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ARE DIFFERENCES IN INSTITUTIONAL SUPPORT MATTERS FISHERY INDUSTRY PERFORMANCE: EVIDENCE OF UGANDA AND THE GAMBIA

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ABSTRACT

Much of the traditional theoretical and empirical literature concentrated mainly on developed and emerging economies neglecting the need for developing countries to build technological capabilities in enhancing export growth and global competitiveness. Using survey questionnaire on Uganda and The Gambia's fish industry in December 2013 to conduct comparative analysis to assess the performance of fish SMEs, we employ Chi-Square t-test to examine statistical difference and levels of significance on fish SMEs' financial access, exports and research and development (R&D). The findings show capabilities in institutional developments, developmental role of the state, network cohesion, linkages with large and foreign firms, R&D, technologies and access to financial services matter in fish SME performance. The statistical test shows strong significance between the two countries. Uganda growing out of the European Union fish import ban, the government mobilises local and international stakeholders to address shortcomings in the industry that propel the increased fish exports and developments in the industry. The Gambia is denied similar experience with the dominance of artisanal fisheries lacking basic capabilities to meet overseas export demands.

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INTRODUCTION

There have been consensus among development economists, such as Becks *et al.* (2003); Ayyagari *et al.* (2005); Demirguc-kunt (2007); Levine (1997) and Hussein and Demetriades (1996) that financial sector deepening, diversification and institutional development relaxes financing constraints on enterprises. These are essential ingredients as they make productive resources including credit available to fish SMEs, thus enhance their economic performance and growth opportunities. Fish SMEs lack of access to resources is identified among key factors that retard their economic growth (see Storey, 1994; Flessig, 1996; Demirguc-kunt and Levine, 1997). The high presence of small artisanal and young fish enterprises lacking capabilities and weak developed institutions tend to constrain their access to productive resources including finance and technologies, thus limiting their growth prospects. As Lall (1992, 2005) argued, institutional and technological capabilities at firm and national level matter in participating and competing in global export

market. This coupled with levels of R&D sophistication shows the different performance outcomes among industries and countries as highlighted in the literature. In the next Section, we present the background of the fish industry in the two countries followed by literature review. Section four covers the methodology of the study. Section five assesses the performance of fish SMEs' relative access to external finance, export incidence, R&D participation, fish SME strategic alliance and BDS supports in Uganda and The Gambia. Section six presents the conclusions and implications of the study.

Background of Fisheries in Uganda and the Gambia

The importance of fish-based SMEs in economic development cannot be over-emphasized as countries, such as Uganda and The Gambia rely on these firms to support a significant segment of their populations. Over 2 million and 200,000 people respectively in Uganda and The Gambia depended on fish for their livelihood in 2006. The industry supports food security, supply of animal protein, incomes of players and major earner of foreign exchange for the two countries. Fishery industry forms a crucial part of poverty alleviation strategy in both countries being the largest agricultural export

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processed, packaged, labeled and branded as exports of foreign countries depriving The Gambia of much needed foreign exchange, employment and other spillovers in the economy. Most of the industrial fish firms from Greece, Spain, South Korea, China and Italy, among others, licensed in The Gambia also operate in neighbouring countries, thus eligible to fish in Gambia's EEZ and transport their catches to neighbouring countries or overseas for processing. This explains the poor fish export revenue base of The Gambia with export earnings showing erratic levels from USD2.33m in 1990 declining to USD1.68m in 1995 falling further to its trough at USD0.33m in 2006 due mainly to targeting high value fish species coupled with weak artisanal capabilities (see Figure 2)

Despite technological improvements in Uganda, there is still room for further changes as fish exports enter EU with limited value addition (semi-process products) which are processed further and repackaged for overseas markets according to customer preferences. However, the challenges are daunting not only associated with increasing competitiveness in the market but also the rapid technological change which requires sophisticated skills and capabilities. Even more daunting is the path facing artisanal fisheries in The Gambia with weak technologies, skills, bank financing and other associated capabilities to transform to competitive exporting industry

Literature Review

Chi-Square t-test is carried out to assess the independent sample mean differences and levels of significance. The tests for equality of means and variables are of interest in socio-economic analysis. The Chi-Square t-test of levels of significance of financial access, exports and R&D incidences is enhanced by institutional developments through its influence on meso-organisations. These enhance performance of economic agents attracting much research by institutional and industrial economists (Nelson, 2008; Rasiah, 2004; North, 1990; Williamson, 1973). The role of institutions has been addressed including coordination modes in transaction allocations though markets are always considered as superior institutions in achieving optimal outcomes (Rasiah, 2013; Marozzi, 2013). The levels of mean differences and significance are also influenced by asymmetric information and the nature of imperfect demand-supply relations which are severe in LDCs (Stiglitz and Weiss, 1981; Rocca *et al.*, 2011).

