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Supplier Development in Tanzania; Experiences, expectations and motivation

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ABSTRACT

This paper contributes to a limited number of empirical studies focusing on African suppliers meeting international sourcing requirements in host countries. The present article is based on a survey of 110 companies targeting the emerging oil and gas industry and follows an explorative study design aiming to examine experiences, preferences and motivation of potential suppliers located in Tanzania. Techniques such as cluster analysis, graph visualization, descriptive statistics and concepts from social network analysis (SNA) were adopted to carry out the study. Our analyses show that only 15% of targeted firms collaborate, or have previously collaborated, with two or more companies and that close to one-third of the firms are unwilling to contribute financially for a training/development programme. Finally, a majority of the firms are willing to spend 15 days or less, which is assumed to be far below the minimum for an effective inter-firm improvement programme. Perhaps more interestingly, our study reveals that "open firms" are also more positive to contribute in improvement programmes. Several implications and guidance can be drawn from this study (e.g. need of a greater number of inter-firm collaborations, joint development initiatives including also foreign supplier firms, international oil companies and learning institutions).

1. Introduction

When marketing scholars study business-to-business interactions they often see that actors collaborate with each other through trust-based mechanisms. These mechanisms open for collaboration within several aspects of importance for the firm's competitiveness, for example: (i) improving the activities between the firms in its value chain, (ii) to bundle resources and thus strengthen the firm's resource base, and (iii) to share information and experience. The trust-based mechanism is one cornerstone in the industrial network approach, also referred to as the IMP approach in marketing (Håkansson and Snehota, 1995), in which the firm is dependent on combining its resource base across a firm's boundaries. Through inter-firm relationships in a network of interdependent actors, the resource base can be enhanced and provide a fundament for competitive advantages. This is particularly relevant in a developing country context, in which each indigenous market actor suffers from both a weak resource base (Vaaland et al., 2012; Owusu and Vaaland, 2016) and a weak culture of inter-firm collaboration and trust (Vaaland et al., 2012; Mutula, 2008; Klerk and Kroon, 2007; Humphrey and Schmitz, 1998), not least in a context in which foreign firms are dominant market actors with access to a well-developed and competitive international supplier base. This study focuses on the collaborative aspects of Tanzanian companies within the emerging oil and gas industry of the country.

Foreign-based companies and suppliers are highly involved in the exploration and exploitation of natural resources in African countries. Whereas the mining industry has been going on for hundreds of years, the petroleum industry is relatively new to Sub-Saharan nations. New oil and gas nations such as Ghana, Uganda, Tanzania and Mozambique are now facing challenges in applying natural resources as a means to create national wealth and benefits for society. Discoveries of oil and gas make the extractive industry the fastest growing sector in emerging economies. The upstream value chain activities in this industry are dominated by international oil companies and foreign suppliers (IOCs), which are increasingly exposed to *local content* expectations and requirements (Vaaland, 2015).

The World Trade Organization (WTO, 2011) defines *local content requirements*, synonymously referred to as *domestic content requirements*, as a "requirement that the investor purchase a

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certain amount of local materials for incorporation in the investor's product". The fundamental task is to "involve and enhance the domestic knowledge base through arrangements that allow for a dynamic industrial and technological development that gradually expands domestic competence and capabilities to competitive levels" (Heum, 2008: 4). This also creates an opportunity to build a sustainable culture of service quality and capabilities that exceeds customer expectations, and that is comparable to international standards (Ihua et al., 2011; Mwakali et al., 2011). However, in spite of local content expectations imposed on the IOCs, the inclusion of local suppliers is not easy to acquire (on this topic, see Ablo, 2015, and Lange and Kinyondo, 2016). Firstly, highly competitive global suppliers are already available; secondly, the level of the industrial base of the host country is not yet ready for meeting the minimum standards for inclusion (Oguji and Owusu, 2014). Local content requirements imposed on IOCs can enable local firms to become involved in tendering processes and be included in an IOC-initiated supplier development programme, although a local firm without ambitions for climbing up the ladder to a higher level than the minimum performance levels will never survive in this type of competitive environment (Owusu and Vaaland, 2016).

In the early stages of the development of the petroleum and mining sector, the capacity to meet professional industry requirements is likely to be low, particularly in developing countries with a weak industrial base (Tordo et al., 2013). Some of these challenges are illustrated by Parris (2013): (i) a low level of economic development, (ii) a lack of timeliness, (iii) a high level of corruption, (iv) people not following written instructions, (v) "poor quality is the norm", (vi) "it is not a problem until it is a problem", (vii) "life is unpredictable", and finally, (viii) "workers are not expected to innovate". Anderson's (2011) study of SMEs in Tanzania identified: (i) inadequate international business skills and management capacity, (ii) poor access to finance, and (iii) imperfect market information and links as main challenges. Adebanjo et al.'s (2013) study in Nigeria identified that the vast majority of potential suppliers failed to achieve the minimum acceptable performance. They further suggest that supplier performance in countries similar to Nigeria has a very significant scope for improvement, thus casting doubt on the ability of many suppliers to compete internationally or with international competitors.

These findings illustrate major obstacles for an indigenous company in meeting international sourcing criteria and expectations from IOCs. The way these obstacles can be reduced is primarily to develop the local companies' product offerings and resource bases. Learning networks and supplier developing programmes are examples of collaborative arrangements that can help enhance the indigenous companies' competitive power. The value of these arrangements rests on a willingness for participants to share information and experience, and to involve and learn from foreign companies more familiar with international sourcing requirements.

The aim of the paper is to explore the inter-firm collaborative potential in order to improve the competitiveness in relation to participation in the oil and gas industry. Rather than providing a critical analysis of the theoretical aspects of inter-organizational trust and collaboration, this paper attempts to explore the more practical sides of inter-firm collaboration and improvement in a developing country context. It is inferred that improvement processes are attached to formalized programmes, in which local firms actively participate in sharing and accessing competencies.

This leads to two research questions:

1. What inter-firm collaborative experience prevails among developing country firms?
2. If an inter-firm developing programme is launched:
   a) What content, comprehensiveness and teaching resources should be included?
   b) How much is the firm willing to invest in time and money to participate?

The Tanzanian context is chosen for of three reasons: First, there is much that is unknown about business activities in developing economies (Adebanjo et al., 2013), and very few empirical studies have focused on African suppliers meeting demanding international companies in the host country, and to the best of our knowledge, none from a supplier perspective. Second, the industrial base is weak and suffers from a lack of inter-organizational trust, which hampers collaboration and in the end necessary improvement processes. Third, the potential economic effect of including local firms in the oil industrial value chain is considerable for a developing country such as Tanzania.

The paper is further organized into six sections: First, a literature review is presented, followed by methodology. In the third section, findings are presented and continued with a discussion and implications, before the paper is concluded in the sixth section.

2. Literature review

The study is theoretically based on the industrial network approach, which represents three core elements required for collaboration. The literature within supplier development and learning networks within a developing country context are also presented in order to provide a background for the programme features.

