Knowledge absorptive capacity: do all its dimensions matter for export performance of SMEs?

Introduction and Motivation

In this paper, we study the relationship between knowledge absorptive capacity (KAC) and export performance of developing country SMEs where empirical evidence is currently scarce. We particularly report the contribution of the four dimensions of KAC (knowledge acquisition capacity, assimilation capacity, transformation capacity and application capacity) to export performance. Given the impulsiveness of international business environment, knowledge is an important capability required by SMEs for competition in export markets (Kedia & Bhagat, 1998; Lopez & Rodriguez, 2005) - requiring internationalizing firms to recognize the value of external knowledge and also generate and apply it to commercial ends (Zahra and George 2002). Firms recognizing the importance of external knowledge perform better in exporting; manifest in their likelihood to devise and adapt their products, services and processes that continue to meet the needs of the evolving market (Kropp et al. 2006; Mehmet, 2008). The lack of knowledge has been cited as one of the possible factors explaining the marginal performance of exporting firms in emerging economies (Onyeiwu, 2011; Okello-Obura et al, 2008). But, while the importance of KAC of firms has been widely researched and documented since the influential paper of Cohen and Lenvinthal (1990), most research has concentrated on assessing its impact on the performance of large firms within their domestic markets (Rothermel & Alexandre, 2009; Jansen et al, 2005) as opposed to export markets; moreover, also ignoring its possibility to explain significant variances in performance of exporting SMEs in developing countries. Indeed, Onyeiwu, (2011) posit that the role of KAC has been underplayed by the literature on Africa's economic growth.

Our study is motivated by a number of reasons and makes important contributions to export literature. First, while the SME sector is identified with high growth potential by the government of Uganda, this sector is not competitive enough. And, given the recurring challenges of SMEs in Uganda which include lack of business records (Orobia et al 2013), it has been hitherto unclear as to whether the extent of this KAC of SMEs has any bearing on export performance. Second, underscoring the importance of KAC of exporting SMEs in Uganda responds to increasing participation of SMEs from developing countries in international business despite the previous assertions that Knowledge limits their ability to compete and extend their operations (Leonidou, 1995a&b). Thus, this paper adds to literature on the correlates of export performance of African countries. Finally, while extant literature suggests that there are four dimensions of KAC, in this paper we show that two (knowledge acquisition and knowledge application) of the four are the significant predictors of Ugandan SMEs export performance. While "...the export literature has tended to focus on acquisition rather than use of export information" (Diamantopoulos and Souchon 1999, p.1) our results suggest that it is both important to acquire and use external knowledge.

The rest of the paper is organized as follows: the next section is literature review and hypotheses development. This section is then followed by methodology, then results and discussion, and the last section is conclusion and implications.

Literature Review and Hypotheses Development

Literature indicates that knowledge is critical to exporting performance. The theoretical reasoning is that knowledge can be an important intangible resource for SME competiveness (Curado & Bontis, 2006) and thus differences in performance among firms can be as a result of knowledge asymmetries. In essence, SMEs in developing countries could enhance their export performance if they harness the advantages associated with knowledge accumulation, assimilation, transformation and application. The other theoretical reasoning is that KAC is a dynamic capability that can be a source of sustainable competitive advantage under such rapid and unpredictable change in global marketplace where firms are expected to develop the ability to acquire, assimilate, and utilize such valuable knowledge in order to pursue the desirable outcomes (Waranantaku & Ussahawanitchakit, 2012). Nevertheless, organisational capabilities that significantly contribute to enhance SMEs' export performance in developed countries are likely to be unique and specific for SMEs in developing countries to achieve export success. Even though Dai and Yu (2012) indicate that there is a positive and significant relationship between skills related to identifying and using export market knowledge and export performance, there is less empirical evidence on the value of KAC to SMEs (Zahra *et al*., 2009). Well, exporting firms that effectively generate external knowledge and assimilate it, transform it and exploit it in a timely manner should experience better export performance. Therefore, the following general hypothesis will be stated.

H_1: *Knowledge absorptive capacity is positively related with export performance of SMEs*

Firms need dynamic capabilities necessary to acquire, assimilate, transform and deploy knowledge to enhance their performance (Zahra and George, 2002; Mogos-descotes & Walliser, 2013). Such a dynamic capability has been termed as KAC (Cohen and Lenvinthal, 1990; Julien and Ramangalahy, 2003). Zahra and George (2002) re-conceptualized KAC as potential absorptive capacity (PAC) which is mainly concerned with external knowledge acquisition and assimilation as well as realised absorptive capacity (RAC) mainly entailing knowledge transformation and application. PAC makes the firm interested to acquiring and assimilating external knowledge (Lane & Lubatkin, 1998) while RAC makes a firm capable of leveraging its knowledge by using the absorbed knowledge.

