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Entrepreneurial orientation, learning orientation, cost focus and innovation in agri-food SME of Uganda

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ABSTRACT
Agri-food Small and Medium Enterprises (SMEs) play a key role in the economies of most developing countries. With increasing challenges and competitiveness, innovation has been shown to play a critical role in sustaining growth of the numerous agri-food SMEs in developing countries. This innovation is influenced by several factors including entrepreneurial orientation (EO) of the firm. This study introduces learning orientation and cost focus into the EO-Innovation paradigm with the aim of understanding the relationship among EO, learning orientation, cost focus and innovation. The study was conducted in the districts of Kampala, Mukono, Wakiso and Jinja in Uganda. These districts collectively have the highest concentration of agri-food firms in the country. Primary cross-sectional data were collected using semi structured questionnaires from a cross-section of 521 SMEs spread across the study area. Data were analyzed using multivariate structural equation modeling in AMOS v.23. Results suggest the importance of proactiveness in enhancing learning orientation, cost focus and innovation. On the other hand, entrepreneurial proclivity was seen to have significant influence on learning orientation and cost focus but not on innovation. The findings of this study have implications in agri-food SME learning orientation and cost focus. In essence, helping SMEs to become proactive or have high levels of proclivity would also increase their cost focus and learning orientation which are all important for the sustainability of agri-food SMEs.

Keywords: Agri-food, entrepreneurial proclivity, learning orientation, proactiveness, small and medium enterprise, Uganda

RÉSUMÉ
Les petites et moyennes entreprises (PME) agroalimentaires jouent un rôle clé dans les économies de la plupart des pays en développement. Avec les défis croissants et la compétitivité, l'innovation a été démontrée comme jouant un rôle essentiel dans la croissance durable des nombreuses PME agroalimentaires dans les pays en développement. Cette innovation est influencée par plusieurs facteurs, dont l'orientation entrepreneuriale (EO) de l'entreprise. Cette étude introduit l'orientation vers l'apprentissage et la focalisation sur les coûts dans le paradigme EO-Innovation dans le but de comprendre la relation entre l'EO, l'orientation vers l'apprentissage, la focalisation sur les coûts et l'innovation. L'étude a été réalisée dans les districts de Kampala, Mukono, Wakiso et Jinja en Ouganda. Ces districts ont collectivement la plus forte concentration d'entreprises agroalimentaires du pays. Des données primaires transversales ont été collectées à l'aide de questionnaires semi-structurés

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auprès d'un échantillon de 521 PME réparties dans la zone d'étude. Les données ont été analysées à l'aide de la modélisation d'équations structurelles multivariées dans AMOS v.23. Les résultats suggèrent l'importance de la proactivité dans l'amélioration de l'orientation vers l'apprentissage, la focalisation sur les coûts et l'innovation. D'autre part, la propension entrepreneuriale a été constatée pour avoir une influence significative sur l'orientation vers l'apprentissage et la focalisation sur les coûts, mais pas sur l'innovation. Les résultats de cette étude ont des implications pour l'orientation vers l'apprentissage et la focalisation sur les coûts des PME agroalimentaires. En substance, aider les PME à devenir proactives ou à avoir un niveau élevé de propension augmenterait également leur focalisation sur les coûts et leur orientation vers l'apprentissage, qui sont tous importants pour la durabilité des PME agroalimentaires.

Mots-clés : Agroalimentaire, propension entrepreneuriale, orientation vers l'apprentissage, proactivité, petites et moyennes entreprises, Ouganda

INTRODUCTION

Agriculture play an important role in the growth and development of most sub-Saharan African (SSA) countries. The sector is important for employment and poverty reduction (Christiaensen *et al*., 2011; Christiaensen and Martin, 2018; World Bank, 2020). Its contribution to gross domestic product (GDP) and employment in these countries is enormous and cannot be ignored. In Uganda for instance, 25% of the GDP is from agriculture (UBOS, 2022), with over 70% of working population employed in the sector (World Bank, 2018; World Bank, 2021). With the renewed interest in agriculture as a facilitator of growth (Gassner *et al*., 2019), agro- industrialization and agro-processing become key components of overall agricultural development. This agro-industrialization and agro-processing is usually dominated by agro-based small and medium enterprises (UIA, 2016) that are involved in several value adding activities in the agricultural value chain.

These agro-based small and medium enterprises (SMEs) play important role in driving demand for primary agricultural produce, in addition to providing support services and inputs to the numerous smallholder farmers (Ba *et al*., 2019; Akumu *et al*., 2020). Growth of these SMEs is thus critical to sustaining overall agricultural growth, in addition to sustaining the livelihoods of millions of people. In addition to increasing employment opportunities and increased market for smallholder farmers, growth of agro-based SMEs also leads to increased GDP, and expands the government tax base (Chege and Wang, 2020).

In this era of dynamic global environment, growth of agro-based SMEs requires that they become competitive (Otsuka and Ali, 2020; Otsuka and Fan, 2021). Competitive agro-based SMEs are able to adapt to the needs of the dynamic global value chains (Amanor, 2019; Kos and Kloppenburg, 2019; Feyaerts *et al*., 2020). Consequently, with increasing global and local scale competitiveness in the agricultural sector, innovation has been shown to drive sustainability of agro-based SMEs (Caiazza *et al*., 2014; Devaux *et al*., 2018). In fact, studies have shown that SME innovation improved performance and profitability (Gellynck *et al*., 2015; Ho *et al*., 2018; Kamuri, 2021; Leo *et al*., 2022).