2.1. The industrial network approach

According to the industrial network approach (e.g. Haakanson and Snehota, 1995; Ford et al., 2006; Vaaland et al., 2012), the firm is described as an actor in a network of interdependencies. The position in the network (e.g. in terms of competitiveness) is determined by the strength and content of relationships connecting the firms. In this perspective, the firm is both affected by-, and affects, other actors in the network. This implies that the network of "weak" developing country suppliers represents a potential for enhancing competitiveness which supposes that they are willing and able to share resources. The relationships between the networking actors (i.e. the local firms) consist of three interrelated dimensions, which can also be studied separately (Håkansson and Snehota, 1995, 2006), namely activity links, resource ties and actor bonds. Moreover, the activity links between the firms can be analysed and improved by collaborating on where to set the boundaries for activities in the value chain.

The resource dimension describes how resources between the actors are connected, combined and shared through resource ties for achieving common goals. The resources possessed by networking actor are considered significantly larger than the resources possessed and controlled within the specific firm boundaries. Industrial network research focuses on what roles actors play in business relationships and what resources they bring and develop, both individually and mutually, with the other actors and networks (see Ford et al., 2006; Håkansson and Snehota 2006; Ritter et al., 2004). However, for the specific networks to achieve certain aims, they need to develop resources to help fulfil their roles. The process of developing resources and fulfilling roles is encapsulated in relationship building through various types of linkages. Our dynamic and active view of linking and building relationships is similar to the findings of Järvensivu and Möller (2009) and Möller and Rajala (2007), who state that actors cooperating in an industrial networks have to contribute unique

and dynamic resources, and continue to develop them in an interlinked way. According to network theory, any resource is only valuable to the extent that it is combined and, thus, interrelated with other resources. These resources are comprised of localisation in the domestic market, facilities, equipment, systems, methods and manpower being included in their resource base.

Vaaland et al's (2012) study of Nigerian suppliers suggests three types of resources that the local companies should develop and share – capital, competence and delivery capabilities. Studies by Silvestre and Dalcol (2009) and Hernandez-Perez (2011) within the Brazilian oil and gas industry show that success was achieved through establishing the competence of their staff and cooperating with a large network of competent local firms and support organizations. The Brazilian and other examples show the importance of the relationships and networks between the firms, but also in a wider sense to include public regulators, learning institutions and foreign firms.

The resource base, and in turn the competitive force, is influenced by an ability to "network" and build inter-organizational trust and commitment. This implies that the resource base of a "weak" indigenous firm can be significantly strengthened through an inter-firm collaboration which supposes that the third dimension is in place, the actor bonds.

The actor bonds are comprised of trust, commitment and mutuality, and describe the firm's social interaction aspect (Håkansson and Snehota, 1995, 2006). Strong actor bonds enable the firm to share information and resources with each other, and is a precondition for collaboration, with trust being a core issue in building and strengthening actor bonds. Although the concept of trust has no uniform and fully accepted definition and suffers from a lack of clarity (Blois, 1999), the marketing literature often describes trust in terms of a firm's willingness to rely on an exchange partner in whom one has confidence (e.g. Moorman et al., 1992; Schurr and Ozanne, 1985), and which is conceptualized as existing when one party has confidence in an exchange partner's reliability and integrity (Morgan and Hunt, 1994).

To sum up, the industrial network approach provides a framework for understanding the preconditions for collaboration among firms. An understanding of a firm's interdependencies with other firms, and an ability to trust the other actors and mutual commitments, are the main conditions for collaboration.

2.2. Supplier development

An inter-firm collaboration, with the purpose of enhancing a competitive level, is often associated with "supplier development". Inter-firm collaboration and development can take place without target customers being involved. In other cases, a specific customer or groups of customers are key stakeholders and initiators of supplier development initiatives with the purpose of enhancing the quality or competitiveness of their supplier base. The target group in this study primarily consists of companies not yet directly involved as suppliers to the oil and gas industry, but which have ambitions to participate. These companies have to improve in order to qualify for inclusion in the supply chains, but are not yet included in "supplier development" initiatives from the buyer side. Nevertheless, inter-firm collaboration, in order to improve without an active participation from the buyer side, shares some characteristics with "supplier development", which will be clarified in the following:

Watts and Hahn (1993, 12) define supplier development as "a long-term cooperative effort between a buying firm and its suppliers to upgrade the suppliers' technical, quality, delivery and cost capabilities and to foster ongoing improvements". Krause and Ellram (1997, 21) encompasses "any effort of a buying firm with its supplier to increase the performance and/or capabilities of the supplier and meet the buying firms supply needs". Wagner (2004) sharpens the definitions by adding four dimensions or facets describing supplier development: First, *results-oriented* versus *process-oriented,* displaying to which the focus is to meet specific results determined by the buyer, or more general improvement or more long-term value for the supplier. Second, *narrow perspective* versus *broad perspective,* indicating to which degree the supplier is a new source of supply or a newcomer in the supplier base. The third is related to buyer motivation, a *reactive approach* versus a *strategic approach,* displaying the extent of primarily eliminating existing deficiencies or actively improving long-term supplier performance. The final dimension displays the role of the buying firm as a *direct or internalized supporter* of human or capital resource deployment to supplier versus *indirect or externalized support.* These are related to incentives or encouragements to enforce improvements.

The preferred dimensions of s supplier development programme might be different from a stakeholder perspective. For example, an IOC might argue that investments in the local supplier base have to be limited to result-oriented development and a narrow perspective, and aligned with specific sourcing needs. However, the local firm might favour more comprehensive, broader and process-oriented development in order to build competitiveness beyond the IOC's immediate sourcing requirements. This latter perspective will certainly be supported by the host country government aiming to strengthen employability and economic growth in the local industrial base (Arroyo-López et al., 2012).

The typology provided by Sánchez-Rodríguez et al. (2005) distinguishes among three supplier development constructs: 1. Basic supplier development pertains to practices that require the most limited firm involvement and minimum investment of the company's resources, including evaluating supplier performance and providing feedback to suppliers, 2. Moderate supplier development, including assessing supplier facilities, rewarding and recognizing performance improvements, collaboration on improvements and certification through ISO 9000, and 3. Advanced supplier development, including the training of suppliers, as well as collaboration and openness related to sharing information among the parties. In our context, the training element is essential, which implies that the context is advanced supplier development. Nonetheless, the comprehensive training of suppliers is a challenge for a cost-conscious and risk-aversive IOC. Expecting an IOC to bring a developing country firm up to a world-class standard by investing in a development programme might be unrealistic, particularly taking into consideration that there is a global competitive supplier market readily available.

2.3. Learning networks

Learning networks based on collaborating local firms can be an alternative to training facilitated and provided by buying firms, such as IOCs. Bessant and Tsekouras (2001) define a learning network as a formally set-up initiative with a primary learning target, has a structure of operation, includes processes which can be mapped into a learning cycle and measures a learning outcome that feeds back to the operation of the network.