Since knowledge absorptive capacity is a multidimensional concept, each of the dimensions can have a different but additive effect on firm performance (Jimenez-Barrionuevo et al, 2011). For instance, external knowledge acquisition is the firm's ability to identify and acquire external knowledge, a critical input to the operations of an internationalizing firm. This is so because studies report lack of insufficient information about foreign markets as a major reason preventing companies from exporting (Leonidou, 2004; Mehmet, 2008; Siringoringo, et al, 2009). Information on competitors, customers prices, products, distribution policies, legal and the general external environment is important for creating uniqueness; enhancing new product development capabilities and is a basis for commercialization (Julien & Ramangalalahy, 2003). The more knowledge SMEs have about their foreign markets, the more they will implement effective response for adapting their product offerings to foreign clients' demands and changes in the social, political and economic environments of their target export markets (Descotes & Walliser, 2013). The firm's ability to acquire information relevant to export market helps it to create positive attitudes toward international expansion, reduce the perception of international

risks, leading to an increase in international performance (Nguyen & Barrett, 2006; Suarez-ortega & Alamo-vara, 2005). We then hypothesize that:

H_2: *External knowledge acquisition capacity is positively related to export performance of SMEs*

For the purpose of enhancing export performance, it has been suggested (see Souchon and Diamantopoulos, 1997; Mogos-Descotes and Walliser, 2013) that firms need to assimilate the acquired knowledge within the entire structure of the organization. For exporting SMEs, assimilation involves organizational mechanisms that enable them to internalize export information efficiently, such as coordination and communication (Julien & Ramangalahy, 2003) and organizational practices such as centralization, formalization, communication and coordination influence knowledge assimilation (Julien & Ramangalahy, 2003). However, most SMEs offer informal, centralized structures with efficient communication procedures (Julien, 1994). If these informal coordination and communication capabilities appear efficient, SMEs are unlikely to develop formal knowledge transfers or integration processes (Ramangalahy, 2001). Yet formal organizational practices can increase the effectiveness of knowledge transfers and integration, such as through regular discussions about errors and failures, and the effective use of formal instruments (e.g., manuals, databases, files, organizational routines) to apply lessons learned (Jerez-Gomez *et al.*, 2005). With most SMEs in Uganda unstructured, it remains that the effect of knowledge assimilation in such environment is ambivalent. Nevertheless it is still reasonable to expect that the efficiency of knowledge transfer and integration is a suitable construct to capture SMEs' knowledge assimilation capacities. We can then hypothesise as follows:

H_3: *External knowledge assimilation is positively related to export performance of SMEs*

Knowledge transformation capacity has been defined as the firm's ability to develop organizational routines in order to facilitate the combination between existing marketing knowledge with newly acquired and assimilated marketing knowledge (Zahra & George 2002; Flatten et al., 2011). Firms operating in rapidly changing environment may obtain new marketing knowledge more often which sometimes is incongruent with their prior knowledge so transformation capacity becomes a critical factor (Waranantakul & Ussahawanitchakit, 2012). The combined new and existing knowledge can lead to new ideas and concepts which lead to successful innovation outcomes. This ability would be enhanced by creating good communication system. Transformation capacity relates closely to the concept of idea generation which reflects the need to renew prior knowledge firms possessed in order to explore innovative and flexible solution in order to improve organizational outcomes (Flatten et al., 2011; Sinkula, Baker and Noordewier, 1997). Thus;

H4: *External knowledge transformation is positively related to export performance of SMEs*

Although the collection of information is important, how it is applied within the company is the vital link between information acquisition and company performance (Ganeshasundaram

and Henley, 2007). Higher levels of information utilization are expected to increase company performance since companies learn to effectively manage competition, understand customer needs, and target profitable markets. This ability may also influence new product development process which is a known source of innovation satisfying the customers' preferences in terms of new product offering; customers are more likely to purchase a new product when it has superior attributes (Veldhuizen, Hultink, & Griffin, 2006). According to Souchon and Diamantopoulos (1997), the immediate use of information collected from overseas markets enhances international performance. Hart and Tzokas (1999) revealed that, the way information is used in companies is significantly and positively related to export performance measures. However, unused export-marketing information is negatively correlated with export performance measures (Mehmet, 2008). Therefore:

H_5: *Application of external knowledge is positively related to export performance of SMEs*