The level of financial and institutional developments, coordination and collaboration in the industry, the development of knowledge infrastructure and firm level efficiencies, among others, explains mean differences and levels of significance (Levine, 1997; Demirguc-kunt, 2008; Marozzi, 2013; Rasiah *et al.*, 2013; Beck and Demirguc-kunt, 2006). Accordingly, technologies can be acquired through transfers from multinational corporations (MNCs) to local firms, internal transfers through FDI, external transfers through licensing agreements, capital goods imports, local adaptation and development, contracts and consultants, formal R&D, harnessing the diaspora skills and other key dissemination channels, like technology parks and clusters (Chandra *et al.* 2006:39-44).

Technological Capabilities

Much of the traditional theoretical and empirical literature concentrated mainly on developed and emerging economies neglecting the need for developing countries to build technological capabilities. As Lall (1992:165) put it, "technology is not freely available to all countries as viewed by neoclassical trade theory and that technological knowledge is not equally shared among enterprises". Instead, firms and countries select appropriate levels of capital/labour intensity in accordance to factor price ratios and their relative endowments of physical capital and labour. Accordingly, in developing SSA countries, despite trade liberalisations in the 1980s, the region failed to exploit the opportunities offered by global trade due largely to low domestic firm capabilities and weak public sector support (Lall, 1992, 2001; Rasiah, 2006, 2007). This is evident with SSA's share of global manufacturing value added fell from 0.43% in 1980 to 0.41% in 2000 and its share of manufactured exports worsened from 0.3% in 1980 to 0.2% in 2000 compared with East Asia's 6.8% and 18.4% respectively (Lall and Mbula, 2005:2). The region is clearly "off the map" in dynamic technological upgrading and has become marginalised in global economy. To address these problems requires strengthening domestic technological capabilities and adopt learning technological effort by attracting foreign direct investments (FDI) from overseas. Addressing key issues such as poor framework conditions for growth and competitiveness such as political instability, civil conflict, weak governance, poor macroeconomic management and weak infrastructure matter in this drive.

Enhancing technological capabilities also requires human skills, huge investments and other input requirements often beyond the capacity of most local firms in SSA. Without public sector support in SSA by providing the required infrastructure and technological investments, firms are likely to go without building the required capabilities due mainly to related huge investment costs and skill human resource requirements. The inability of firms to meet these investment requirements, reach the minimum operating efficiency, quality control, state-of-the-art equipment maintenance or adapt product designs to changing market conditions or maintain effective linkages with reliable suppliers are unlikely to participate and compete effectively in global markets (Lall, 1992:168). Like firms, countries differ in their abilities to utilise and innovate technologies which go to demonstrate in their productivity, economic performance and growth. This is corroborated by OECD in evaluating the performance of advanced industrial economies that the long-term economic growth arises from the interplay of incentives and capabilities. Accordingly, for national technological capabilities (NTC) to develop, capabilities in the form of physical investment, human capital and technologies have to be enhanced (see Nelson, 1981). In poor LDCs of SSA, firms are small in size constrained by host of obstacles to build a required capability. In this regard, SSA governments, Uganda and The Gambia without exception, must intervene to provide investment projects and address some collective action problems to facilitate fish enterprises greater access to productive resources including finance, technologies, human skills, linkages among others, thus enhance their economic performance and global competitiveness. The economic growth miracle of Southeast Asia owed it to enhanced firm and national technological

capability building (Lall, 1992) (also see Stiglitz, 1996: 151:77; Chandra *et al.* 2006; Nelson, 1990; Rasiah, 2004, 2006, 2011 and Skare, 2011). The study of Kim, Lee, Park & Oh (2011) also found out that firm performance is enhanced by intense R&D, learning and external networking capabilities.