Morris et al.'s (2006) study of learning networks in South Africa provides aspects of inter-firm learning that breed the competitive force of the host country's industrial base. They suggest a few basic challenges for running an experience-sharing learning network in an emerging economy context: (i) a lack of trust and unwillingness to share information among member firms, (ii) a tendency to blame the emerging problems to others (e.g. government, suppliers and customers) and avoiding opening up the "black box" of firm inefficiency and resource utilization, and (iii) a lack of

commitment and active participation in running the network. A distinction is made between those activities that are important at the set-up stage, the operational stage and the sustaining phases. Building a learning network in a developing country context poses some challenges in relation to hampering effective inter-firm learning, and Morris et al. (2006) suggest some key features associated with establishing and running the networks. In this study, we focus on whether the selected informants seem to fulfil the pre-conditions for the set-up of a learning network. Hence, we take the pre-condition elements from a learning network based on Morris et al. (2006), and place it into a programme in which external actors (e.g. a learning institution or a competitive foreign company) play a facilitating role (Table 1).

The theoretical approach and related variables in the study are conceptualized in the following:

2.4. Conceptual model

The concepts of interdependencies, trust and commitment are core elements in the industrial network approach, which are assumed to have a significant effect on the collaborative experience among the focal firms. As a result, a lack of collaborative experience is an effect of manifested autonomy within the firm, weak inter-firm trust and/or a lack of commitment.

The collaborative attitude and experience are assumed to affect perceived programme features, which are also assumed to be directly affected by the firm's commitment, regardless of any prior collaborative experience. We are suggesting and applying two motivational factors (i.e. duration and a willingness to pay) and two structural variables (i.e. *learning from whom* and learning content) characterizing the programme features.

3. Methodology

3.1. Data collection

Methods such as cluster analysis, graph visualization, descriptive statistics and techniques primarily used in network analyses were adopted to carry out the study. Considering the lack of previous academic papers on the same topic and the explorative nature of our study, the decision to adopt a quantitative approach is mainly justified by the need to provide sound results based on a very large number of primary data collected by means of a survey.

The survey was conducted in Dar es Salaam and Mtwara in 2015. Dar es Salaam (an urban location) is the country's commercial city that hosts the headquarters for most IOCs operating in Tanzania, while most of the country's petroleum extraction activities take place in Mtwara (a rural location). The companies to be included were based on a list of 200 companies that represents the fastest growing medium-sized companies in Tanzania (KPMG, 2015). The selected respondents had an annual turnover between 0.5–9.3 mill USD (equivalent to TZs 1 billion–20 billion). The questionnaires were filled in by one research group member during physical meetings with each company's informant. Potential respondents were identified within each firm (i.e. owners, top managers, other workers with direction or administrative responsabilities), contacted and interviewed based on their willingness to collaborate. After having identified potential firms and respondents, any sample technique was adopted by virtue of the very high response rate. Out of 120 targeted companies, 110 (92%) companies/questionnaires were considered complete, with 82 located in urban Dar es Salaam and 28 located in rural Mtwara. With respect to the nature of businesses, 73 firms were service-related businesses and 37 companies related to physical production. The questionnaire covered the extent and nature of collaborative experience and four issues related to a collaborative training programme, as outlined in Table 2:

3.2. Analytical tools and procedures

Various methodological approaches and techniques were adopted, including cluster analysis, graph visualization, descriptive statistics and concepts from social network analysis (SNA). All the variables used in this study were grouped into different clusters with the objective of detecting similar behavioural patterns among the organizations comprising the sample of our study. More specifically, in the first phase of the cluster analysis all variables were included with the aim of revealing the general features of the firms. Afterwards, the analysis was refined by looking at each pair of variables belonging to the upper categories labeled as "collaborating partners", "total duration of a programme" and "willingness to pay a portion of a programme". This approach revealed the behavioural patterns in greater detail, and verified the reciprocal correspondence of the different variables. The approach used to conduct this analysis was the binary hierarchical clustering using the *Jaccard* score, according to which two variables are considered to display similar patterns when the organizations making up each cluster answered both no = "0" and yes = "1" in correspondence to each variable considered. This method made it possible to classify the variables in six different clusters based on similar response patterns.

After having revealed the association between the organizations based on their behaviours regarding their openness towards external sources of knowledge (i.e. "collaboration partners") and a willingness to be involved in programmes (i.e. "the total duration of a (potential) programme" and "willingness to pay for a portion of a programme"), a further analysis primarily based on graph visualization was carried out. The aim of this additional analysis

Table 1
Elements, questions and measures.

Pre-conditions elements (Morris et al., 2006)	Core questions	Measures
Trust Is critical for the function of a network, and mutual learning implies openness.	Can other participating companies be trusted in an assumed low-trust business environment?	• Collaborative attitudes and experience.
External intermediaries Can external facilitation be recognized?	Actors other than participating local firms are assumed to be core players, e.g. a learning institution and/or an IOC. Who are the other core players?	• Beyond local inter-firm learning, who else should add competence? Learning from whom?
Challenging inherited mindsets Inherited mindsets represent serious obstacles. Tendency to blame external forces, e.g. government and IOCs.	What is the required programme comprehensiveness in terms of time and content? To what extent are participants willing to invest in a programme?	• Learning content • Duration • Preparations • Willingness to pay

Source: Authors' own elaboration based on Morris et ?al. (2006)

Table 2
Upper categories, variables and content of the questions. Authors' own elaboration from Questionnaire.

Upper categories	Answers/variables	Content of the question
Collaborative experience partners	1. Alone, as a pure internal process 2. One foreign partner 3. One local partner 4. Two or more local partners 5. Two or more foreign partners	During the last 3 years, has your company been involved in any formalized improvement processes? If yes, with whom?
2. Total duration of programme	1. 5 Days 2. 10 Days 3. 15 Days 4. 20 Days 5. 30 Days 6. 45 Days	Duration of the programme includes both preparations within the company and attendance in the class, together with other companies. How many days in total should a programme have?
3. Willingness to pay	1. Pay nothing, someone else should pay. 2. Pay 250 K TSh per participant 3. Pay 500 K TSh per participant 4. Pay 750 K TSh per participant 5. Pay 1000 K TSh per participant 6. Pay more than 1000 K TSh per participant	Are you willing to pay a portion of the programme cost? How much?
4. Teaching resources: Learning from whom?	1. Business school instructors 2. Foreign oil industry instructors 3. Local business instructors 4. Indifferent as long as the instructors have a practical approach to business competitiveness	Who else should contribute with knowledge diffusion beyond the participating firm?
5. Learning content	Health, safety, environment and quality (HSEQ), standards and underlying processes Supply chain management, production and delivery processes, project management Organization, business systems, management structure and staffing/HR development and management Contracts and legal issues Business ethics and rules of conduct, cultural differences Oil and gas-specific areas, industrial understanding, technologies Basic accounting, project economics, budgeting and financial management Strategy and industrial marketing, inter-firm collaboration, basics of mergers and acquisitions	What subjects should be included in order to improve the competitiveness of the local firm?

was to assess the potential association between the aforementioned behaviours and the geographical location (i.e. an urban or rural area) and sector (i.e. industry or services) of the firms. A case-by-variable contingency matrix was built by including all the binary responses of the interviewees (i.e. no = "0" and yes = "1") in the cells corresponding to each variable included in the study. By means of the NetDraw visualization software (Borgatti et al., 2002), in addition to statistics and concepts borrowed by the social network analysis, we were able to determine if the firms' collaborations with other organizations, their willingness to be involved in programmes and their opinion about the content of the programme was influenced by geographical location (i.e. rural or urban areas) or sector (i.e. physical production or service firms). The concept of "degree" used in our analysis refers to the actual number of positive responses corresponding to each individual variable (grouped in the upper categories according to Table 2). A very similar approach based on a case-by-case matrix is used to determine the most central and influential actors in networks (see Wasserman and Faust, 1994). This method was adopted in this study to reveal the most frequent responses of the local rural and urban firms and the related: i) actual external sources of knowledge, ii) willingness to improve their competitiveness and innovative performances, iii) ability to satisfy the IOC supply chain inclusion criteria. Similarly, the same method was used to determine the most important potential content of the learning programmes and instructors according to the physical production or service firms.

