strategies in order to meet their customers' needs. The findings show that the majority of the pineapple processing businesses have a direct relationship with different types of customers, who are mostly based in Europe. As a result, they each have their niche markets with different

customers and hence they are not in competition with one another. One manager of a pineapple processing business indicated that 'in fact, we cannot compete because we are all into different niche markets in Europe [...] everyone has its own requirement so there is no problem about that, so far as we are all getting our raw material. I mean, nobody is worried' (Pineapple case 1; Nsawam, 2014).

The findings reveal that the horizontal relationships among the palm processing businesses have created stronger ties and cooperation among processors and between processors and distributors, but greater competition prevails in the fruit supply (see Table 2). The vertical relationships among pineapple processors instead generates a high level of cooperation among processing businesses and farmers and, due to the abundance of fruit produced by large-scale farming activities, minimum level of horizontal competition is observed between processors.

**Insert Table 2 Here**

### 4.2 Effects of competition and cooperation on business relationships

The evidence presented identified different levels of competition and cooperation existing in both vertical relationships along the supply chain and in horizontal relationships. These various levels of competition and cooperation within the two clusters are modifying the relationships of actors in the clusters. Three key areas where variable levels of competition and cooperation have influenced internationalisation were identified. These are examined below including flexible credit financing, modification of contract types, and sharing innovation.

***Flexible credit financing***

The greater levels of cooperation observed between palm oil distributors and processors enables distributers to offer advance informal financial support to small-scale processors in order to further their operations, particularly to procure raw materials. The use of informal credit in the palm cluster is in contrast to the pineapple processors who rely on formalised bank finance or equity finance from foreign direct investment. The pineapple processors are also involved in providing some credit to farmers through an out-grower scheme that has formal legal contracts. The palm processors who use this informal credit may not otherwise have access to bank loans and other financing. This strategic move is to ensure that processors remain committed to a distributor, particularly when there is fierce competition for palm fruits. A distributor explains this as follows:

> We sometimes provide advance credit. For instance, if I need two drums I pay for one drum to encourage and commit them [processors] to supply to me because they know I will always pay when their palm oil is ready. So, when they supply the two drums then I pay their balance to them. So that, they are able to buy palm fruits for processing (Distributor 2; Kwaebibirem, 2014).

The findings further show that the cordial distributor-processor relationship is such that distributors remain committed to processors despite their inability to supply the agreed amount of palm oil. Distributors have deeper appreciation of the socioeconomic environment in the cluster and are able to accommodate defaulters. In the words of one distributor:

> You see, sometimes it becomes difficult to get the fruits or there is a lot of water in the palm fruits, so if I force it the processor will be in difficulty. So, I am patient and I understand the person and give him or her time to meet my demands (Distributor 1; Kwaebibirem, 2014).

***Modifying formal business arrangements***

The presence of fierce competition in the sale of palm fruit has meant that strong network ties between SMEs and farmers have driven modification in earlier formal processor-farmer business relationships involving large-scale firms and farmers in the palm cluster. Large scale palm processors have resorted to building links into the social networks of farmers and SMEs in order to gain extra raw material to supplement those from their own plantation. The need for reorganising formal arrangements with farmers' social network has been summarised by the manager for a large-scale palm processing business in the palm cluster.

> … if you want to wait for farmers to produce and send the fruits to you in a formal business arrangement then you will not meet your target. So, we have decided to mix with the farmers and attend functions in the communities so that we can have regular contact with these farmers so that we can access their raw materials. In fact, it doesn't matter if you have a contract with them because they are easily convinced by other buyers. One main challenge is that the small processors operate with cash in hand …[but] … we have to make payments after fruits have been supplied. Even though we have our farms we need their fruits to meet growing demand, so we are constantly trying to stay in touch with our farmers (Palm case 4; Kwaebibirem, 2014).

In contrast, the pineapple processors have more formalised business relationship with farmers or rely on the production from their own farms. Particularly since farmers in the pineapple cluster are brought together by the large-scale processing businesses in order to determine quality and quantity of fruits produced. As a result, large scale processing businesses are rather modifying the business environment. A manager explains:

> We have over 400 out-growers who we support financially to produce required quantities for the company […] and we have our agronomy and business units to work with this group of farmers to meet the standard that our customers want (Pineapple case 3; Nsawam, 2014)

***Sharing innovation***

The evidence shows that cooperation among palm processing businesses has facilitated the spread of fruit processing innovation. Indeed, business owners freely engage and visit other processing units to learn from and adopt new innovations for their businesses. The explanation offered by the manager of palm case 7 sums up the ease with which innovation spreads.