Control Variables

Bartov et al. (2000) suggests that failure to control for confounding variables could lead to falsely rejecting the hypothesis when in fact it should be accepted. As such export experience and firm ownership are controlled in this study. Organizational characteristics such as export experience of the firm and ownership have been highlighted as significant predictors of export performance (Cavusgil and Zou, 1994; Bellak 2001; Gilaninia et al., 2012). As in the export experience which is measured by the number of years that company has spent in export activities, studies on its relationship with export performance have been mixed with some authors such as Cavusgil and Zou (1994) and Gilaninia et al (2012) indicating a positive relationship and Naidu and Prasad (1994) indicating a negative association. Gilaninia et al (2012) observed that export experience is a guiding force in the internationalization since it increases the confidence of export activities, provides a better understanding of the mechanism of foreign markets and helps in developing networks of extensive communications with customers for the company. This in turn results into proper implementation of export activities resulting into the desired success in international markets.

Firm ownership has also been mentioned in literature to be significant in determining export performance of exporting firms. Most of the literature in this area has pitted foreign owned firms against domestically owned firms. By and large it has been pointed out that better export performance is more pronounced in foreign owned enterprises compared to domestically owned enterprises (Bellak, 2001; Valsamis et al, 2011). Domestic firms tend to have lower efficiency in generating output from inputs, while their scope for raising prices may be limited by product quality, poor marketing, and highly competitive markets. In addition, they tend to have fewer intangible assets and higher financing costs (Commander and Svejnar, 2011).

Methodology

Study setting

SMEs in Ugandan context are those businesses employing 5-50 people (small scale) and 51-500 people (medium scale) (Obura et al, 2008). They predominate the business landscape

(Ernst & Young, 2011; Ministry of Planning and Economic Development (MFPED), 2006) and are regarded Uganda's backbone for economic development because they are main sources of employment, foreign exchange and domestic revenue. Ugandan SMEs constitute 90 percent of private sector - largely involved in trade, agro-processing, and small manufacturing (Hategа, 2007). Performance of export-participating SMEs is palpably inadequate. Yet one of the barriers to exporting facing these SMEs is their poor access to and knowledge of exporting (Hategа, 2007, Obura et al, 2007). The problem of access to quality business information is generally attributed to poor information systems, lack of awareness of business information sources, and use of inappropriate means of access to information

SMEs in Uganda get considerable support from Uganda Investment Authority. A conducive investment climate is the foundation for Uganda Investment Authority (UIA) support to SMEs. Also, as limited management and operational capacity slows the performance and growth potential of SMEs, Uganda Investment Authority helps to provide SMEs with affordable access to localized and customized business management information, business development services, and training. However, Orobia et al (2013) who studied working capital management of SMEs in Uganda suggest a need for SMEs to be pro-active and familiarize themselves with better work methods. We argue in this paper that these better work methods can be enhanced by improved external knowledge absorptive capacity of SMEs in a bid to improve their export performance. Also, the Uganda Investment Authority through the SME Division plays an important role in enhancing SME competitiveness in Uganda and the East African region. In doing this, the SME division focuses on SMEs with innovative or new business ideas or technology. But, UIA has been noting recurring challenges of SMEs, including lack of innovation skills. It is can be argued that innovations can be augmented by information normally generated from export markets.

While the government of Uganda identified the SME sector as one of the key areas to achieve growth, employment and socio-economic transformation in the medium to long term, overly, this sector is not competitive enough. In response, the UIA has been promoting the growth and survival of local businesses (SMEs) through capacity and capability enhancement. It is predicted that improved competitiveness of SMEs will then result through technological, knowledge and management skills transfer. Similarly, Kazoora et al (2006) report that a Uganda Public-Private Partnership (UP3) Action Fund is created with donor assistance to support the strengthening of private sector business associations to become more efficient in their operations such as exporting. And much of these initiatives are also channelled through the Medium Term Competitive Strategy for Uganda (MTCS). The majority of SMEs and their associations Kazoora et al (2006) reviewed were largely unaware of high level policy processes (such as UP3 and MTCS) which puts into question the capacity of exporting SMEs in absorbing knowledge for their export performance improvement.

More so, UIA encourages subcontracting and partnership exchange hoping that this links Ugandan SMEs to the supply chains of large domestic and international companies with the aim of developing the local SME capacity to identify profitable business opportunities and meet buyer needs. Such links are predicted to supply external knowledge as "outside sources of knowledge are often critical to the innovation process whatever the organizational level at which the innovating unit is defined" (Cohen & Levinthal, 1990, p. 128). Essentially, Ugandan SMEs sector stand to benefit by building their production capacity, expanding markets for their products and the number of products they offer for sale. Some researchers like Ecel et al (2013)