Table 3
Collaborative experience partners – Degree and percentage. Number of firms in parentheses. Authors' elaboration from Questionnaire.

Collaborating partners										
Answers/variables	Overall (110)		Urban (82)		Rural (28)		Industry (37)		Services (73)	
	Degree	%	Degree	%	Degree	%	Degree	%	Degree	%
Alone	29	26.4	24	29.3	5	17.9	10	27.0	19	26.0
One local partner	24	21.8	15	13.6	9	32.1	7	18.9	17	23.3
One foreign partner	18	16.4	13	15.9	5	17.9	7	18.9	11	15.1
Two or more local partners	6	5.5	4	4.9	2	7.1	2	5.4	4	5.5
Two or more foreign partn.	11	10	8	9.8	3	10.8	7	18.9	4	5.5

4. Findings

In the following, findings related to the two research questions will be presented: collaboration experience and preferences regarding a joint-industry developing programme.

4.1. Collaboration experience

In general, Tanzanian firms have established few collaborations with external partners. No significant differences between firms located in urban and rural areas, as well as between firms operating in the physical production and in services (i.e. trading and service providers), were observed. Going into more detail, the rural firms tend to collaborate more with external partners compared with the firms located in the urban areas; in fact, 32.1% of the rural firms established collaborations with one local partner, 17.9% with one foreign partner and 10.8% with two or more foreign partners. Conversely, the percentage of urban firms with no external ties is significantly higher (29.3% as opposed to 17.9% for the rural firms). The major difference in the comparison between physical producers and service firms was found in the significantly higher number of companies operating in the industry with two or more foreign partners (18.9% vs 5.5%) (Table 3).

The cluster analysis shows a clear positive association between the more "open" firms with respect to inter-firm collaboration and their willingness to improve their performance. In fact, the firms collaborating with local or foreign partners are also those willing to invest more time and money in a programme (see Appendix A, Cluster Analysis 1). This finding is confirmed by the additional cluster analyses grouping the variables pertaining to each pair of upper categories (see Appendix A, Clusters Analyses 2–4). Conversely, the analysis of the graphs aiming to show a relationship between the geographical location of the firms (i.e. rural or local), their openness towards external sources of knowledge, and their willingness to reach the requirements of the IOCs operating in the country, show more conflicting and in some ways unexpected results (see Graphs 1–2 in Figs. 2 and 3 and Table 2). Overall, most of the Tanzanian firms are not involved in formalized improvement programmes, and thus lack a systematic knowledge exchange with external partners. Similarly, they are only willing to pay an insignificant portion of the programme cost, if anything at all. Furthermore, they consider 15 days the optimal duration for a programme. Surprisingly, no particular positive associations were found between the variables used in the study and the urban firms. Conversely, the degree of rural firms with external partners is higher when compared with the same measure regarding the urban firms.

In the following, the findings related to four aspects of a joint industry training programme will be presented: (i) preferred duration, (ii) a willingness to pay, (iii) preferred external teaching resources (beyond their own exchange of experience and skills), and finally, (iv) preferred learning content.

4.2. Programme preferences

4.2.1. Duration

Overall, most of the Tanzanian firms consider 15 days the ideal duration of a training/education programme, even though in this case the rural firms are also more willing to invest time in them. In fact, 35.7% of rural firms would enable their employees to attend a programme lasting 15 days, even though a very high percentage are willing to invest even more time (30 days, 21.4%). On average, urban firms show a lower willingness to participate. At the same time, similar results were found in the comparison between industry and services, with the firms operating in the physical production more willing to participate in a programme (Table 4).

4.2.2. Willingness to pay

Overall, the Tanzanian firms are reluctant to pay parts of the programme cost, with no significant differences among the various categories under analysis. The main difference is that most of the rural firms (42.9%) and companies operating in the service sector (34.2%) want to pay nothing for participation in a programme with the purpose of enhancing the firm's competitiveness through an exchange of experience and the adoption of competencies provided by external sources. Lastly, more urban firms are willing to pay for a potential programme (even though only 250 K TSh[1]) compared with the rural firms ("pay nothing" was the most frequent response) (Table 5).

4.2.3. Teaching resources

The findings indicate that a majority of Tanzanian firms prefer a foreign expert in the oil industry as an external knowledge provider in a programme (40.9%), even though a very high percentage of interviewees (39.1%) does not have a clear opinion, and answered "indifferent" to this specific question. These findings were confirmed when the sector of the firms was considered. A very high number of firms operating in the physical production would prefer a foreign instructor working in the oil sector, whereas the background and geographical origin of the instructor is "indifferent" for 45.2% of the service firms. Both types of firms showed less interest towards instructors from a business school and local business instructors. Similar differences were also noticed in the responses of the urban and rural firms. Most of the rural firms do not have a clear opinion (53.6%), whereas urban located firms clearly prefer a foreign instructor from the oil industry (47.6%) (Table 6).

[1] 250 000 TSh is approximately 100 USD.

Table 4
Total duration of programme – Degree and percentage. Number of firms in parentheses.

Duration of a program										
Answers/variables	Overall (110)		Location				Types			
			Urban (82)		Rural (28)		Industry (37)		Services (73)	
	Degree	%	Degree	%	Degree	%	Degree	%	Degree	%
5 Days	24	21.8	20	24.4	4	14.3	6	16.2	18	24.7
10 Days	23	20.9	17	20.7	6	21.4	8	21.6	15	20.5
15 Days	31	28.2	21	25.6	10	35.7	12	32.4	19	26.0
20 Days	4	3.4	4	4.9	0	0.00	1	2.7	3	4.1
30 Days	18	16.4	12	14.6	6	21.4	9	24.3	9	12.3
45 Days	10	9.1	8	9.8	2	7.14	1	2.7	9	12.3

Source: Authors' elaboration from Questionnaire.

Table 5
Willingness to pay – Degree and percentage. Number of firms in parentheses.

Willingness to pay										
Answers/variables	Overall (110)		Location				Types			
			Urban (82)		Rural (28)		Industry (37)		Services (73)	
	Degree	%	Degree	%	Degree	%	Degree	%	Degree	%
Pay nothing	32	29.1	20	24.4	12	42.9	7	18.9	25	34.2
Pay 250 K TSh per participant	36	32.7	28	34.1	8	28.6	15	40.5	21	28.8
Pay 500 K TSh per participant	14	12.7	10	9.1	4	14.3	4	10.8	10	13.7
Pay 750 K TSh per participant	10	9.1	10	12.2	0	0.0	4	10.8	6	8.2
Pay 1000 K TSh per participant	3	2.7	2	2.4	1	3.6	2	5.4	1	1.4
Pay more than 1000 K TSh per part.	15	13.6	12	14.6	3	10.7	5	13.5	10	13.7

Source: Authors' elaboration from Questionnaire.