With the recognition of the need to promote agro-industrialization and agro-processing as one of the growth strategies for the Ugandan economy (Government of Uganda, 2013; Government of Uganda, 2020), promoting innovation among agro-based SMEs is vital. These innovation which may involve minor to major changes in routines (Najib and Kiminami, 2011; Caiazza *et al*., 2014; Aksoy, 2017), requires that firms learn "on the job" and undertake cost cutting strategies so as to achieve their goals. Innovation is an important characteristic of entrepreneurship that creates a difference between entrepreneurial ventures and non-

entrepreneurial ones (Kanu, 2018). Consequently, an understanding of the role played by agro-based SMEs on innovation is critical to enhancing agro-based SME innovation in developing countries. This study provides empirical evidence on the influence of entrepreneurial orientation and innovation in the agro-food sector of Uganda. The finding of this study is important in developing strategies for improving SMEs growth through innovation.

LITERATURE REVIEW AND HYPOTHESES

Agri-food SME willingness to undertake entrepreneurial activities shows its level of entrepreneurial orentation (Wiklund and Shepherd, 2005). Consequently, entrepreneurial orientation refers to the extent to which each agri-food SMEs undertakes the different entrepreneurial activities (Anderson *et al*., 2009). These entrepreneurial activities include risk taking, proactiveness and proclivity. Risk taking involves identifying and testing potential strategies that have the potential to grow the business but can also lead to losses, while proactiveness involves staying alert to address business challenges as and when they appear. On the other hand, proclivity refers to the SMEs preference for some level of risk for which if avoided and/or overcomed would lead to profits for the firm. Consequently, EO is influenced by a number of factors that are both internal and external to the SME. Previous studies have observed that each of the different EO dimensions have differential influence on performance either directly or indirectly by influencing the level of innovation undertaken by a given firm (Li *et al*., 2009; Rauch *et al*., 2009). While controlling firm specific characteristics, a study by Iza and Dentoni (2020) reported that a firm's EO had a negative influence on innovation aimed at improving its marketing activities. They however reported positive and significant influence of proactiveness on both customer focused innovation aimed at the product and system-focused innovation aimed at the changing the business process. Similarly, they reported an insignificant influence of intentions on all aspects of innovation. Li *et al*. (2009) reported that overall EO had a significant positive influence on firm performance, while Rezaei and Ortt (2018) reported that the association between EO and performance and innovation can be intermediated by how EO influences functional performance. The influence of EO on firm innovation and performance can thus be both direct and indirect (Diabate *et al*., 2019; Soares and Perin, 2020).

Although there is some evidence that EO has a strong relationship with a firm's level of innovation and performance, some authors have provided counter evidence that it does not influence SME innovative performance. For instance, a study by Okangi (2019) reported a negative influence of proactiveness on profitability of construction firms in Tanzania. Moreover EO may only be relevant to innovation if applied under the right circumstances and context (Chirico *et al*., 2011). For some firms, EO is not relevant, while for others, EO plays a vital part in enhancing innovation. In the agri-food sector for instance, changes to the product must be in line with what the consumers desire and are willing and able to pay for. Where EO leads to negative effect on innovation, the firm will not undertake such entrepreneurial activities. Similarly, the role of EO on learning orientation and cost focus are also generally lacking. This inconclusive findings on the importance EO on innovation and performance becomes realistic in some sectors of the economy and regions for which entrepreneurial orientation research is critically lacking.

Several studies on EO have either been undertaken in advanced economies (Li *et al*., 2009; Gellynck *et al*., 2015; Rezaei and Ortt, 2018; Gupta *et al*., 2019; Soares and Perin, 2020) or for non-agro-food SMEs (Okangi, 2019). In the agri-food sectors of developing countries, EO perspective is unique and requires its own level of understanding with supporting evidence. This is because developing country agro-food competitive strategies requires an understanding of the developing context of EO-innovation paradigm. Whereas there are few studies that try to address this gap for developing countries, they either focus on primary production (Iza and Dentoni, 2020; Tindiwensi *et al*., 2020) or on agro-trade (Kamuri, 2021). It is however,

important to extend such analysis to agro-food value chain SMEs that are becoming important in sustaining the economy of most developing countries (Devaux *et al*., 2018). This study introduces learning orientation and cost focus to the EO – innovation paradigm. The conceptualized relationship is presented in Figure 1. In this study, learning orientation is considered as internal feeling in the entrepreneur's mind that makes continuously evaluate and recalibrate inputs and outcome combinations for purposes of achieving growth (Gellynck *et al*., 2015; Micheels and Gow, 2015). In other words, it is a process of continuous learning. On the other hand, cost focus in this study involves firms undertaking deliberate efforts to attract potential customers by their prices (Micheels and Gow, 2015). Both learning orientation and cost focus are expected to influence the level of innovation observed for the different SMEs. In the agro-food sector, innovation refers to changes in routine (Najib and Kiminami, 2011; Caiazza *et al*., 2014; Aksoy, 2017; Iza and Dentoni, 2020). These changes are routine and can target the product (product innovation), the marketing process (market innovation), or the internal operations of the business (process innovation) (Ajer *et al*., 2023).