Systemic Quad

Systemic Quad² looks at the surrounding factors of industry integration and competitiveness in the global market. It considers four systemic pillars comprising of network cohesion, environment, role of national governments and global connectivity required to participate and compete in international markets. The public-private partnerships are considered vital in the development of dynamic industry pillars of the systemic quad capable of resolving collective action problems as shown in Uganda case. Combination of inefficiencies at firm level, the lack of requisite human resources and technological capabilities necessary to stimulate the institutional innovative capacities have to a greater extent undermine the capacity of industries, fishing in particular to enjoy increase production, sustainable export growth and division of labour. These are also the prime reasons for the stagnation that has characterised export processing zones across developing countries (Rasiah, 2011). It is argued that central to any effort to revive stagnating conditions must focus on planting the four systemic pillars to stimulate, upgrade, innovate and establish new enterprises to turn-around the industry to vibrancy.

State theory

State theory focuses on developing the welfare of the people in terms of inclusive development, good governance and regulation (Johnson 1982; Elliot & Wilson, 1996; Das 1996; Wong 2004, Jessop 1990). The term developmental state is characterised by having strong state intervention as well as extensive regulation and planning. Johnson (1982, a pioneer of the concept of the “capitalist developmental state” defined it as ‘a State that focuses on economic development (export-oriented industrialisation) and takes necessary policy measures to accomplish this objective’. Johnson cited Japan’s economic development trajectory and most ASEAN countries where State-led the industrialisation drive and took developmental functions. While there is limited government ownership of industries, private sector is rigidly guided and supported with enhance provision of public goods. It is argued that the success of East Asian “Tigers” did stem, in part, from State intervention (Polidano, 2001). The promotion of economic development in ASEAN is linked to supportive networks of meso-organisations (public-private research institutions), private industry associations (often set up by State initiative) and collaboration with international development agencies (Polidano, 2001; Onis, 1996; Wong 2004; Stiglitz, 2002; Rasiah, 1996). However, there is no consensus in the literature of governments’ role in SME industry and fish SME financing, in particular. The different ways of government intervention is still being researched with no standard answers

to all countries and markets and there are no pre-designed policy packages from the shelves. What is suitable in one country may not work in others, calling for a context-sensitive approach that takes into account country specifics. Of least controversy, however, is government’s role in providing contractual and informational framework, providing key institutions and ensuring stable macroeconomic environment. It is through these roles that governments can help push outwards the Access Possibility Frontier (APF) and ensure SMEs long-term sustainable access to external finance and growth. The reforms of the business environment may not focus directly on SMEs but can help close the gap among enterprises of different sizes and level the playing field. Through these policies, government assists in developing markets that can be used by banks to reach out to SMEs.

The neo-classical economists, such as, Freeman, Adman Smith, Milton Friedman among others, have advocated for laissez-faire (free market) policy, a slogan for no government intervention. Accordingly, they viewed the maximum point of government intervention is reached when it provides policy framework and that the rest is up to the market. However, it is argued that neo-classical thought of free market is not self-correcting and market cannot regulate itself justifying the need for State intervention not in owning assets but act as facilitator in the provision of infrastructure, basic platforms for incremental innovations, financial governance and build necessary partnerships with private sectors for growth and development (Lall, 1992; Stiglitz 2002; Vinanchiarachi, 2010). These are beyond private sector to deliver making role of government quite indispensable. Against this background, Stiglitz (2002) referred to free market, neoclassical and neoliberal belief in the supremacy of the market as disastrous for developing economies, particularly in LDCs (also see Lall, 1992, 2005). The approach seeks to minimise the crucial role of government arguing that the “invisible hand” of the market will ultimately address unemployment, poverty and other ills for society. Hence, free market is criticised as a blend of ideology and worst thinking, instead advocate for the establishment of key institutions and the increasing role of government in public-private partnerships for growth and development.