Table 6
Teaching resources: Learning from whom? – Degree and percentage. Number of firms in parentheses.

Teaching resources										
Answers/variables	Overall		Location				Types			
			Urban (82)		Rural (28)		Industry (37)		Services (73)	
	Degree	%	Degree	%	Degree	%	Degree	%	Degree	%
Business school instructors	9	8.2	7	8.5	2	7.1	3	8.1	24	32.9
Foreign oil industry instructors	45	40.9	39	47.6	6	21.4	21	56.8	6	8.2
Local business instructors	13	11.8	8	9.8	5	17.9	3	8.1	10	13.7
Indifferent	43	39.1	28	34.1	15	53.6	10	27.0	33	45.2

Source: Authors' elaboration from Questionnaire.

4.2.4. Learning content

Both tables and graphs related to the learning content show that all the different possible contents of a programme are considered important, even though some specific areas are considered more relevant than others. More specifically, physical producers consider *HSEQ standards and underlying processes* and *Supply chain management* as two highly relevant fields (respectively 3.0 out of 5 and 2.9 out of 5), followed by *Contracts and legal issues (2.7)*

Business ethics and rules of conduct (2.6), and *Strategy and industrial marketing*. Similarly, *HSEQ standards and underlying processes* (2.9) and *Supply chain management* (2.8) are considered the most important fields by the firms operating in the service sector. Both categories consider aspects such as *Oil and gas specific areas* and *Accounting, budgeting and finance* as less relevant topics (Table 7). The dimensions of the nodes of each variable in the three graphs below clearly show the differences.

4.3. Synthesizing collaborative experience and programme preferences

4.3.1. Collaborative experience and motivational factors

The cluster analyses show clear associations between variables (see Appendix A). Firms who are willing to invest more time in a programme are also those who are willing to pay more for a portion of it. At the same time, there is a positive association between the more "open" firms, i.e. those ones with one or more partners, and their willingness to invest time and money in the programme.

Figs. 1 and 2 graphically show the reluctance of the Tanzanian firms to collaborate with external partners and to be actively involved in learning programmes. In fact, the different dimensions of the nodes related to the various variables used in this study clearly show their tendency to internalize their improvement process and to invest a very small portion of money and time in potential learning programmes.

4.3.2. Programme content and potential instructors

The dimension of the nodes of each variable in the two graphs below clearly show the slight differences in the preferences

Table 7
Learning content – Importance (1–5), Total score and mean. Number of firms in parentheses. Authors' elaboration from Questionnaire.

Learning content/Importance (1–5)										
Answers/variables	Overall (110)		Location				Types			
			Urban (82)		Rural (28)		Industry (37)		Services (73)	
	Total Score	Mean	Total Score	Mean	Total Score	Mean	Total Score	Mean	Total Score	Mean
HSEQ standards and underlying processes	321	2.9	238	2.9	84	3.0	109	3.0	300	2.9
Supply chain management	310	2.8	231	2.8	81	2.9	105	2.9	290	2.8
Org., bus. systems, management	278	2.5	212	2.5	72	2.6	95	2.4	258	2.6
Contracts and legal issues	284	2.6	206	2.5	77	2.8	99	2.7	267	2.5
Bus. ethics and rules of conduct	282	2.6	210	2.5	74	2.6	96	2.6	265	2.5
Oil and gas specific areas	250	2.3	186	2.2	67	2.4	88	2.2	232	2.3
Account., budgeting, finance	243	2.2	186	2.2	61	2.2	82	2.1	227	2.3
Strategy and industrial marketing	272	2.5	196	2.5	69	2.5	92	2.6	254	2.4

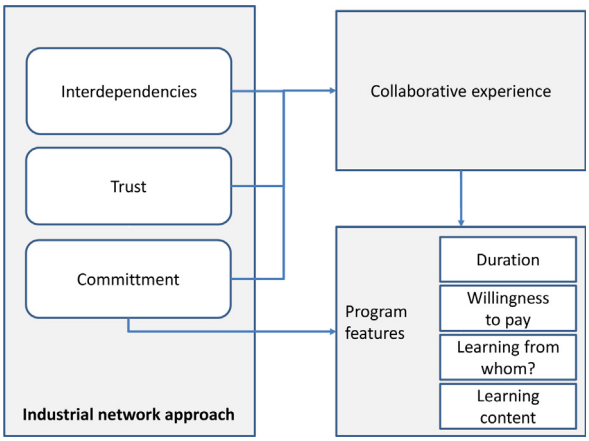

Fig. 1. Conceptual model.
Source: Authors' own elaboration

interlinked in relationships with other firms, and as such embedded in an industrial network of interrelated actors (e.g. Haakansson and Snehota, 2006; Ford et al., 2006). These actors can be competitors, sub-suppliers and customers or others. According to network theory, any capability (within the boundaries of the firm) is only valuable to the extent that it is combined with capabilities controlled by other actors. Furthermore, and even more importantly, the resource base of the firm can be significantly expanded in combination with other firms. It is therefore crucial to strengthen inter-firm collaboration.

Given this assumption, the descriptive data and cluster analysis indicate a modest degree of collaboration between Tanzanian companies. Most firms are not involved in joint industry programmes (i.e. more than two firms) and only 15% collaborate, or have previously collaborated, with two or more firms in order to improve. If they do, they collaborate with other local firms, and rarely with foreign companies. Whereas collaboration and sharing experience with other peers can provide ideas and facilitate managerial and technological innovation, it depends on with

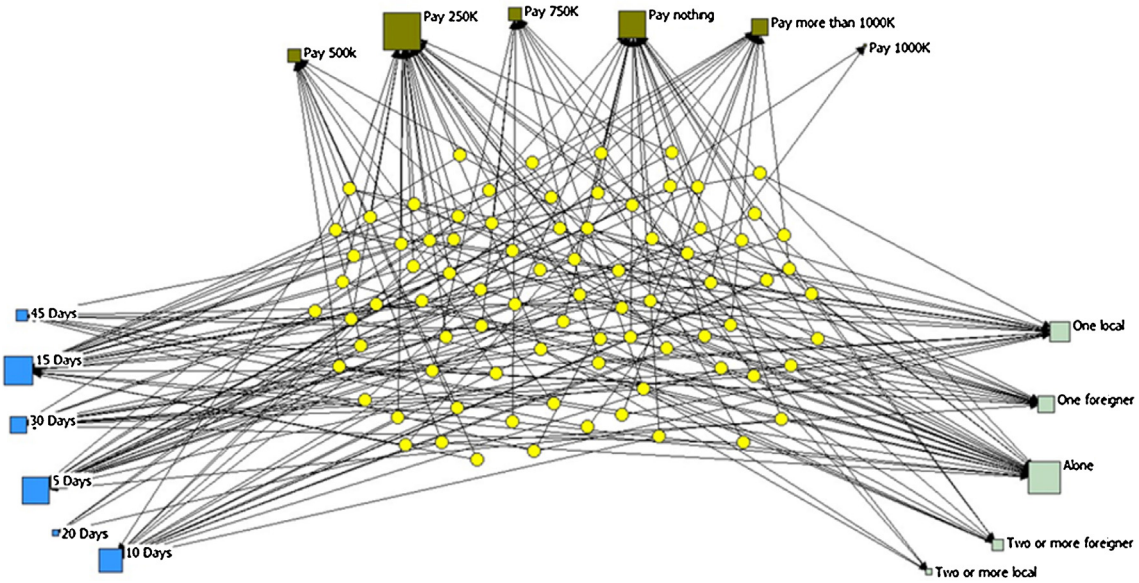

Fig. 2. Graph 1. Urban firms. Upper categories (degree). Legend: yellow circles = urban firms; dimension of the squares = degree. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)
Source: Authors' Elaboration from Questionnaire. NetDraw visualization (Borgatti et al., 2002).