The conceptual framework gave a rise to several hypotheses that were tested empirically. These hypotheses were:
H1a: Proactiveness has a positive effect on agri-food SME learning orientation
H1b: Proactiveness has a positive effect on agri-food SME Cost focus
H1c: Proactiveness has a positive effect on agri-food SME Innovation
H2a: Entrepreneurial proclivity has a positive effect on agri-food SME learning orientation
H2b: Entrepreneurial proclivity has a positive effect on agri-food SME Cost focus
H2c: Entrepreneurial proclivity has a positive effect on agri-food SME Innovation
H3a: Agri-food SME risk taking ability has a positive effect on agri-food SME learning orientation

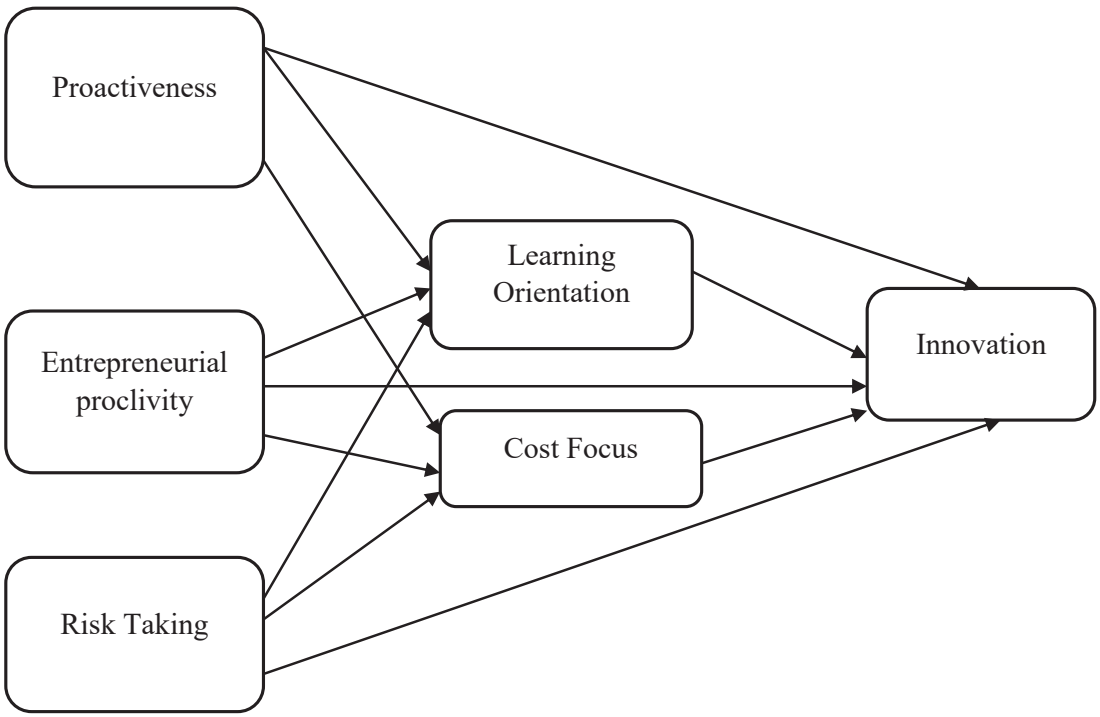

Figure 1. Conceptual framework of the study
Modified from Iza & Dentoni (2020)

H3b: Agri-food SME risk taking ability has a positive effect on agri-food SME Cost focus
H3c: Agri-food SME risk taking ability has a positive effect on agri-food SME Innovation
H4: Agri-food SME learning orientation has a positive effect on agri-food SME Innovation
H5: Agri-food SME cost focus has a positive effect on agri-food SME Innovation

METHODOLODGY

Study context and design. This study applied a cross-sectional research approach to understand the relationship among entrepreneurial orientation, learning orientation, cost focus and SME innovation. A cross-sectional design was appropriate given the nature of study which was to test the proposed hypotheses without the need for a follow-up. Consequently, primary cross-sectional data were collected from a sample of agri-food SMEs selected from Kampala, Mukono, Wakiso and Jinja districts in Uganda. The sample size for this study was determined following the Krejcie and Morgan (1970) approach. Given that there were over 100,000 SMEs in the study location (UIA, 2016), the Krejcie and Morgan approach dictated that this study takes a sample of 384 SMEs. According to Groves and Peytcheva (2008) the average non-response rate for survey research is 36%. Consequently, the sample size was corrected upwards, by 36% to 521 SMEs. This gave a total sample size of 521 SMEs. The distribution of the sample across all the study locations was proportional to the distribution of SMEs across the study locations (Table 1).With the exception of Jinja district that is geographically classified to be in Eastern Uganda, all the other three districts are classified as being located in central Uganda. In fact, Mukono and Wakiso districts both border Kampala, Uganda's capital city, while, Jinja is located some 83 kilometers east of Kampala. These four districts were purposively selected since they collectively have the highest concentration of agri-food SMEs in the country. For each of the district, a list of registered SMEs was obtained from Uganda Investments Authority. This list formed the sampling frame. Basing on the need to have realistic representation for each category of SMEs by role in the value chain (retailer, wholesaler, processor, transporter, and exporter), a representative sample was selected from each sampling frame using simple random sampling and included in the study.