> [We] the small and medium operators, we are able to learn new techniques from each other. For instance, this new extractor you see here, a fellow processor helped me to fix it. We are like a family … [therefore] … we share new techniques freely. When I changed to my motor [on the miller] from manual to electric, everyone asked me to show them and I did... because we are one big community (Palm case 7; Kwaebibirem, 2014).

The notion that these processing businesses are able to freely engage and assist one another in acquiring new machine technology and the fact that such innovation acquired is seen to be helpful for all in the cluster means that processing technology is easily accessible. This accounts for the rise in the number of palm processing businesses in the cluster.

Within the pineapple processing business cluster, such sharing of information is limited and innovation spreads through the movement of key individuals moving jobs, from one local processor to another. While there is less competition for purchasing fruit, there is evidence of competition particularly in terms of recruiting the most knowledgeable managers and technicians. However, there is evidence of innovation sharing amongst pineapple farmers with new varieties of fruits being diffused. In this case, the government provided agricultural advisors who played a key role in collaborating with a pineapple farmer whose external exposure facilitated the spread of a new pineapple variety in the cluster. This has been explained by the manager of a pineapple farm:

> Our director […] discovered the variety when he was in Italy… [We] also didn't keep everything to ourselves; we gave it to our sister farmers so that they can grow it as well. So, we spread the [MD2] variety... [And] … Ghanaian agronomists [from MoFA] came in to help. (Pineapple case study 4; Nsawam, 2014)

## 5. Discussion

This study examined the supply chain relationships in a palm and pineapple processing clusters. In so doing, it identified the key roles that competition and cooperation play in

shaping the operations of clustered businesses. In the palm cluster, the dominance of SME informal relationships facilitates strong horizontal 'community ties' which helps businesses to overcome competition observed in raw material supply. The pineapple cluster is in turn dominated by MNCs with formal vertical supply-chain business contractual relationships that are supported by a relative abundance of raw material. The difference in relationship along the supply-chain has significantly been influenced by competition and cooperation in terms of accessing finance, securing business contracts and promoting innovation. Our evidence showed that the idealised view of a balanced coexistence of competition and cooperation encapsulated in the concept of *'coopetition'* is not empirically grounded. Competition and cooperation occur from different sources and at different paces, and with varying degrees of either competition or cooperation as the dominant force. Based on our findings we argue that both scenarios (dominant competition or dominant collaboration) can work for the benefit of the businesses providing that the actors involved accept the prevalent cluster dynamic. This further draws our attention to the diversity and uniqueness of location-specific attributes that underpin business relationship in clusters. Understanding internationalising business practices in Africa therefore requires recognition of these unique attributes and in particular, the role that formal and informal institutions play within spatial agglomerations of firms.

Unlike the literature on emerging economies which shows that clusters' competitiveness is mostly driven by MNCs and government intervention (Alfaro et al., 2012; Rasiah and Vinanchiarachi, 2013; Clarke and Ramirez, 2013), our findings show that competition in the supply of raw materials has heightened the competitive environment within which SMEs and larger businesses interact. The level of competition in the palm cluster has meant that large-scale businesses are modifying their relationships in order to remain competitive. At the same

time, the socially embedded collaborative relationships observed among SME processing businesses have become the key driver of competition in palm fruit supply within the palm cluster.

SMEs often lack the capacity to compete for resources in African clusters and in order to address this challenge and acquire the resources needed for their operations, businesses in the palm cluster relied on their social relationships. In others words they cooperate with farmers in order to compete with other processors. At the same time, the communities of small palm processing businesses created informal support institutions among themselves, offering financial, technical and social support to members within the palm cluster. These distinctive characteristics and strength exhibited along the supply-chain deepens our understanding of SME-based clusters and set them apart from MNC-led clusters in addressing institutional challenges (e.g. formal contracts) in developing economies.