show evidence of symbolic information use on export performance of Ugandan coffee exporters. While this is a worthwhile endeavour, it is important we establish evidence of the influence of all knowledge absorptive capacity dimensions on export performance of SMEs in Uganda. Indeed Tsai (2001) drawing on a network perspective on organizational learning, argued that organizations can produce more innovations and enjoy better performance if they occupy positions that provide access to new knowledge developed by other organisations. Restated, this effect however depends on organisations' absorptive capacity, or ability to successfully replicate new knowledge. Given the recurring challenges of SMEs in Uganda which include lack of business records, it is unclear as to the extent of Ugandan SMEs knowledge absorptive capacity as to whether the extent of this knowledge absorptive capacity of SMEs has any bearing on export performance. Given the importance of exporting SMEs in Uganda and efforts by relevant Ugandan institutions in helping those SMEs realise their potential, this setting provides the fertile ground for testing the posited hypotheses.

D***esign, population and sample***

The research design for this study is cross sectional and correlational. The population of interest is exporting SMEs in Uganda. Specifically, the population is 350 SMEs engaged in exporting registered with export promotions board but situated in the central districts of Kamplala, Mukono and Wakiso. In Uganda, most of the exporting firms according to the Export Promotions Board (UEPB, 2013) are located in those districts. We determine the sample size using Krejcie and Morgan (1970) and generate a sample size of 186 exporting SMEs using the rotary method. The unit of enquiry is three people involved in exporting (the CEO, Export managers/officers and marketing managers/officers) in each of the sample firms. We adopt a survey as the most appropriate method of data collection as previous research supports the reliability and validity of the self-report measures (Lechner et al., 2006). Only 93 firms respond to our questionnaire. The responses are aggregated using a firm as a breaking variable. In terms of experience 44 firms (or about 47.3%) had less than 10 years in exporting, 48 (or about 51.6%) had between 10 and 25 years of exporting experience while only one had more than 25 years of exporting experience. Responses were enlisted from manufacturing (59 firms), Services (13 firms), agro-processing (20 firms) and horticulture (1 firm) sectors. Finally responses were enlisted from 60 domestically-owned firms and 33 foreign-owned firms.

Measures and the questionnaire

A Likert-scale questionnaire, designed to measure the opinion or attitude of a respondent is utilised to obtain self-reported information. The questionnaire design is based on our review of relevant literature regarding Knowledge Absorptive Capacity and its dimensions of external knowledge acquisition, assimilation, transformation and application (see e.g. Cohen and Lenvinthal, 1990; Zahra and George, 2002; Cadogan et al., 2003; Koksal and Ozgul, 2010; Flatten et al., 2011). The operationalisation of Knowledge absorptive capacity dimensions has remained contentious and generally lacks consensus (Lane et al, 2006). Nevertheless, we majorly adopt the recent measures of Zahra and George, (2002). We do this because, although Cohen and Levinthal (1990, 1989) have focused a lot on investments in R&D to develop companies' absorptive capacity, several other researchers have indicated that several other areas could be explored to develop an organization's absorptive capacity eventually leading to a review of the concept by Zahra and George (2002) and a reformulation of the definition largely expanding the concept and further defining it as being made of two (2) different absorptive

capacities, namely potential absorptive capacity and realized absorptive capacity. Looking at export performance, literature reveals that this concept's measurement is one the most controversial aspects in international business primarily because of its multi-dimensional nature. However, Sapienza *et al* (1988) argue that subjective performance measures (such as those designed to enlist the opinion or attitude of the respondent) such as "Compared to our competitors, our exports have rapidly penetrated into various foreign markets*"* are more useful when studying SMEs, as small firms may often be uncomfortable about providing objective performance measures such as absolute export sales volume. Moreover, self report measures of performance have also been widely used in previous research on export performance and found to be highly consistent with how firms actually performed as indicated by objective measures (see Singh and Mahmood, 2013). Going ahead, we follow these precedents and utilize the subjective measures of export performance (see appendix 1) as modified from the previous works of (Cadogan et al. 2003; Julien and Ramangalahy, 2003; Koksal and Ozgul, 2010) (See Table 1 for operational definitions, measures/typical questions asked for all variables, see also the questionnaire in Appendix 1). Thus respondents are asked to indicate their perception of how well the entity performed on the various indicators on a 5-point likert scale from 1 "strongly disagree" and 5 "strongly agree". On control variables, we measure firm export experience by the number of years the firm has been engaged in export activities and code firms with less than 10 years exporting experience as 0, those with between 10 to 25 years as 1 otherwise 9. We also treat firm ownership as a dichotomous variable, '1' if the firm is domestically owned; '0' otherwise

[Insert Table 1 about here]