Data collection and measurement of constructs. Primary data used in this study were collected using quantitative researcher administered questionnaires. The questionnaire was administered to the study participants. Specifically, the participants included agri-food SME owners or manager or their representatives in the event that they were un available but willing to delegate to another to answer the questions on their behalf. This choice was informed by the fact that as entrepreneurial ventures, it is the owners and managers who are most likely to possess the entrepreneurial traits for which the study was interested in. It is the role of owner and/or manager to direct the agri-food SME towards entrepreneurial success. Thus, interviewing the owner and/or manager would give more valid results on the aspects under study. Only those firms that gave voluntary consent to participation were included in the study. The questionnaire which contained questions on the firm's characteristics, and on the constructs under study were administered to respondents digitally using the mobile application Kobo collect. Digital data collection is preferred to hard-copy paper data collection since it saves time and tends to be more accurate if administered properly. Consequently, data were collected by a team of ten enumerators who all had experience in collecting data digitally and were first trained on the questionnaire before field work. All the enumerators also had some background in agribusiness.

The main constructs in this study were proactiveness, entrepreneurial proclivity, risk taking ability, learning orientation, cost focus and innovation. Unlike firm characteristics such as SME size that can simply be measured directly, measurement of these constructs usually requires the use of several psychometric statements which are usually answered on a Likert scale. The study adopted and modified previous used studies in measuring these constructs (Ar and Baki, 2011; Gellynck *et al*., 2015; Aksoy, 2017; Iza

and Dentoni, 2020). The modification of the constructs involved rephrasing the questions to match the context of the study area, making them more relevant to the location. In order to avoid the challenges that usually involves use of an odd numbered Likert scale, this study opted for a 6-point Likert scale. This 6-point Likert scale helps to avoid the tendency of respondent choosing a neutral option if they seem not to have a clear direction of the response (Chomeya, 2010).

Data analysis. On each day of field work, the research team performed preliminary data cleaning as a way of early detection of errors and anomalies during entry, before uploading the data on the same day on to the server. Once the field work was completed, collected data were exported to SPSS statistical package for onward analysis. Further cleaning was conducted prior to actual analysis. Data analysis involved descriptive statistics and Partial Least squares Structural equation modelling (PLS-SEM). The PLS-SEM, a multivariate analysis approached was estimated using AMOS v.23 software.

RESULTS

Sample characteristics. Majority of the Agri-food SMEs were from Kampala (37%) and Wakiso (36%). In this study, 68% of the agri-food firms interviewed could be classified as small (Table 1). Medium enterprises constituted the least category with only 14% of the SMEs. Majority (58%) of the agri-food SMEs were male owned. Slightly more than a third (35%) of the SME owners had undergraduate university degrees, while, about 27% had secondary level education, and 13% had diplomas. Under 3% of the SMEs owners had no formal education, while, over 4% had post graduate qualifications. Over 28% of agri-food SME managers had undergraduate bachelor degrees, while, about 26% had secondary school level qualifications and about 13% had various diplomas. About 12% of the SME managers had primary level education or no educational background. About 40% of the SMEs operated wholesalers, while about 25% operated as processors. Other types of agri-food SMEs included retailers (18%),

Table 1. Firmographics statistics of agri-food SME

Variable	Category	Freq.	Percent
District	Jinja	71	13.6
	Kampala	195	37.4
	Mukono	69	13.2
	Wakiso	186	35.7
Size of SME	Micro	94	18.0
	Small	354	68.0
	Medium	73	14.0
Gender of SME owner	Male	305	58.5
	Female	216	41.5
Level of Education of SME owner	No formal education	15	2.9
	Primary	48	9.2
	Ordinary Level	72	13.8
	Advanced Level	68	13.1
	Certificate	42	8.1
	Diploma	67	12.9
	Undergraduate degree	184	35.3

	Post graduate diploma	11	2.1
	Masters	11	2.1
	PhD	3	0.6
Level of Education of SME manager	No formal education	90	17.3
	Primary	24	4.6
	Ordinary Level	60	11.5
	Advanced Level	80	15.4
	Certificate	34	6.5
	Diploma	70	13.4
	Undergraduate degree	148	28.4
	Post graduate diploma	10	1.9
	Masters	5	1.0
Type of Agri-food SME Agri-food retail		92	17.7
	Agri-food Wholesale	208	39.9
	Agri-food processor	132	25.3
	Agri-food transporter	50	9.6
	Agri-food exporter	39	7.5

Reliability and Validity. Prior to assessing the relationship between entrepreneurial orientation, cost focus, learning orientation and innovation, the study first evaluated the reliability and validity of the constructs. The first focus of assessing for reliability and validity was to ensure to that all the factors loadings were above 0.5 (Hair *et al*., 2010). Items with factors loadings below 0.5 were dropped from the analysis. Thus, for proactiveness, one item was dropped while for risk taking, two items were dropped. All the items for entrepreneurial proclivity, learning orientation, and innovation met the threshold, and thus none was dropped. Items with non-significant factor loadings were also dropped from the analysis (Table 2). Thus, in the case of cost focus, one item was dropped. Where an item was dropped, a new Cronbach alpha was computed to assess improvement in internal reliability. The final analysis showed that all the Cronbach's alphas were above 0.75, indicating good internal reliability of the constructs (Nunnally, 1994). Where an item was deleted from analysis, re-analysis of the Cronbach's alpha showed improvements in the Cronbach's alpha value. After all the items and constructs had met the threshold for factor loadings and Cronbach's alpha, analysis proceeded to assess the composite validity and convergent validity using composite reliability (CR) and Average Variance Extracted (AVE). Results presented in Table 3 showed that all the constructs had composite reliability values above 0.7, and AVE values above 0.5. A CR value of at least 0.7 confirms composite reliability while, an AVE value of 0.7 confirms convergent validity (Fornell and Larcker, 1981; Hair *et al*., 2010).