The examination of these two contrasting clusters also shed light on the ways in which exporting businesses cope with weak institutions. While the pineapple cluster is shown to be relying on formal business structures e.g. using foreign direct investment and technological innovations from European countries, complemented by public sector support, the palm cluster relied on trust-based relationships and participation in informal socially embedded networks which have been developed over time (Granovetter, 1985; Borgatti and Halgin, 2012). In addition, whereas the MNC focused model gives greater emphasis to formal factors rather than intangible factors to drive exporting activities, the versatility of the SME-led cluster is modifying formal contractual arrangements and providing the platform for sharing innovation. These distinctive characteristics of the SME and MNC based clusters resonate

with the argument that the unique place-based capabilities produce different outcomes (Zell et al., 2014).

While the pineapple cluster aims for greater vertical integration to cope with weak institutional environments, the palm cluster relied on different forms of parallel institutions, operating alongside the state backed institutions. These include the trust based unwritten supplier contracts as a viable alternative to the generalised lack of confidence in and irrelevance of legal contracts, informal lending where formal bank finance in not accessible, and informal sharing of innovation and technology. However, these parallel institutions are limited to certain communities and can entail greater costs than well-functioning formal institutions.

## 6. Conclusions

This paper examined the nature of supply-chain relationships in two food-processing exporting clusters in Ghana by examining both quantifiable and non-quantifiable attributes in order to show how dynamics of competition and cooperation have shaped such relationships. As African countries seek to promote sustainable economic growth to tackle poverty, there is a need for greater understanding of peculiarities of African business clusters, rather than assuming that 'Western models' will provide the solutions needed to support cluster-based internationalisation.

In response to RQ 1, concerning the main supply-chain relationships in both clusters, the study demonstrated that there exist distinctive relationships between MNC and SME led clusters, the pineapple and palm respectively. The former aligns with mainstream business model observing high levels of vertical cooperation and minimal horizontal competition

while the palm cluster exhibit high levels of cooperation. Alternatively, the latter relied on embedded social networks to overcome the institutional challenges faced in order to remain competitive; and hence observed higher levels of cooperation and minimal competition in both vertical and horizontal relationships. In response to RQ 2, on the role of competition and cooperation in shaping inter-firm relationships, our evidence specifically demonstrated how collaborative and competitive relationships along the supply-chain contributed to shape a range of business practices such as changing formal business contracts, and helping clustered firms to access finance and new knowledge leading to cluster-based innovation.

The study fills a gap in the literature by distinctively examining the key defining features of MNC- and SME-led clusters in a developing economy. It shows that exporting SMEs have the capacity to harness intangible relationships of businesses' socio-cultural networks in order to address competition through cooperative relationships, sustaining thus their operations. This is important for place-based policy since it suggests that the elements that drive dynamism in each cluster are place-specific and for that matter cluster policies must be tailored to the characteristics of a given place. The evidence in this study further contributes to theory by revealing the deficiencies of the concept of coopetition in understanding the dynamics of 'competition' and cooperation in clusters. Specifically, since there is no such an ideal type of equilibrium between competition and cooperation in clusters, the unique dynamism of clusters may dictate the dominance of rivalry or collaboration and outputs in terms of firm competitiveness. We propose therefore an evidence-based approach for understanding clusters' dynamics in developing economies which combines quantifiable and non-quantifiable relationships in determining the degree of dominance between the two forces.

The study has some limitations, and this offers the opportunity for future research. Firstly, though the research examines and compares two clusters within the same region, which is novel, its findings cannot be easily generalised. There is therefore the need for more comparative studies of clusters in different contexts so to build on both the framework and findings of this study. Secondly, the research is a cross-sectional study on business relationships which is not static and therefore a longitudinal approach to the study of these issues could be adopted in future research so to draw out possible variations between clusters along their life cycle. Thirdly, the research identified the importance of both formal and informal institutions shaping key business relationships, but there is still a need for greater understanding of the role of formal institutions such as the public sector, private corporations and other development agencies in supporting cluster internationalisation. This may be done by fostering an enabling environment for the sustainable growth of firms in clusters and more directly supporting firms to create livelihoods for undeserved communities.