Tests of factorability, validity and reliability

We use factor analysis based on (principal components) and Cronbach's (1951) α to examine the validity and reliability of the scales as measures of the study constructs. To establish convergent validity, the principle components for each variable is extracted by running principle component analysis using varimax rotation method and factor loadings below .5 coefficients are suppressed to avoid extracting factors with weak loadings. Prior to performing the Principle Component Analysis for our scales: KAC with its dimensions of potential absorptive capacity (knowledge acquisition and knowledge assimilation) and realized absorptive capacity (knowledge transformation and knowledge application); and export performance, we assess the suitability of the data for factor analysis based on sample size adequacy, the KMO and Bartlett tests. The Keiser-Meyer-Olkin (KMO) and Bartlett's (1954) test of sampling adequacy is computed to ensure that factor analysis yields distinct and reliable factors (Kaiser, 1974). The following criteria is used to assess and describe the sampling adequacy (Kaiser, 1974): .90 = Marvelous, .80 = Meritorious, .70 = Middling, .60 = Mediocre, .50 = Miserable and below .50 = unacceptable.

The results show the KMO values for the five scales (external knowledge acquisition, 0.684; external knowledge assimilation, 0.721; external knowledge transformation, 0.706; external knowledge application, 0.603; export performance, 0.833) (in all cases registering no miserable or unacceptable sampling adequacy). Bartlett's test of sphericity in all scales also reached statistical significance ($p<0.05$) (significant value was 0.000 for each scale). Collectively, these results support the factorability of the correlation matrices. To determine the internal consistency (reliability) of our scales we compute Cronbach's α coefficients for the study variables. The standardized Cronbach α coefficients for all the scales, are all found to be

above 0.7 (External knowledge acquisition α = .763, External knowledge assimilation α = .790, External knowledge transformation α = .767, external knowledge application α = .722 and export performance α = .853). We attempt to detect whether Common Methods Variance (CMV) is present as it leads to a false internal consistency. We employ several methods to control for CMV in this study. First, some dependent variable items are reverse scaled to avoid the occurrence of response patterns affecting data accuracy. Second, we use three respondents from each exporting firm and aggregate their responses using the firm as a breaking variable. Third, dependent, independent and control variables in this study are not similar in content. Fourth, multiple scales are used for cognitive independent constructs. Finally, we employ Harman's one-factor test to assess whether a single latent factor could account for all the manifest variables. By performing principle component analysis we find that the largest factor explains only 30.40 percent of the variance.

Results and Discussion

Descriptive statistics

The descriptive statistics of the dependent and independent variables are in Table II. The statistics indicate that the mean rating of the statements put to the respondents meant to measure perceived extent of export performance is 3.4339 out of a maximum of 5. This suggests that on average the exporting firms are fairly satisfied with their export performance and this corroborates the median which is very close at 3.4167. The minimum score of 1.77 and a maximum of 5 out of a possible 5 however suggest that there are wide variations in perception of export performance. For the independent variable, the results indicate that the mean score for the knowledge absorptive capacity is 3.8119 compared to the minimum and maximum of 2.53 and 4.52 respectively on a scale of 1-5. This figure is close to the median of 3.8646 suggesting that more 50% of the respondents perceive high levels of knowledge absorptive capacity.

[Insert Table II about here]

Correlation analysis results

The correlation results are presented in Table III. The results indicate a significant positive relationship between knowledge absorptive capacity and export performance ($r=.431$, $p<.01$). This *appears* to provide support for the first hypothesis which states that *Knowledge absorptive capacity is positively related with export performance of SMEs*. This means that SME differences in export performance can be a result of knowledge asymmetries and is consistent with the theoretical view that knowledge in an important resource capable of generating organizational out comes (Curado and Bontis, 2006). The results further support those of Piercy et al (1998) indicating that information skills are perfect discriminators of high and low export performers and those of Dai and Yu (2012) that emphasize how important knowledge absorptive capacity is to export performance, pointing out that firms with appropriate absorptive capacity effectively identify valuable and important technological developments in foreign markets and learn efficiently of foreign advanced technologies which makes it easier for them to catch-up with recent technological developments within their field of specialization. A positive relationship between knowledge absorptive capacity and export performance of SMEs therefore

suggests a need for exporting SMEs to recognize the value of new external information for export enhancement. The positive relationship suggests that since the majority of SMEs in Uganda are largely unaware of the high-level processes such as UP3 and MTCS (Kazoora et al., 2006); this explains their dismal performance in export markets.