After the reliability and validity assessment, the study then estimated the structural model to test for the hypothesized relationships. This was achieved using the multivariate analysis through structural equation modelling (SEM). During the multivariate analysis in SEM, model fit was improved by co-varying errors with high covariances. The final structural model fits indices showed good model fit (Table 2). Specifically, the ratio of the chi-square to degrees of freedom was 2.926, less than the cut-off of three. The Tucker-Lewis Index (TLI) = 0.933 (spec. 0.90) and the Comparative Fit Index (CFI) = 0.941 (spec. 0.90) all met the acceptable baseline values. Similarly, the root mean square error of approximation (RMSEA) of 0.061 was less than the acceptable maximum of 0.08. Lastly, the Standardized Root Mean Squared Residual (SRMR) value of 0.0383

was less than the acceptable maximum of 0.05 (Pavlov *et al*., 2021). During the analysis, path analysis was performed for the pooled sample and for the sub-group sample. The grouping factors were business size, education level of the owner and manager, type of agri-food SME, and gender of the SME owner.

Table 2. Mean of scale items, internal consistency and factor loadings per construct

Construct/Scale Item	Mean	SD	CFA factor loading
Proactiveness (α1 = 0.813, α2 = 0.846)			
In dealing with other people or firms, we routinely initiate actions first and wait for the other people or firms to respond	3.83	1.15	0.618
In this firm, we have a preference for "stepping-up" to get things going as opposed to sitting and waiting for someone else to do it	4.32	1.41	0.834
In this firm, we have a tendency of planning ahead on projects	4.76	1.10	0.796
In our business operations, we anticipate future challenges, needs and changes	4.60	1.30	0.814
In dealing with other people or firms, we typically respond to actions first initiated by those other people†	3.97	1.06	0.338
Entrepreneurial proclivity (α = 0.942)			
In our firm, we encourage everyone to come up with innovative marketing approaches, knowing well that some will fail	4.62	1.26	0.783
We have a conviction that a change in the market generates a positive opportunity for our business	4.38	1.21	0.673
In our firm, we tend to dialogue more regarding opportunities rather than challenges	4.58	1.14	0.835
In our firm, we prefer to 'play it safe'	5.09	0.88	0.745
In our firm, we prefer implementing our plans only if we are certain they will work	4.74	1.12	0.734
When it comes to solving problems in our business, we have strong preference for new and creative remedies more than the remedies of conventional wisdom	4.60	1.21	0.871
Owing to the nature of our business environment, we think it is best to explore our options cautiously	4.60	1.13	0.834
In our firm, we have preference for low-risk investment projects which have normal and certain rates of return	4.37	1.27	0.677
In our business, we generally avoid conflicts with competitors, preferring a 'live-and-let-live' attitude	4.75	1.27	0.836

	4.69	1.26	0.884
In our business, we have strong preference for using tested and tried products or services for our business operations			
Risk taking (α1 = 0.658, α2 = 0.794)	4.15	1.47	0.518
In times of uncertainty, we adopt a brave, aggressive stance so as to maximize the chances of exploiting potential opportunities			
	4.44	1.22	0.895
In this firm, we have a willingness to invest a great deal of time on something that might yield high returns			
	4.36	1.32	0.910
In our firm, we are willing to invest a lot of money on something that might yield high returns			
	3.95	1.35	0.217
In general, in our firm, we do not like to take on high-risk projects†			
	3.70	1.22	0.130
In our firm, we usually take bold actions by trying the unknown†			
Learning orientation (α = 0.946)	4.58	1.07	0.836
Our potential to learn hastily than our competitors are the vital to our competitive advantage			
	4.78	1.05	0.812
Learning as a key to continuous improvement is one the basic values of our firm			
	4.95	0.97	0.742
In our firm, we take learning as an investment, not an expense			
	4.71	1.19	0.830
In our firm, learning is considered as a key ingredient required to guarantee survival in this line of business			
	4.86	1.03	0.834
Everyone in our firm are all in full agreement with the organizational vision			
	4.84	1.09	0.858
Everyone working in our firm are committed to the contribute to achieving goals of this firm			
	4.98	1.03	0.848
Employees of this firm look at themselves as partners in mapping the directions of the firm			
	4.63	1.29	0.865
All employees in our firm are fully aware that their perception of the marketplace must be examined and adapted continuously			
Cost focus (α1 = 0.727, α2 = 0.889)	4.91	1.07	0.852
In our firm, achieving a high operating efficiency is a top priority			
	4.83	1.09	0.826
In our firm, we have a supreme responsibility for reducing cost on our firm			
In our firm, we take achievement of economies of scale or scope as an important element of our firm's strategy			
	4.75	1.14	0.835
We closely pay attention to the effectiveness of key processes and business operations			
	4.99	1.07	0.753

We do not look to improve our firm operations in order to lower our costs	3.98	1.53	0.031ns
Innovation (α = 0.811)			
We develop new ideas of improving our products/services	5.24	0.76	0.696
We implement new techniques in production and processing of our products/services	5.23	0.77	0.741
We adopt new techniques in our operations	5.19	0.71	0.768
We create new processes in our operations in order to improve efficiency	5.25	0.71	0.675

n=521
Items were measured on a 6-point Linkert scale.
Goodness of fit: Chi-square (469) = 1372.307, p < 0.001; chi-square/d.f. = 2.926, CFI = 0.941, TLI = 0.933, RMSEA = 0.061 (Pclose = 0.000), SRMR = 0.0383
†Indicates item that was dropped due to low loading value.
α Cronbach's alpha, α1 and α2 Cronbach's alpha before and after items were dropped

Table 3. Construct Validity of the measurement Model

Construct	1	2	3	4	5	6	CR	AVE
Proactiveness (1)	1.000						0.786	0.594
Entrepreneurial proclivity (2)	0.804	1.000					0.943	0.625
Risk Taking (3)	0.703	0.711	1.000				0.830	0.632
Learning orientation (4)	0.803	0.880	0.720	1.000			0.946	0.687
Cost Focus (5)	0.836	0.876	0.770	0.886	1.000		0.889	0.668
Innovation (6)	0.685	0.634	0.595	0.609	0.607	1.000	0.812	0.520

n=521; CR: Composite reliability, AVE: Average Variance Extracted.