In the same vein, Matlosa *et al.* (2002) argued that the government and market interactions may be characterised as relatively new phenomenon, tasked with creating well-functioning markets with effective legal systems, efficient credit administration, standards, physical and lending infrastructure and if necessary, to act as a temporal entrepreneur of last resort. It must not simply be a case of ‘government versus market’ in the development process but rather as complementary agents of economic development. It is argued that governments must work with the market as public action moves beyond the regulatory reform agenda in addressing the physical, financial, institutional and knowledge constraints limiting fish SMEs’ growth and development (Aryeetey and Moyo, 2012; Page, 2012). It is argued that markets do not expand and progress spontaneously, they rely on the right kind of government policy to use innovative ideas - synergies, increasing returns, learning, adopting, adapting and commercialise knowledge for growth. The propellant of this process of evolutionary economics (see Lundvall, 1994; Nelson, 1995, 2008; Lall 2005) is learning, acquisition of new knowledge and the significant role of government in the

² Systemic Quad is developed by Rasiah (2007) focusing on developing countries as Michael Porter 1990 “Collaborative Diamond Model” is relevant for mature industries.

provision of human skills and apprenticeship. Studies have shown that without government intervention with right policy framework and incentives programmes, micro, small and medium enterprises will ever remain marginalised in the economy despite their importance in the socio-economic development in developing countries. Uganda government responded under crisis situation to address the fish export crisis though inadequate to reach frontier phase but the situation in The Gambia was different, lacking supportive public sector policies to trigger dramatic changes in the fishery industry.

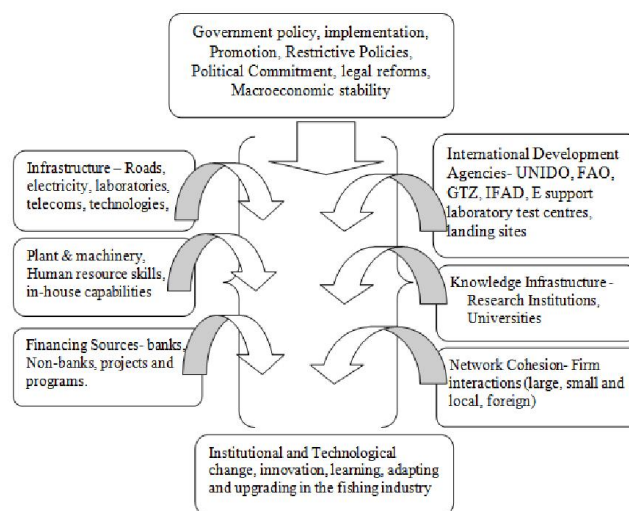
MATERIALS AND METHODS

We use the two-country survey data to test for levels of significance relative to financial access, Export incidence; R&D participation, SME and BDS support. The sample of fish SMEs in The Gambia and Uganda are pooled together to conduct comparative analysis using Chi-Square test. The survey conducted in December 2013 is drawn base on convenient random sampling of 160 and 120 fish industry players in Uganda and The Gambia respectively since there is no comprehensive data on the population of fish enterprises in Uganda and The Gambia. Figure 4 shows the conceptual framework for technological learning, adapting and upgrading in the fishing industry. The vital role of government policy and the political will to ensure stable macroeconomic environment, provide infrastructure, tax incentives, legal reforms and collaboration with development partners are vital for institutional development and technological learning and upgrading.

The essential roles of private sector network cohesion, knowledge infrastructure (universities and research institutions) and financial markets are key in pushing the technological learning towards the frontier phase. Learning mechanisms enable enterprises to increase their technological capability endowments through in-house training programs, learning by doing, strong networking among firms and linkages with local suppliers, clients, knowledge institutions, banks, local and foreign consultants and industry networks (Biggs *et al.*, 1988). These linkages enhance the technological capabilities of domestic firms ranging from information sharing to strategic partnering and joint venture. Participation and collaboration mean that firms can leverage technical expertise and share information from a larger pool (Wesphall *et al.*, 1985). In Uganda, the response to EU ban for failing to address SPS requirements triggered joint efforts in Uganda's fisheries industry from across stakeholders to address the fish export crisis.

The European Commission's sanitary phytosanitary (SPS) technological standard through Council Directive of 91/493/EEC in July 1991 was instrumental in providing the trigger to transform the safety standards of fish processing in Uganda. In 1997, the European Commission (EC) through Council Directive of 97/296/EC required all developing countries to seek authorisation from the EC before exporting fish products to the EU (McCormick, 1999; Kiggundu, 2005). There were several conditions that had to be met to comply with EU fisheries Council Directive (Nathan and Associates, 2000). Many argued that the strict sanitary and other regulations of EU and the United States are a disguised