The second hypothesis which states that *External knowledge acquisition capacity is positively related to export performance of SMEs* also appears supported (r=.505, p<.01). This means that exporting SMES actively seeking to acquire valuable technological knowledge and skills from foreign companies (sources) either at their own initiative, or mandated by interventionist host governments (through e.g. UP3 and MTCS as in the case of Uganda) is related to export performance of those SMEs. The finding of this study supports the view that acquisition of export knowledge can therefore be a precursor to internationalization as well as outcomes of such endeavors especially export performance (Cavusgil and Zou, 1994) and suggests that exporting is primarily a developmental process riding on the acquisition of knowledge (Johanson and Vahlne, 2009)

The third hypothesis which states that *External knowledge assimilation is positively related to export performance of SMEs* appear conservatively supported (r=.215, p<.05) since the correlation is relatively weak. But this significant relationship suggests that ability of the exporting SME to assimilate the acquired external knowledge is related to export performance. This is consistent with Cohen and Levinthal (1990) who suggest a label of firm's absorptive capacity as a mainly a function of the firm's level of prior related knowledge. Restated; exporting SMEs need prior related knowledge to assimilate for their exporting performance improvement.

Hypothesis, H_4 which states that *External knowledge transformation is positively related to export performance of SMEs* is not supported by the results of this study. This result is at variance with previous studies (Flatten et al., 2011; Zahra and George, 2002). A possible explanation for this apparent anomaly could be that SMEs are not expected to have enough funds needed to transform the knowledge acquired. This thinking appears to have support from the hypothesis of the institutional theory which stipulates that specific institutional settings determine SMEs' behavior and actions at the national level (Kostova 1997; Scott 1995), and impact SMEs' levels of international performance (Mogos Descotes et al. 2011).

Finally, H_5 *which states that Application of external knowledge is positively related to export performance of SMEs* appear supported by the results of this study (r=.475, p<.01). This positive relationship suggests that exporting SMEs application of external knowledge is related to their export performance. This is consistent with Zahra and George (2002) and Lane et al (2006) who indicate that incorporating external knowledge produces new commercial outputs (goods or services) as well as systems, processes, further knowledge or new organizational forms

[Insert Table III about here]

However, univariate analyses do not control for other factors, making the interpretation of the results difficult. Therefore, the analysis is extended to a multivariate setting. We first examined the correlations among our independent variable dimensions to determine whether multicollinearity problems exist. Field (2009) suggests that multicollinearity becomes a problem only when the correlations exceed 0.80 or 0.90. As Table III shows, none of the correlations between independent variable dimensions is close to these threshold values. This suggests that the different dimensions are sufficiently discriminated but converge within the global variable (with correlations all above .70). However, according to Myers (1990), a certain degree of

multicollinearity can still exist even when none of the correlation coefficients are very large. Therefore, we also examine the variance inflation factors (VIFs) in our models to further test for multicollinearity. The highest VIFs were well below the threshold value of 10 suggested by Field (2009) indicating that multicollinearity does not pose a problem to the regressions.

Regression analysis results

We first examine the predictive potential of the knowledge absorptive capacity as a global variable in Table IV in order to validate our $\mathbf{H_1}$ which states that *Knowledge absorptive capacity is positively related with export performance of SMEs*. We find that knowledge absorptive capacity explains about 16.7% of the variance in exporting performance of SMEs. This finding further substantiates our hypothesis 1 and confirms the works of previous scholars (e.g. Mogos Descotes and Walliser, 2011).

[Insert Table IV about here]

However, as knowledge absorptive capacity has two dimensions namely, potential and realised absorptive capacity and that these also have further two dimensions each, we extend the regression analysis using the four dimensions, i.e. knowledge acquisition and assimilation for potential absorptive capacity and, knowledge transformation and application for realised absorptive capacity. We carry out hierarchical regression analysis consistent with Aiken and West (1991) and enter variables simultaneously within each hierarchical group. We use the tool of hierarchical regression as it useful for evaluating the contributions of predictors above and beyond previously entered predictors, as a means of statistical control, and for examining incremental validity. Table V shows the results.

[Insert Table V about here]

Model 1 in Table V reports the baseline model with only control variables. The control variables do not explain any significant variance in export performance. This suggests that our models are not sensitive to confounding factors and the models are highly plausible. Regarding H_2, the unstandardized β coefficients for knowledge acquisition are all significant at $p<.01$ or better for models 2-5. In model 2 we find that knowledge acquisition is a significant predictor, contributing about 26.2% per cent of the variance in export performance, offering further substantiation to hypothesis H_2

Regarding H_3 the unstandardized β coefficients for knowledge assimilation are all not significant in models 3, 4 and 5. The contribution made by knowledge assimilation to export performance is a paltry 0.3%. This suggests that H_3 is not supported. Similarly, unstandardised β coefficients for knowledge transformation in models 4 and 5 are not significant. They are also with a negative sign. In fact the contribution made by knowledge transformation is about nil. This also suggests that Hypothesis H_4 is not supported.