Pooled and Group model results using multivariate analysis. Table 4 presents results of the multivariate analysis for the relationship between entrepreneurial orientation, cost focus learning orientation and innovation. It shows that agri-food SME's proactiveness has a positive and significant effect on learning orientation (p<0.01), cost focus (p<0.01), and innovation (p<0.1), thus, supporting hypothesis H1. On the other hand, entrepreneurial proclivity had a positive and significant effect on agri-food SME's learning orientation (p<0.01), and agri-food SME's cost focus (p<0.01), but had no significant effect on agri-food SME innovation, thus partially supporting hypotheses H2. Risk taking potential of the Agri-food SME did not have any significant effect on learning orientation, cost focus and innovation, thus hypotheses H3 was not supported. Similarly, both agri-food SME learning orientation and cost focus did not have any significant effect on agri-food SME innovation, thus both H4 and H5 were not supported in the pooled model.

Sub-group level analysis by size of agri-food SMEs shows differences in the relationship between entrepreneurial orientation, learning orientation, cost focus and innovation (Table 5). Specifically, the influence of agri-food SMEs proactiveness on learning orientation was only significant and positive for agri-food SMEs classified as small, but not for micro and medium agri-food firms. Similarly, the influence of agri-food SMEs proactiveness on cost focus was only significant and positive for agri-food SMEs classified as small, but not for micro and medium agri-food firms. On the other hand, the influence of agri-food SMEs proactiveness on innovation was only significant and positive for agri-food SMEs classified as medium, but not for micro and small agri-food firms. The influence of entrepreneurial proclivity in learning orientation was positive and significant for both small and medium agri-food firms, but not for micro agri-food firms.

Table 4. Pooled Model Results

Path and perspectives			Std.β	S. E	C.R	P-value	Result
Proactiveness	→	Learning orientation	0.475	0.150	3.908	0.000***	H1a Supported
Proclivity	→	Learning orientation	0.493	0.083	5.349	0.000***	H2a Supported
Risk Taking	→	Learning orientation	0.032	0.065	0.564	0.572	H3a Not supported
Risk Taking	→	Cost focus	-0.021	0.071	-0.358	0.720	H3b Not supported
Proclivity	→	Cost focus	0.643	0.088	6.710	0.000***	H2a Supported
Proactiveness	→	Cost focus	0.377	0.155	3.086	0.002 ***	H1a Supported
Learning orientation	→	Innovation	2.591	1.547	0.913	0.361	H4 Supported
Cost focus	→	Innovation	-4.157	2.214	-0.996	0.319	H5 Not supported
Proactiveness	→	Innovation	1.454	0.556	1.760	0.078*	H1c Supported
Proclivity	→	Innovation	1.156	0.685	0.823	0.410	H2c Not supported
Risk Taking	→	Innovation	-0.214	0.202	-0.673	0.501	H3c Not supported

Chi-square = 563.11; df=469; Chi-square/df=2.926; p=0.000; CFI=0.941; TLI=0.933; IFI=0.941; RM-SEA=0.061 (PCLOSE=0.000); SRMR=0.0383. S.E, C.R, P-value indicate Standardized estimates, Standard errors, Critical ratio and probability value respectively.
*, ** and *** indicate significance at p<0.1, p<0.05 and p<0.01, respectively

Table 5. Group level analysis for business size typology

Path and perspectives			Standardized estimates		
			Micro	Small	Medium
Proactiveness	→	Learning orientation	-0.077	0.499***	0.079
Proclivity	→	Learning orientation	0.869	0.512***	0.501***
Risk Taking	→	Learning orientation	0.248	-0.007	0.383
Risk Taking	→	Cost focus	-0.131	-0.065	0.063
Proclivity	→	Cost focus	0.151	0.659***	0.968***
Proactiveness	→	Cost focus	0.943	0.406***	-0.047
Learning orientation	→	Innovation	1.453	2.465	0.807
Cost focus	→	Innovation	-4.564	-3.234	-1.028
Proactiveness	→	Innovation	3.447	0.606	1.458**
Proclivity	→	Innovation	0.886	1.054	0.026
Risk Taking	→	Innovation	-0.830	-0.021	-0.424

Notes: *, ** and *** significant at p< 0.1, p< 0.05 and p<0.01, respectively

Table 6 presents results of sub-group analysis by level of education of SME owner and manager. It shows that the influence of agri-food SME proactiveness on learning orientation was positive and significant only for SME managers and owners with diploma or lower level of education. On the other hand, the influence of agri-food SME proactiveness on agri-food SME cost focus was positive and significant only for SMEs whose owners had at least an undergraduate degree, and for SME SMEs, whose owners had at most a diploma. The influence of agri-food SME entrepreneurial proclivity on learning orientation was significant for all levels of education of both owner and manager, while the influence of agri-food SME entrepreneurial proclivity on cost focus was significant for all levels of education of SMEs owners, but, only significant for SME' whose managers had at most a diploma.