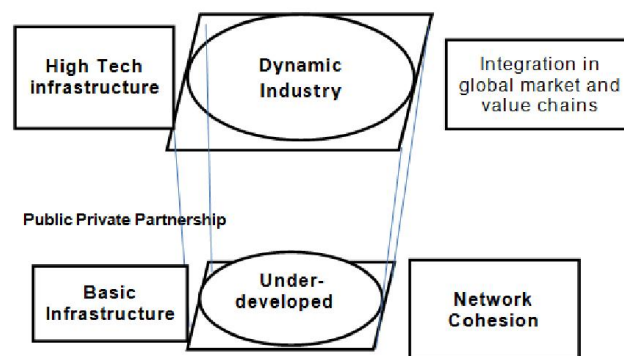
protection against WTO trade rules. These restrict most developing countries' participation in global trade as they lack the expertise in terms of human resource skills, state-of-the-art equipments and unrestricted external financial access.



Source: Adapted from Jaabi, and Rasiah (2012)

Figure 4. Conceptual Framework of Institutional and Technological Change

It is argued that to participate in global trade and remain competitive, requires conducive environment (macroeconomic stability and greater financial inclusion), network cohesion, role of national governments (state theory) and global connectivity (Rasiah, 2007:211). The absence of these four pillars has adversely undermined the sustainable increase in fish production and export growth.



Source: Rasiah (2007: 212)

Figure 5. Systemic Quad

Economies that manage to strengthen the four pillars of systemic quad are able to sustain rapid growth, increase employment, value addition and sustained exports as experience in Japan, Taiwan, Singapore and other Southeast Asian countries (Rasiah, 2007). On the other hand, economies that are only able to provide basic infrastructure, security and political stability in industrial estates have failed to sustained growth, add value, and job creation. With the sustained value addition differentiation, division of labour and wage increases have helped raise standard of living and human development sharply in successful countries, the lack of it has denied the less successful ones (mainly Sub-Saharan Africa) similar experience.

Specification of Variables

The main focus of this section is to assess the levels of significance between Uganda and The Gambia relative to SMEs’ access to finance, RDI, export incidence, SME inter-firm alliance and BDS support in the two countries. Data on the following variables were collected and used for analysis in the equations.

Enterprise –level Variables

The variables used in the analysis include financial access, XI, RDI, SME inter-firm alliance and BDS.

Access to Finance

Financial access in the two countries is tested using chi-square test to examine the relative strength and significance between the two countries. Then, Financial Access (FinAccess) was estimated as:

$$\text{Fin Access Approved} = 1, \quad \text{FA Rejected} = 0$$

Technological Capabilities

R&D Incidence (RDI) is used as a dummy measured as:

$$\begin{aligned} \text{RDI} &= 1 \text{ (Yes) if fish enterprises participate in R\&D} \\ \text{RDI} &= 0 \text{ (No) if fish enterprises do not participate R\&D} \end{aligned}$$

Fish SMEs’ access to formal finance does facilitate their economic performance as highlighted in the literature in Chapter 2. Their performance is further enhanced with R&D participation to reach out and compete in global markets with improved fish products. Technological capabilities as detailed in the literature enhance fish enterprises to meet sanitary export requirements, add value and enable enterprises to sustain increase production, exports and employment.

Export Incidence

$$\begin{aligned} \text{XI} &= 1 \text{ (Yes) if fish enterprises participate in export market} \\ \text{XI} &= 0 \text{ (No) if fish enterprises do not participate in export market} \end{aligned}$$

Statistical Analysis

The section introduced methodologies and data to identify fish SMEs’ technological capabilities and economic performance in the two countries. We conducted correlation analysis to test for co-linearity and level of significance among variables. Chi-square tests are also conducted to show if there is any statistical difference between the two countries’ performance vis-à-vis financial access, exports and R&D. The null hypothesis (Ho) states that there is no difference between the two countries performance. Tests on various performance indicators are conducted to accept or reject null hypothesis. The subsequent analysis will focus on the relative performance of the sampled fish SMEs. First, we examine the relative levels of SMEs’ access to finance in the two countries. The second exercise examines the relative R&D and export incidences of fish SMEs in Uganda and The Gambia. The test is extended to SME, inter-firm alliance and BDS supports in the two countries.

RESULTS

This section compares statistically the relative levels of fish SMEs in Uganda and The Gambia in terms of their access to external financial credit; export Incidence, RDI, SME inter-firm alliance and BDS support as shown in Tables 6.2. We first conduct levels of correlation among variables relevant in this Chapter.