between the physical producers and the service firms with regard to the content of the programmes and the related instructors. In fact, the instructors from the oil sector dominate the figure related to the physical producers, whereas the highest dimension of the node corresponding to the variable "indifferent" can be noticed in the graph visualization related to the service firms. At the same time, the two graphs graphically illustrate that *HSEQ standards and underlying processes* and *Supply chain management* are considered the two most important topics by both the physical producers and service firms (Figs. 4 and 5).

5. Discussion

5.1. Collaboration

Prior studies of indigenous companies operating in an oil and gas context in developing countries have emphasized the importance of strengthening the resource base and activity structures (e.g. Vaaland et al., 2012; Vaaland, 2015; Owusu and Vaaland, 2016). In this line of research, the firm is assumed to be

whom you collaborate. Since local Tanzanian firms have to compete with global suppliers, the competitive power of the indigenous firm depends on the extent to which competencies from these foreign firms can be accessed and included in formalized improvement programmes.

The findings also indicate that some firms already collaborate. These "open firms" are also more positive to sharing costs and presumably their commitment to a joint improvement programme. Contrary to our expectations, the rural firms seem to be more inclined to collaborate than the urban ones. This is interesting since the literature in fields such as economic geography and regional science indicates a higher number of collaborating partners and a more relevant propensity to innovate in firms located in urban or "core" areas, rather than in firms located in rural or "peripheral" areas (e.g. Asheim and Isaksen, 2002; Storper and Venables, 2004; Knudsen et al., 2008; Isaksen and Trippl, 2014; Calignano and Hassink, 2016). One possible explanation for is that rural Mtwara hosts an offshore gas field supply base, in which several foreign firms operate. Geographical closeness between Tanzanian and foreign companies can

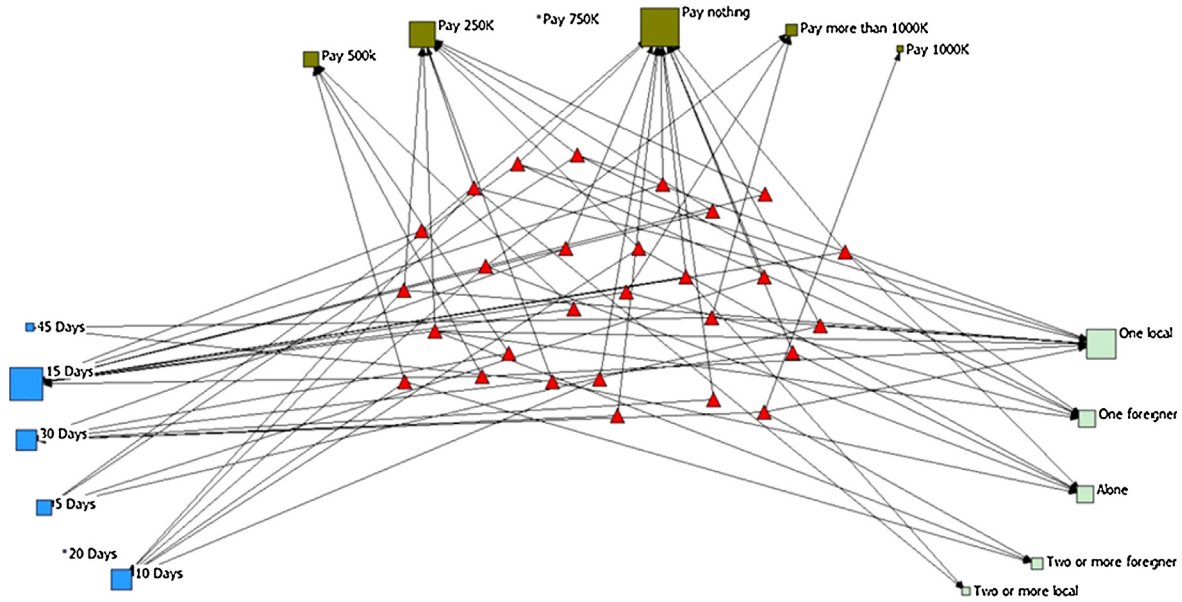

Fig. 3. Graph 2. Rural firms. Upper categories (degree). Legend: red triangle = rural firms; dimension of the squares = degree. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)
Source: Authors' elaboration from Questionnaire. NetDraw visualization (Borgatti et al., 2002).

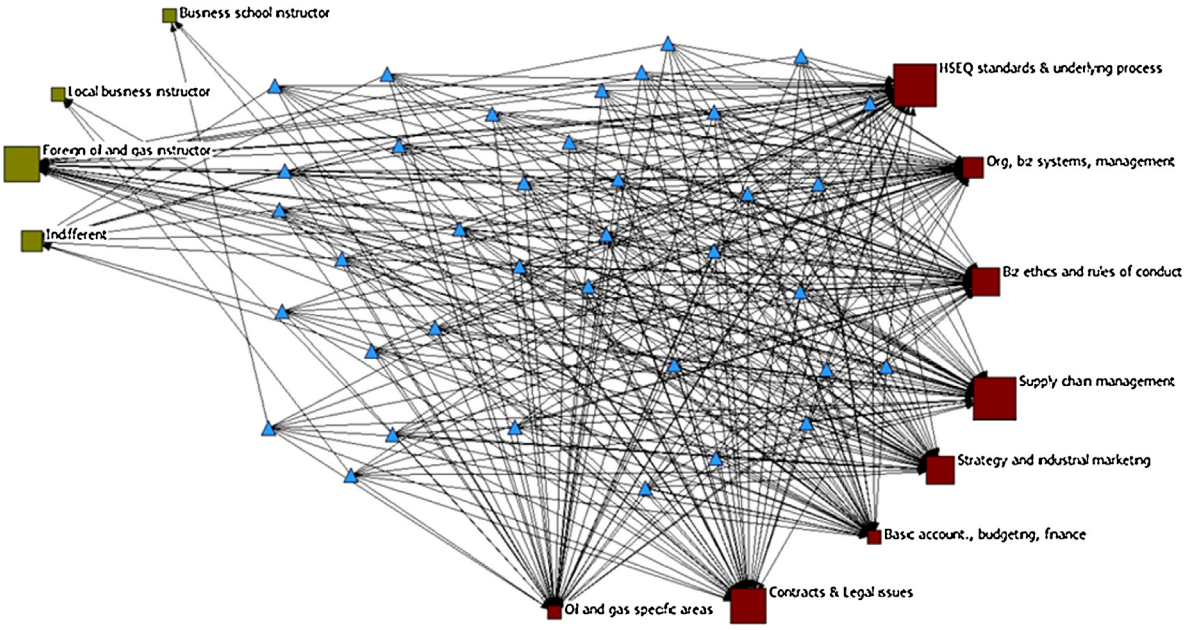

Fig. 4. Graph 3. Industry firms. Upper categories (Importance 1–5). Legend: blue triangle = industry (firms); dimension of the squares = degree and mean. Authors' elaboration from Questionnaire. NetDraw visualization (Borgatti et al., 2002). (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

strengthen actor bonds in terms of trust and commitment, open up for sharing resources and facilitate effective activity link between the firms. The threshold for entering collaborative inter-firm relationships with foreign companies might therefore be lower compared with the urban Dar es Salaam, which does not share the same geographical closeness between oil & gas industrial actors.