Concerning hypothesis H_5 the unstandardized β coefficient for knowledge application is significant at $p<.01$ or better, in model 5. The contribution made by knowledge application is about 11% and is significant. This implies that knowledge application is accounting for a significant portion of the variance in export performance and therefore H_5 is substantiated. Accordingly, only external knowledge acquisition and external knowledge application are significant predictors of export performance of Ugandan exporting SMES. Taken together, the independent variables explain about 35.4 percent of the variance in export performance of SMEs

in Uganda. Overall, the results suggest that model 5 in Table V is the more plausible model. The incremental improvement in adjusted R^2 in models 1-5 in Table V suggests that a better-fitting model emerges as knowledge acquisition and application are sequentially introduced contrasting favourably with the model in Table IV. Overall, results support those of extant studies such as by Renko et al (2009) and Toften (2005) that often indicate that there is a positive and significant relationship between skills related to identifying and using export market knowledge and export performance. Particularly Reko et al (2009) argues that firms with ample market knowledge are able to stay close to their markets there by responding to their needs quite quickly leading to above normal performance.

As the goal of the current paper is to study the relationship between knowledge absorptive capacity of exporting SMEs in Uganda and their export performance, results augment following themes. First, the two dimensions of KAC combine to influence exporting firms' export performance but, the influence of external knowledge assimilation and external knowledge transformation is negligible. For the case of Ugandan exporting firms, this KAC is best realised when external knowledge acquisition and external knowledge application are combined. This is consistent with arguments made in previous literature that the acquisition of information about foreign markets is important since it is provides a basis for SMEs to determine the extent to which they can use the acquired information for decision making and to respond to shifts in foreign markets (Sounchon & diamantopoulos, 1999; Kuivalainen et al, 2010). The trifling role of external knowledge assimilation and transformation is likely to be because most SMEs in Uganda are unstructured yet researchers (e.g. Mogos-Descotes & Walliser, 2013) suggest that firms need to assimilate the acquired knowledge within the entire structure of the organization. Structure should be able to imply existence of organizational practices likely to influence knowledge assimilation, such as centralization, formalization, communication and coordination (Julien & Ramangalahy, 2003).

Second, the explanatory power of external knowledge acquisition dimension suggests that exporting firms' abilities to identify and acquire external knowledge and information is critical in export operations of Ugandan firms. In the context of this study, this dimension refers to the export information of SMEs such as information concerning trends in export markets (e.g. regulations), pricing, distribution channels, competitors' strategies including strengths and weaknesses, forces influencing overseas customers' needs and information regarding improvements in products or services. This suggests that Ugandan exporting firms put overseas customers and competing exporting firms at the centre of their information gathering; confirming the key assumptions of market orientation literature regarding the importance of information about customers and competitors (Jaworski & Kohli, 1993). Thus the primary focus of Ugandan exporting firms should be on knowing their clients and competitors in foreign settings.

Third, improvement in the explanatory power of the regression model as a result of introducing external knowledge application suggests that exploitation dimension of realised absorptive capacity of exporting firms, places emphasis on the application of knowledge which reflects an exporting firm's proclivity to refine, create, and apply new incoming knowledge into exporting operations (Mogos Descotes & Walliser, 2011). Thus external knowledge acquisition dimension reflects the quality of its exposure to information sources within its environment which then becomes a *sine qua non* for external knowledge application. In the context of this study, external knowledge application is manifest in the culture of the exporting firms' response to the acquired knowledge in export markets, basing product and service innovations on

information generated from export markets and quick and appropriate responses to competitor actions in the export markets. The two preceding themes suggest that for SMEs to enhance their export performance, acquired appropriate knowledge must be immediately applied and appears to provide support for Souchon & Diamantopoulos (1997), who suggest that the immediate use of information collected from overseas markets enhances international performance.

Finally, the results support the application of the RBV as a relevant framework for understanding variances in export performance of SMEs. The management (internal efficiency) of exporting SMEs should be responsible for acquiring and applying specific external knowledge that creates a sustainable competitive advantage reflected in above average performance of the focal exporting firm compared to its competitors in export market. Applying the RVB to this study suggests that exporting firms' focus should be the deployment of the specific knowledge and combination of knowledge resources to meet the heterogeneous and dynamic demands of clients. Exporting firms should actively seek for unique external knowledge information inputs to drive the competitive advantage. Our results also support the application of the dynamic capability theory as a relevant framework for understanding variances in export performance. In the context of this study, exporting SMEs should be bundles of competencies and resources. This study suggests that such resources should be knowledge-based resources acquired externally for better performance in the export market. Dynamic capabilities should be those that enhance the application of external knowledge for export performance improvement.