Correlation of Variables

In this section, correlations of variables in the two countries’ fisheries industries examine the level of relationships among variables. The variables in the two countries are plotted together to assess the levels of correlations and statistical significance. The results show less statistical relations among the variables making the subsequent test appropriate.

Chi-Square Test

Chi-square or test is a statistical hypothesis test commonly used to compare two or more observed data to investigate whether they are different from one another base on a specific

Table 1. Correlation of Variables

		Age	Fin Access	RDI	Size_EM	XI
Age	Pearson	1				
	Correlation					
	Sig. (2-tailed)					
Fin Access	N	290				
	Pearson	0.0535*	1			
	Correlation					
RDI	Sig. (2-tailed)	.0564				
	N	290	290			
	Pearson	0.2107	0.5071	1		
Size_EM	Correlation					
	Sig. (2-tailed)	.170	0.217			
	N	290	290	290		
XI	Pearson	0.0804	0.5083	0.5822	1	
	Correlation					
	Sig. (2-tailed)	0.1602	0.123	0.127		
	N	290	290	290	290	
	Pearson	0.0502*	0.4298	0.4668	0.5326	1
	Correlation					
	Sig. (2-tailed)	0.05080	0.1070	0.3260	0.1720	
	N	290	290	290	290	290

Source: Survey data, (2011), * correlation is significant at the 10% level.

hypothesis. With the deviations (differences between observed and expected), one can conclude that something other than chance is at work, causing the observed to differ from the expected. The chi-square test is always testing what scientists call the null hypothesis, which states that there is no significant difference between the expected and observed result. This section presents the statistical chi-square test using the two-country data to assess differences in performance with regards to financial access, export and R&D incidences. As shown in Table 2, the differences between fish SMEs performance in the two countries show statistically significant differences, meaning null hypothesis is rejected. The results suggest that there are differences in fisheries industry performance between Uganda and The Gambia. The results in Table 2 shows strong evidence of statistically significant differences in the two countries industrial performance vis-à-vis financial access, export incidence, R&D incidence, SME support, BDS support and Inter-firm Strategic Alliance associated with greater developments in Uganda's fisheries industry as detailed in Section 2. The developmental role of the Ugandan government as argued by the State theory coupled with dominant industrial fisheries, network cohesion and connectivity in global markets enhance fish production, exports and livelihood support to many people in fishing communities relative to low response of authorities in The Gambia to transform the industry as a major player in the economy. Below is the chi-square result on key performance variables.

Table 2. Chi-Square Test by Financial Access, Export and R&D Incidences

		Country		
		The Gambia	Uganda	Total
FinAccess	No	74	54	128
	Yes	56	106	162
	Total	130	160	290
	Chi-Square 15.621*** *** p-value < 0.0001			
XI	No	106	100	206
	Yes	24	60	84
	Total	130	160	290
	Chi-Square 12.635*** *** p-value < 0.0001			
RDI	No	127	52	180
	Yes	3	108	110
	Total	130	160	290
	Chi-Square 129.026*** *** p-value < 0.0001			
SMES	Chi-Square 42.903*** *** p-value < 0.0001			
BDS	Chi-Square 58.288*** *** p-value < 0.0001			
SA	Chi-Square 3.518*** *** p-value < 0.0001			

Source: Computed from Author's Survey (2011) data using SPSS Version 21.
Note: Chi-Square Test; *** refers to statistical significance of 1%

Financial Access

In this section, we conduct an independent t-test to examine whether there is a significant relative difference between fish

SMEs access to finance in Uganda and The Gambia. We used chi-square statistics to test for differences and levels of significance. The result shows significant p-value of (0.000) below the p-value cut-off point of 0.001 as shown in Table 2. Therefore, the p-value independent t-test shows a significant difference between Uganda and The Gambia in terms of fish SMEs financial access. The test revealed a very strong evidence of statistically significant difference between fish SMEs in Uganda and The Gambia in access to finance at 1% (Chi-square 15.621, df=1, p-values=0.000 < 0.01). The difference between the two countries access to finance is statistically significant, suggesting null hypothesis rejected. Given the significant results, we can conclusively argue that fish SMEs in Uganda and The Gambia reported significant differences in financial access. This is associated with differences in institutional and financial developments, firm and national level capabilities, government policy support, effective network cohesion and global connectivity. The establishment of credit schemes at Bank of Uganda targeting SMEs and fish SMEs in particular, the incentives created for commercial banks to invest in the sector, emergence of leasing and hire purchase firms in the industry and connectivity in global markets resulted to flow of funds and information across the industry. These are largely absent in The Gambia with the dominant artisanal fisheries lacking basic capabilities to access and manage large formal financing.