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**Insert Appendixes Here**

**FIGURE 1**

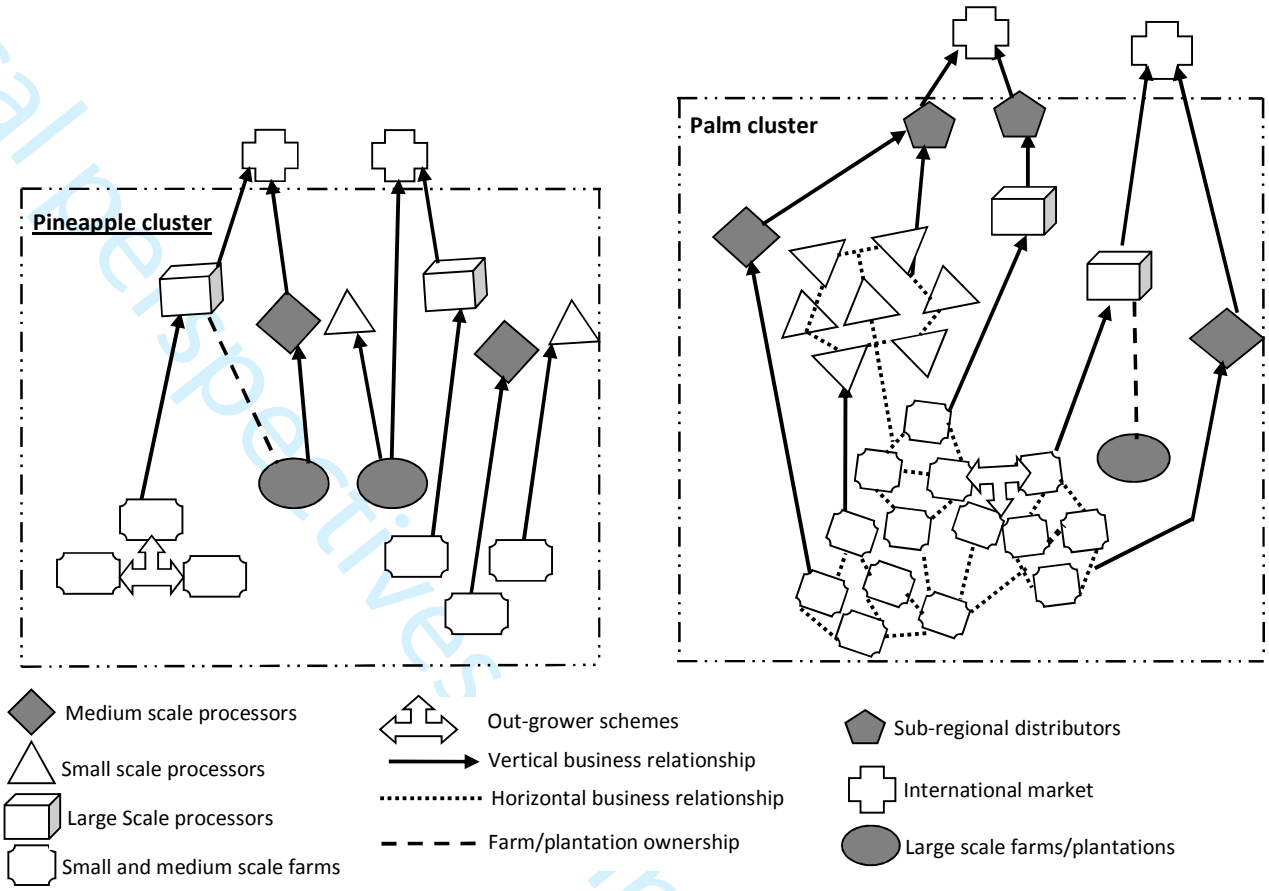


Figure 1: Supply-chain relationships in two contrasting exporting fruit clusters

**TABLES 1 & 2**

**Table 1: Summary of key participants for the study**

| Interviews | Palm cluster | Pineapple cluster | Total |
|---|---|---|---|
| **Farmers** | 1 | 1 | 2 |
| **Processing businesses** | 6 | 7 | 13 |
| **Distributors** | 2 | - | 2 |
| **Total** | **9** | **8** | **17** |

| Survey | Palm cluster | Pineapple cluster | Total |
|---|---|---|---|
| **Processing businesses** | 82 | 17 | 99 |