Sub-group level analysis by type of agri-food SMEs indicates that agri-food SME type moderates the relationship between entrepreneurial orientation, learning orientation, cost focus and innovation. Results in Table 7 show that agri-food SMEs proactiveness had significant positive effects on learning orientation and cost focus only for agri-food transporters or exporters. There was no significant effect of proactiveness on learning orientation and cost focus for agri-food retailers, wholesalers and processors. Agri-food SME proactiveness also had a significant positive effect on agri-food processors, but not for agri-food retailers, wholesalers and transporters or exporters. Results also showed that the entrepreneurial proclivity had a significant positive effect on learning orientation for agri-food retailers, wholesalers and processors. It also had a positive and significant effect on cost focus for agri-food retailers, and processors only. Risk taking had a significant positive effect on learning orientation of agri-food processor. Agri-food SME learning orientation also had a significant effect on innovation of agri-food transporters or exporters.

Table 6. Group level analysis education level of owner and manager

Path and perspectives			Standardized estimates			
			Education Owner		Education manager	
			Degree or more	Diploma or less	Degree or more	Diploma or less
Proactiveness	→	Learning orientation	0.228	0.602***	0.314	0.522***
Proclivity	→	Learning orientation	0.709***	0.336**	0.732**	0.418***
Risk Taking	→	Learning orientation	0.040	0.075	-0.087	0.070
Risk Taking	→	Cost focus	-0.190	0.019	-0.343	0.020
Proclivity	→	Cost focus	0.695***	0.747***	0.406	0.655***
Proactiveness	→	Cost focus	0.478*	0.237	0.894	0.329***
Learning orientation	→	Innovation	-0.396	-1.272	-0.781	1.411
Cost focus	→	Innovation	0.816	-3.612	0.763	-2.587
Proactiveness	→	Innovation	0.356	3.073	1.531	1.100
Proclivity	→	Innovation	-0.181	2.532	-0.520	0.953
Risk Taking	→	Innovation	0.304	0.109	-0.171	-0.053

Notes: *, ** and *** significant at p< 0.1, p< 0.05 and p<0.01, respectively

Table 7. Group level analysis for type of agri-food SME

Path and perspectives			Standardized estimates			
			Retailer	Wholesaler	Processor	Transporter or exporter
Proactiveness	→	Learning orientation	0.101	0.494	0.076	1.535***
Proclivity	→	Learning orientation	0.800***	0.481*	0.616***	-0.262
Risk Taking	→	Learning orientation	0.112	0.019	0.304*	-0.259
Risk Taking	→	Cost focus	0.104	-0.046	0.142	-0.216
Proclivity	→	Cost focus	1.094***	0.305	0.723***	0.263
Proactiveness	→	Cost focus	-.210	0.755*	0.122	0.929***
Learning orientation	→	Innovation	1.107	-0.535	0.885	2.107*
Cost focus	→	Innovation	0.039	0.523	-0.996	-2.993
Proactiveness	→	Innovation	0.812	0.607	0.521*	0.812
Proclivity	→	Innovation	-.736	0.080	0.563	0.402
Risk Taking	→	Innovation	-0.531	0.196	0.047	0.127

Notes: *, ** and *** significant at p< 0.1, p< 0.05 and p<0.01, respectively

Table 8. Group level analysis for gender of agri-food SME owner

Path and perspectives			Standardized estimates	
			Male	Female
Proactiveness	→	Learning orientation	0.340***	0.908*
Proclivity	→	Learning orientation	0.620***	0.087
Risk Taking	→	Learning orientation	0.030	0.011
Risk Taking	→	Cost focus	-0.074	0.048
Proclivity	→	Cost focus	0.702***	0.520**
Proactiveness	→	Cost focus	0.364***	0.437
Learning orientation	→	Innovation	2.082	1.144
Cost focus	→	Innovation	-3.723	-1.511
Proactiveness	→	Innovation	1.750*	0.675
Proclivity	→	Innovation	0.997	0.701
Risk Taking	→	Innovation	-0.306	-0.147

Notes: *, ** and *** significant at p< 0.1, p< 0.05 and p<0.01, respectively

Table 8 presents results of sub-group analysis by level of education of SME owner and manager. It shows that gender of the SME owner moderates the relationship between entrepreneurial orientation, learning orientation, cost focus and innovation. Whereas the influence of agri-food SME proactiveness was significant for both male and female owned agri-food SMEs, the influence of proactiveness on agri-food firm cost focus and SME innovation were only significant for male owned firms, but not for female owned firms. Similarly, the effect of proactiveness on SME innovation was only significant for male owned agri-food firms, but not for female owned firms. The effect of entrepreneurial proclivity on learning orientation was also significant only for male owned firms but not for female owned firms. However, the effect of entrepreneurial proclivity on cost focus was significant for both male and female owned firms.

DISCUSSION

This study assessed the relationship among entrepreneurial orientation, learning orientation, cost focus and innovation for a cross-section of agri-food small and medium enterprises in Uganda. Whereas entrepreneurial orientation has many dimensions, this study focused on proactiveness, entrepreneurial proclivity and risk taking which all play a vital role in fostering innovation among small and medium enterprises. Results showed that entrepreneurial proactiveness is important for improving learning orientation of agri-food firms. Proactiveness presupposes that entrepreneurs take charge of all aspects of the business and avoid being taken by surprise on key aspects of the business. Given the uncertainty involved in business, learning becomes important for entrepreneurs who are proactive. Continuous learning has been observed to be a pre-requisite for SME business performance (Wahyuni and Sara, 2020). This explains why proactiveness positively influenced learning orientation. This finding implies that proactiveness is one of the dimensions of entrepreneurial orientation that is responsible for the observed influence of entrepreneurial orientation on learning orientation (Huang and Wang, 2011; Shaher and Ali, 2020).