Export Incidence

The model fit chi-square statistics is used to test the relative Export Incidence (EI) of fish SMEs in Uganda and The Gambia. The model tests empirically test relative differences in the two countries export market participation. The test shows significant p-value at 1%. The p-value independent t-test reported a significant difference between Uganda and The Gambia in terms of Export Incidence. The test revealed a very strong evidence of statistically significant difference between fish SMEs in Uganda and The Gambia in export incidence at 1% (Chi-square 12.635, df =1, p-values=0.000 < 0.01) as shown in Table 2.

Therefore, the null hypothesis is rejected

The difference in export incidence between Uganda and The Gambia is significant at 1%, meaning there is a strong evidence of significant difference between the two countries. This is reflective of Uganda's strong fisheries industry and joint collaboration in addressing collective action problems, skills training, effective linkages and increasing exports to lucrative markets. The joint collaboration in Uganda fisheries industry enables the country to regain export licenses to EU after the fish export crisis in 1997 – 2000. Fish production and exports boosted from 2000 through to 2006 after the industry upgraded its plant layout, landing sites, handling systems, technologies and an overall compliance with SPS and HACCP requirements. Due to the dominance of artisanal fisheries with low industrial fisheries in The Gambia, exports reached its highest at just USD5.9 million in 2010 explained by inability to meet overseas quality and sanitary conditionalities.

Research and Development Incidence

The model fit chi-square statistics is used to test for differences in R&D participation of fish SMEs in Uganda and

The Gambia. The model tests empirically the relative differences in performance vis-à-vis R&D. The test revealed a very strong evidence of statistically significant difference between fish SMEs in Uganda and The Gambia in R&D incidence at 1% (Chi-square 29.026, $df = 1$, $p\text{-values} = 0.000 < 0.01$) as shown in Table 2. The test result show significant p-value of 1% ($p = 0.000 < 0.01$), meaning a statistically significant difference between Uganda and The Gambia in terms of R&D Incidence. The null hypothesis is rejected with statistically significant difference in R&D participation in the two countries. The significant difference in RDI between fish SMEs in Uganda and The Gambia as shown in Table 2 is associated with high export capabilities, network cohesion and vital public sector policy support in Uganda relative to The Gambia. Uganda has a higher level of institutional development as detailed in Chapter four with Maker ere and Mbale Universities providing specialised fish technology training, equipped with fish quality testing laboratories, right legal reforms in the industry, appropriate sector policies, among others, helped transform the fish industry from low key local industrial activities to a strong international market participant. The lack of similar developments in The Gambia denies the country to undertake R&D and enhance its participation and competitiveness in global fish markets.

SME Support

The relative SME support and inter-firm alliances show significant differences between Uganda and The Gambia. Using chi-square tests, the study assesses the differences in fish SMEs support in the two countries. The test shows a very strong evidence of a significance between Uganda and The Gambia in SME support (chi-square 42.903, $df = 3$, $p\text{-value} = 0.000 < 0.001$). The difference is significant at 1% as shown in Table 2, thus null hypothesis is rejected. With Uganda fish SMEs better supported and stronger network cohesion among fish enterprises are quite different with those in The Gambia as they lack the necessary support and linkages. Unlike Uganda, there is no formal fish industry association in The Gambia to dialogue with government on issues relevant to the growth and development of the fisheries sector. In the absence of a network body, coordination of joint activities and policy dialogue tend to suffer, adversely affecting information flow and industry growth. With the Uganda Fish Processors and Exporters Association (UFPEA), industry players can speak in one voice and successfully dialogue with the authorities on issues affecting the industry.