Finally, the findings also indicate a more fundamental problem among African firms, namely a lack of inter-firm trust. This is in accordance with Klerk and Kroon's (2007) study of South African enterprises, Overå (2006) study of enterprises in Ghana and in Vaaland et al's (2012) study of potential suppliers to the oil and gas industry in Nigeria, suggesting that business relationships and collaboration are hampered by a lack of inter-firm trust. A reluctance to collaborate leads to at least two significant negative effects on competitive power. Firstly, small companies are less capable of developing or accessing the resources and competencies necessary to comply with buyer requirements (i.e. IOCs internationally based sourcing requirements). Secondly, a lack of consolidation into larger business units implies that the indigenous companies are too small for large integrated contracts or contracts that presuppose integrated delivery processes (Vaaland et al., 2012).

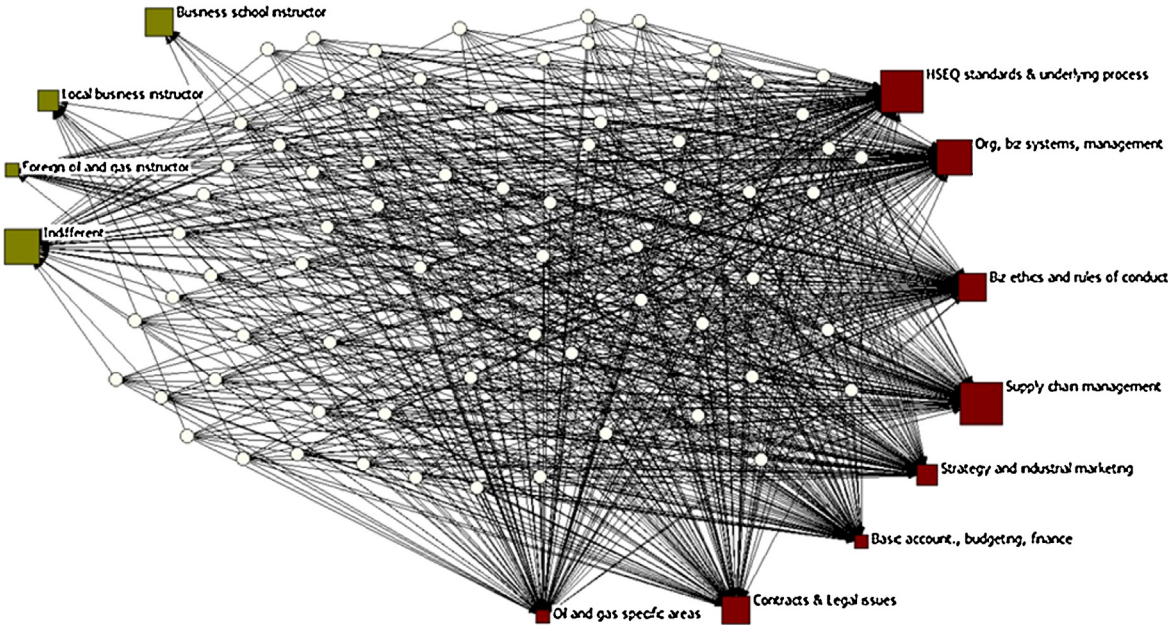

Fig. 5. Graph 4. Service firms. Graph 4: Upper categories (Importance 1–5). Legend: yellow circles = services (firms); dimension of the squares = degree and mean. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)
Source: Authors' elaboration from Questionnaire. NetDraw visualization (Borgatti et al., 2002).

5.2. Programme features

This study has also revealed aspects related to a learning network as perceived from the indigenous companies. Many learning networks are self-supporting in the sense that each participant contributes with competence elements and experience, which can be shared and collectively improved. Whereas this can be sustainable in an industrialized industry context, companies in a developing country presuppose that external knowledge providers are added to the network. This is emphasized in the Morris et al.'s (2006) study of South African learning networks, in which the foreign-dominated buyer side and learning institutions play an important role as partners and participants.

The findings indicate that only one-fourth of the firms are willing to spend 30 days or more in a joint programme, with a majority (71%) willing to spend 15 days or less. A change process takes time and requires dedication in order to facilitate sustainable improvements. Hence, it may be argued that a programme of 30 days is a minimum for improving administrative and operational processes up to a competitive level. The extent of participation might be influenced by company size, which has not yet been taken into consideration in our data set. On the other hand, a small company has small-scale disadvantages in the first place, which makes it hard to secure daily business operations with the necessary improvement processes.

Sharing programme costs in a developing country is one barrier to participation, albeit an important proxy for motivation and unconditional "free riding". Close to one-third of the firms are unwilling to contribute at all, and 14% are willing to pay the maximum of 1 mill TSh (USD 400) per participant. Again, this illustrates that a segment of relevant participants is required. A sustainable inter-firm improvement programme therefore has to build in some entrance barriers for the purpose of avoiding "free riders". In the end, the successful completion of a development programme can be honoured by the reimbursement of participation fees.

Anderson (2011), Adebanjo et al. (2013), Parris (2013) and Owusu and Vaaland (2016) all suggest various competencies that should be closed for an African firm to become more competitive. These competencies (or lack thereof) were articulated in terms of nine subjects presented as content elements in a development programme for the informant's consideration and prioritizing. The informants revealed an emphasis on all subject areas. However, three areas seem to exhibit the highest ranking: *health safety, environment and quality (HSEQ), supply chain management* and *contracts and legal issues.* These priorities seem to be consistent with the cornerstones in prequalification criteria employed by the IOC. When it comes to external knowledge providers beyond the participating firms, representatives from the oil and gas industry are clearly preferred. Business school contributions do not seem very well recognized, as only 8% consider this to be preferred. This is surprising given the fact that the purpose of a business school is to lay the groundwork for competitive and professional businesses. The lack of business school status among indigenous companies can also be an indication of the "ivory tower" syndrome, in which business school faculties lack business legitimacy. This syndrome is empirically supported in two studies of university-industry linkages in Tanzania (see Ishengoma and Vaaland, 2016 and Vaaland and Ishengoma, 2016 for further). On the other hand it could also be related to weaknesses in educational background among the informants.