Similarly, entrepreneurial firms that are usually proactive would also be cautious of their cost. This is because blindly being in charge trying to achieve business goals may instead push certain cost higher, making such firms uncompetitive. According to Forés (2019), proactiveness usually becomes costly to firms. In this study, results showed that proactiveness positively influenced cost focus. This implies that, in addition to the willingness to take up new opportunities as soon as they appear, agri-food firms also pay attention to the cost implications of such opportunities. Agro-food firms also need to understand the timeliness of their proactiveness so as to fully benefit from it (Srinivasan*et al*., 2005; Poll*et al*., 2018).

Results of this study also suggest that firms that are proactive are also most likely innovative. Only firms willing to take up new opportunities would also be willing to make changes to several aspects of their operations including both product and market innovations. Generally, entrepreneurial orientation is expected to influence firm innovation and innovative performance (Huang and Wang, 2011; Pérez-Luño *et al*., 2011; Jalilvand *et al*., 2019; Song *et al*., 2019). However, the specific influences of each of the dimensions of entrepreneurial orientation may vary by sector and firm. For instance, a study by Khalili and Fazel (2013), observed that proactiveness did not have significant influence for petrochemical firms in Iran. However, Al Mamun and Fazal (2018) reported that proactiveness significantly influenced performance and innovation of micro enterprises in Malaysia. Proactiveness seems to be more visible to relatively small

firms such those in this study. This is because proactiveness is highly linked to personal initiatives (Hahn *et al*., 2012).

Entrepreneurial proclivity which is a firm's willingness to undertake entrepreneurial activities and processes (Zhou, 2007) influences a firm's ability and capacity to learn new strategies and approaches to doing business. Consequently, in this study, results suggest that entrepreneurial proclivity is important for agri-food firm's learning orientation. Previous studies also observed similar results (Huang and Wang, 2011; Soares and Perin, 2020). Additionally, entrepreneurial proclivity may involve regular investments into processes that improve the performance of firm. Such investments have cost implications. It is thus important that agri-food firms that practice entrepreneurial proclivity equally focus on cost, failure to do so may make the entrepreneurial efforts counterproductive. This finding suggests that even when firms are adopting entrepreneurial strategies, they need to be careful that their approaches do not make them counterproductive by increasing their cost and thus reducing their profitability.

Whereas risk taking is crucial to agribusiness, this study finds no significant influence of risk taking on learning orientation, cost focus, and innovation. Similar results were reported by Akbar *et al*. (2020). This is attributed to the fact that the firms included in this study were dealing in agri-food value chain activities beyond primary production. In the agribusiness, risk is usually more pronounced in primary production, but less encountered at levels above primary production. According to Imbiri *et al*. (2021), risk in agricultural supply chain are varied with each having a different impact and requiring a different approach to its management.

Results also show that, the observed relationship among entrepreneurial orientation, learning orientation, cost focus and innovation depends on the size of SME, education level of the owner and manager, type of SME and gender of the SME owner. These findings corroborate those of earlier studies. For instance, Etriya *et al*. (2018), reported that firm age and firm size moderated the relationship between entrepreneurial orientation and innovation. Similarly, Arzubiaga *et al*. (2018) reported that gender diversity and family involvement among board members moderated the relationship between enterpreneurial and firm performance. These findings suggest that, whereas the relationship among enterprenuerial orientation, learning orientaion, cost focus and innovation exist, it is usually context specific. This context has to be taken into consideration while formulating policies aimed at improving agro-food SME innovation.

CONCLUSION AND POLICY IMPLICATIONS

This study investigated the relationship among entrepreneurial orientation, learning orientation, cost focus and innovation. Specifically, the study was interested in understanding how the three entrepreneurial dimensions of proactiveness, risk taking and proclivity affects agri-food firms learning orientation, cost focus, and overall innovation. Results showed that all dimensions of entrepreneurial orientation are important for learning orientation, cost and overall agro-food SME innovation. Results also showed that this relationship is moderated by a number of factors including SME size, gender, education level of owner and manager and the type of agri-food SME. The findings of this study have both theoretical and practical implications. Theoretically, the findings advocate for taking into consideration the diversity of agro-food enterprises while studying entrepreneurial

orientation and innovation. Practically, the findings of this study advocates for increasing the level of proactiveness of agro-food SMEs so as to improve their learning and innovation. The specific approach taken however, has to be context specific, taking into consideration the diversity of firms in the agro-food value chain.

Despite the positive findings of study, this study suffers from one main limitations. The study did not look at the specificity of the commodities in the agri-food chain. This limitation does not affect the validity of this study. Instead, it presents two interesting scenarios. First, it implies that the findings of this study may not be applied to situations that are commodity specific. In essences, the extent of applicability of the findings of this study are only limited to non-commodity specific situations. Secondly, this limitation presents an opportunity for further studies. We recommend those interested in commodity specific analysis of the EO-Innovation paradigms to consider undertaking further studies along those commodity chains.

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STATEMENT OF NO-CONFLICT OF INTEREST

The authors declare that there is no conflict of interest in this paper.

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