*Source*: Authors' survey and interview data

**Table 2: Summary of key findings on the supply-chain relationships in two contrasting clusters**

| Key variables | Palm cluster | Pineapple cluster |
|---|---|---|
| Economic agents | SME led fruit processing cluster | MNC led fruit processing cluster |
| Contractual model | Dominated by informal network relationships | Dominated by formal network relationships |
| Sociocultural ties | Strong socio-cultural ties in both | Absence of socio-cultural ties, |

| | | |
|---|---|---|
| | horizontal and vertical networks | driven by business contracts |
| Cooperation | Dominance of cooperation along supply chain network | Minimal cooperation along the supply chain network |
| Competition | Strong competition in the demand for raw materials | Minimal competition in the demand for raw materials |

**APPENDIXES A, B, C, D**

Appendix A: Distribution of enterprise activities in the two clusters

| ***Activity*** | ***Palm*** | ***Pineapple*** | ***Total*** | $x^2$ | ***p*** |
|---|---|---|---|---|---|
| Processing only | 30.5% | 29.4% | 30.3% | 25.40 | 0.00** |
| Processing and | 0.0% | 5.9% | 1.0% | | |
| Processing and farming | 65.9% | 29.4% | 59.6% | | |
| Processing, farming and exporting | 3.6% | 23.5% | 7.1% | | |
| Farming and farming | 0.0% | 11.8% | 2.0% | | |
| **Total** | **100.0**% | **100.0**% | **100.0**% | | |

Note: ***p significant at 0.01 level of importance*

| **Appendix B: Distribution of export channels** | | | | | |
|---|---|---|---|---|---|
| Export Channels | ***Palm*** | ***Pineapple*** | $x^2$ | ***P*** | ***Fishers Exact p*** |
| Agents/Distributors/Buyers | 93.3% | 14.3% | 26.45 | 0.00** | 0.00** |
| Company's export team/unit | 6.7% | 85.7% | | | |
| Total | 100.0% | 100.0% | | | |

Appendix C: Qualitative analysis using Nvivo

| Main Theme | Nodes | Sub-nodes |
|---|---|---|
| Business start up | Eternal factors | • Electricity supply<br>• Fuel supply<br>• Muti-Nationals |
| | Location specific activity | • Socioeconomic activities<br>• Environmental conditions<br>• Ownership<br>• Climatic condition |
| Relationships in cluster | Farmer - Processor | • Business relationships<br>• Strong Social networks<br>• Out-grower system<br>• Fruit shortages<br>• Excess supply of raw material<br>• Cooperation<br>• Competition |
| | Processor – Processor | • Strong Social ties<br>• Associations<br>• Formal relationships<br>• Informal relationships<br>• Collaborations |
| | Processor - Distributor | • Source of finance<br>• External market<br>• International market |

| | | |
|---|---|---|
| | | • Trust based relationships<br>• Local industries<br>• Market women |
| Operation of businesses | Knowledge & innovation | • Information flow<br>• Information sharing<br>• Trust based information<br>• Research institutions |
| | Operational resources | • Financial institutions<br>• Foreign funds<br>• Informal financial schemes<br>• Raw material supply<br>• Movement of labour<br>• Business support |
| Effects of relationships | Flexible credit financing | • Social networks<br>• Out-grower<br>• Farmer - distributor<br>• cooperation |
| | Modifying business arrangements | • Competition in raw materials<br>• Informal arrangements<br>• Formal structure<br>• |
| | | • Cooperation |

| | | |
|---|---|---|
| | Sharing innovation | • Labour movement<br>• Entrepreneur exposure<br>• Social networks |

**Appendix D: Semi structured interview Guide**.

1. Can you tell me briefly the history behind the start-ups and the main issue with respect to your company?

2. Where do you generally access resources such as information, technical advice and even finance from to run your operations

   - Raw materials
   - Technical advice
   - Finance
   - Any other?

3. How beneficial has your relationships with other businesses helped with your operations in this location
   - Farmers
   - Processors
   - Distributors
   - Others

4. What does it mean for you and your company to be located in this district?
   - explain your main reason(s)
   - Any difficulties?
   - How have you overcome these challenges?

5. Have you tried to develop and implement improvement in your processing in the last three years?
   - How were you able to achieve this?
   - Did you receive help from other businesses in the cluster?

6. In what way has the relationship with other businesses has influence your operation?

- Do you have a particular example you can share?