6. Managerial implications

Local content requirements and IOCs efforts to include qualified and competitive local suppliers represent a significant business potential for local firms. On the other hand, the IOCs will hardly invest in a local supplier base without incentives. The local firm's motivation in terms of a willingness to share risk, time and cost (expressed through the duration of a programme and a *willingness to pay*) is one such incentive. It is therefore recommended that the management of local firms be proactive towards inter-firm collaboration, and engage in joint development initiatives. These initiatives should be strengthened by including foreign supplier firms, IOCs and a learning institution. The latter can facilitate, organize and add some generic knowledge elements, which can be synthetized with experience from participating foreign and local firms. Moreover, a shared responsibility for necessary joint

improvement processes could attract foreign aid funding based on the potential a competitive local firm represents in terms of employability and economic growth.

7. Conclusion

This study has revealed two important aspects related to the competitiveness of Tanzanian companies aiming towards participation in the country's emerging oil and gas industry. The first aspect is about the extent of inter-firm collaboration, and in particular collaborative arrangements with foreign firms (i.e. international oil companies (IOCs) and foreign suppliers well connected in the IOCs' global supply chains). Through collaborative arrangements, indigenous companies may access crucial experience, competencies and resources, which in turn significantly improve their inclusion in the supply chains of the oil and gas industry. The findings illustrate a large potential for improvements in the linkages, as most firms are not involved in a formalized joint industry programme. Only 15% collaborate, or have previously collaborated, with two or more firms in order to improve. A cluster analysis revealed that "open firms" (i.e. a collaborative experience) are also more positive to contributing to formalized joint-industry improvement programmes. The findings indicate a more fundamental problem, namely a lack of inter-firm trust. It must be stressed at this point that – following Morris et al. (2006) – collaborative attitudes and experience were used in this study as a proxy to measure trust. However, our analysis did not clearly distinguish between formal and informal cooperation and, more generally, referred to collaboration experiences leading to improvement processes. As a result of these blurred boundaries, respondents could have underestimated the actual number of collaborations. Therefore, since the nature and extent of trust is not fully captured in this study, further research should be carried out in this direction.

The second aspect is related to inter-firm development programmes, both in terms of motivation and content. Two measures of motivation were employed: to what extent the firms are willing to share the cost of a programme and an investment in terms of time (i.e. the total duration of the programme). The findings indicate that close to one-third of the firms are unwilling to contribute at all, while 14% are willing to pay the maximum of 1 mill TSh per participant. A majority (71%) of the firms are willing to spend 15 days or less, which is assumed to be far below the minimum requirements for effective organized improvement processes within a programme. Among nine groups of programme themes, three are sharing the highest importance: *Health safety, environment and quality (HSEQ), Supply chain management* and *Contracts and legal issues*. This is not surprising given the fact that these issues are cornerstones in the prequalification criteria employed by the IOC.

The findings illustrates that a segment of relevant participants is required. A sustainable inter-firm improvement programme therefore has to build in some entrance barriers with the purpose of avoiding "free riders". Following Morris et al.'s (2006) conditions for a learning network, a segmented base of the most motivated and "open" firms is a good starting point for local firm participation in the emerging oil and gas industry of Tanzania.

This study is not without some limitations. Only one respondent for each firm is included, primarily the top manager, though not always. Secondly, improvement is not necessarily contingent upon collaboration. In this study, we have assumed that improvement is formalized and subject to inter-firm collaboration. Furthermore, the study has not omitted control variables such as size of the firm, which may have an effect on the outcome. Nonetheless, some of these weaknesses could be justified by the explorative character of the study. Further research should explore how learning and improvement processes in local firms can be aligned with the requirements of a demanding foreign customer. Can a new innovative type of development program connect the competitive foreign buyer with the local firm? A second important issue for continuing research is related to inter-firm trust in a developing country context. This type of research should not only focus on African firms, but also include foreign companies engaged in local content development. A lack of trust not only hampers the sharing of resources and improving activity chains, but also reduces the necessary structural consolidation into larger and more competitive business units. Hence, the challenges of including a weak industrial base into the international oil and gas supply chain in a developing country may be overwhelming. Consequently, there is a need for further more research-based empirical documentation of how the oil and gas industry, and particularly foreign companies, actually enhance the inclusion of the local industry and knowledge sector, and thus sustain economic growth. Local content implies a long-term goal of helping to develop local suppliers to be internationally competitive beyond their home country; methods and strategies to fulfill such ambitious goals are also strongly needed.

Appendix A.

Cluster Analysis 1. Collaborative experience partners, Willingness to pay and Total duration of programme.

Method: Binary hierarchical clustering (Jaccard score).
Source: Authors' Elaboration from Questionnaire.

Variables	6 clusters
Alone	1
One local	2
One foreigner	2
Two or more local	3
Two or more foreigners	3
Pay nothing	4
Pay 250 K	1
Pay 500 K	5
Pay 750 K	3
Pay 1000 K	6
Pay more than 1000 K	2
5 days	4
10 days	1
15 days	1
20 days	5
30 days	3
45 days	2

Cluster	Variables
1	Alone, Pay 250 K, 10 Days, 15 Days
2	One local, One foreigner, Pay more than 1000 K, 45 Days
3	Two or more local, Two or more foreigners, Pay 750 K, 30 Days
4	Pay nothing, 5 days
5	Pay 500 K, 20 Days
6	Pay 1000 K

Cluster Analysis 2. Collaborative experience partners and Willingness to pay.

Method: Binary hierarchical clustering (Jaccard score).
Source: Authors' Elaboration from Questionnaire.

Variables	6 clusters
Alone	1

(*Continued*)

Variables	6 clusters
One local	2
One foreigner	2
Two or more local	3
Two or more foreigners	3
Pay nothing	4
Pay 250 K	1
Pay 500 K	5
Pay 750 K	3
Pay 1000 K	6
Pay more than 1000 K	2

Cluster	Variables
1	Alone, Pay 250 K
2	One local, One foreigner, Pay more than 1000 K
3	Two or more local, Two or more foreigners, Pay 750 K
4	Pay nothing
5	Pay 500 K
6	Pay 1000 K

Cluster Analysis 3. Collaborative experience partners and Total duration of programme.

Method: Binary hierarchical clustering (Jaccard score).
Source: Authors' Elaboration from Questionnaire.

Variables	6 clusters
Alone	1
One local	2
One foreigner	2
Two or more local	3
Two or more foreigners	3
5 days	2
10 days	4
15 days	1
20 days	5
30 days	3
45 days	6

Cluster	Variables
1	Alone, 15 Days
2	One local, One foreigner, 5 Days
3	Two or more local, Two or more foreigners, 30 Days
4	10 Days
5	20 Days
6	45 Days

Cluster Analysis 4. Total duration of programme and Willingness to pay.

Method: Binary hierarchical clustering (Jaccard score).
Source: Authors' Elaboration from Questionnaire.

Variables	6 clusters
5 days	1
10 days	2
15 days	2
20 days	3
30 days	4
45 days	5
Pay nothing	1
Pay 250 K	2

(*Continued*)

Variables	6 clusters
Pay 500 K	3
Pay 750 K	4
Pay 1000 K	6
Pay more than 1000 K	5

Cluster	Variables
1	5 Days, Pay Nothing
2	10 Days, 15 Days, Pay 250 K
3	20 Days, Pay 500 K
4	30 Days, 750 K
5	Pay more than 1000 K
6	Pay 1000 K

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