Business Development Support

From Figure 2, Business Development Services (BDS) support also shows statistically significant difference of fish SMEs in the two countries. There is strong evidence of a significant difference between Uganda and The Gambia in BDS support (chi-square- 38.288, $df = 3$, $p\text{-value} = 0.000 < 0.001$). This is contrary to the null hypothesis that suggests no difference in BDS support to fish SMEs in the two countries, thus rejected. Addressing fish export crisis saw many training institutions emerging in the industry in Uganda including the Fisheries Training Institute, Fisheries Research Institute, Maker ere and Mbale Universities among others, providing relevant technical support to fish SMEs' institutional and human resource capacity building. Overall, fish SMEs' institutional developments in Uganda become enhanced much higher than

those in The Gambia manifested in their fish production, exports and broader access to finance. The differences in public sector policy support brought about contrasting outcomes in the two countries' fish industry performance. This is corroborated by earlier analysis in Chapter three with higher fish production and export capabilities in Uganda than in The Gambia. The joint response from key stakeholders (government of Uganda, international development partners, private sector industry association, financial institutions, overseas importers and knowledge infrastructure) to address the fish export crisis in Uganda culminated into addressing collective action problems in the industry. This enabled the industry to export fish to sophisticated global markets where stringent sanitary and fish quality standards matter to a greater extent. The Gambia with no similar training programs offered by its only University relies on training support in the sub-regional countries and local training workshops. The human resource capacity building is limited to transform the industry into global competitiveness.

Inter-firm Strategic Alliance

Inter-firm Strategic Alliance as shown in Table 2 also shows strong evidence of statistically significant difference between the two countries (chi-square = 3.518, $df = 3$, $p\text{-value} = 0.000 < 0.001$), thus the null hypothesis is rejected. The fish export crisis in Uganda has significantly transformed the industry into a complex and deepening business activity with considerable interactions with vertical and horizontal linkages both locally and overseas. This makes productive resources available to the industry, enhance capabilities and promote growth of actors in the industry. Through trade credit, leasing of fish gears, pre-financing schemes, investments in cooler trucks and equity by overseas importers and large fish enterprises enable many fish SMEs access to resources and increase their fish production. The UFPEA provided the necessary network cohesion in addressing industry concerns and promote growth. With no crisis in The Gambia, it lacks the similar monumental pressure to address industry constraints. Linkages are weak to support industry growth and no industry association to dialogue with the authorities on the concerns of the sector. This has undoubtedly limited the availability of productive resources and capabilities of fish SMEs. The industry in The Gambia is not as complex as Uganda with limited emerging firms to deal in downstream fish products. As a result, fish and fish products are exported with minimal processing with large portion being smoked, salted and dried fish which do not fetch much value as fresh chilled fish. The policy support is also inadequate in forming clusters; protect water fish resources and promoting linkages to push the industry forward.

Conclusions and Implications

The paper established that financial, institutional and technological developments matter in enhancing access to productive resources and promote exports to external markets. This has enabled Ugandan fish industry increase fish production, add value and export to lucrative and competitive markets overseas relative to The Gambia where infrastructure is less developed. Secondly, the role of a developmental State is highly manifested in Uganda where the government played a lead role in coordinating efforts, collaborating with key stakeholders and putting the necessary pressure on industry

players to meet EU sanitary requirements. The lack of any monumental pressure to trigger learning, adapting and upgrading technologies in The Gambia, made positive changes in the industry too slow to respond to overseas market demands. This paper undertakes a comparative analysis of fish SMEs' performance in Uganda and The Gambia. Using chi-square statistical test shows strong evidence of significant difference in financial access, export incidence, RDI, SME support, BDS support and Inter-firm Strategic Alliance in Uganda and The Gambia. This is associated with enhanced public sector policy support, greater meso-organisational support, collaborative effort, extensive network cohesion, broader financial and institutional developments in Uganda relative to The Gambia that enabled former regained fish exports licence to increase fish exports to lucrative markets overseas. The Export Incidence as shown in Table 2 reported significant difference in the two countries associated with greater and vibrant fish export market in Uganda than The Gambia. The industry in Uganda is deepened and better developed with more fish industrial firms and enterprises emerging to deal in different downstream products relative to the dominant artisanal fisheries with weak capabilities in The Gambia. In contrast, Uganda had strong industrial fisheries and effective vertical and horizontal linkages with artisanal fisheries, suppliers, customers and overseas trading partners resulting to industry deepening with increase participation in the lucrative export markets of EU, USA, Middle-east and sub-regional fish trade.

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