Conclusion and implications

The objective of this paper was to study the relationship between knowledge absorptive capacity of exporting SMEs in Uganda and their export performance. The results suggest that knowledge absorptive capacity is a true driver of export performance of SMEs but for exporting SMEs in Uganda, it is the external knowledge acquisition and application sub-domains of knowledge absorptive capacity that matter most, typified in the 'sub-domains model' in Table V. Thus, SME export performance is driven by knowledge competencies the SMEs accumulate and apply.

This paper offers several implications. From an academic point of view, we explore the role played by the four dimensions of KAC of SMEs to their export performance and methodologically isolate the contribution played by each individual dimension. Our results imply that SMEs can become better exporters if they are able to acquire and apply external export knowledge without having to assimilate and transform that knowledge. Thus the results seem to depart from the definition of absorptive capacity as "the ability of a firm to recognize the value of new external information, assimilate it and apply it to commercial ends" (Cohen and Levinthal, 1990, p. 128) and offer an alternative understanding of the concept as to how an SME in a developing country context acquires external knowledge and exploits it to gain better export performance.

The implication for policy makers would be to develop export information repositories accessible to SMEs since export information is a driving factor of SMEs international export performance. Moreover, policymakers stand to gain insights from our study in order to design more suitable support programs that enhance the exporting knowledge competences of SMEs. This study also offers guidance on what to focus on (i.e. knowledge acquisition and application) for SME managers who want to improve their export information activities and achieve higher

levels of performance in export markets. The findings imply that SMEs should raise their ability to acquire and utilize external knowledge resources to secure better export performance.

Despite the contributions and implications, this study has several limitations, which we discuss along with areas for future research. The use of hierarchical regression is susceptible to problems associated with sampling error. However, the likelihood of these problems is reduced by our interaction with the data. The motivations and dynamics that drive the rapid internationalization of SMEs are beyond the scope of this paper. This study is cross-sectional and a reliance on cross-sectional data remains a burgeoning concern. Future studies might benefit from the use of longitudinal data for investigating export performance of SMEs through KAC.

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Table 1: Variables and their measurements

Variable			**Measurement**	**Definition**	**Sample item scales**
Global variable	*Dimensions*	*Constructs*			
Export performance			Respondents' mean rank of the 12 items of information included in the questionnaire on a five-point Likert scale	Overall outcome of the firm's activities in its export markets (Cadogan et al., 2003; Koksal and Ozgul, 2010)	When we compare with our competitors, our export volumes seem to be lower (*R*)
Knowledge absorptive capacity (Cohen and Levinthal, 1990)	Potential absorptive capacity (Zahra &George, 2002)	Knowledge acquisition	Respondents' mean rank of the 10 items of information included in the questionnaire on a five-point Likert scale	Ability to obtain knowledge by SMEs have about relevant export markets (Descotes & Walliser, 2013).	In this company, we generate a lot of information concerning trends in our export markets (e.g. regulations, technological developments, political, economic)
		Knowledge assimilation	Respondents' mean rank of the 9 items of information included in the questionnaire on a five-point Likert scale	Exporting SMEs' mechanisms that enable them to internalize export information efficiently, such as coordination and communication (Julien & Ramangalahy, 2003)	In our company there is a quick information flow, e.g., if a business unit obtains important information it communicates this information promptly to all other business units or departments.
	Realized absorptive capacity ((Zahra &George, 2002);Wong et al., 1999;	Knowledge transformation	Respondents' mean rank of the 6 items of information included in the questionnaire on a five-point Likert scale	The firm's ability to develop organizational routines in order to facilitate the combination between existing marketing knowledge with newly acquired and assimilated	-We are able to renew our prior knowledge with the newly acquired knowledge -Our employees have the ability to structure and to use collected knowledge.

	Zahra & George, 2002)			marketing knowledge (Zahra & George 2002; Flatten et al., 2011).	
		Knowledge application	Respondents' mean rank of the 11 items of information included in the questionnaire on a five-point Likert scale	the immediate use of information collected from overseas markets (Souchon & Diamantopoulos 1997)	- Our product innovations are based on the information we normally generate from our export markets - adjustment to our product strategies is normally based on the information we generate from our external markets
Sector			dichotomous variable: 1 if it is a service-based enterprise; otherwise 0		
Ownership			dichotomous variable: 1 if it is a domestically owned enterprise; otherwise 0		
Exporting experience			dichotomous variable: 1 if it has 10 or less years of exporting experience, above 10 years of exporting experience = 0		

Table II: Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Dev	Median
External Knowledge acquisition	93	2.60	5.00	3.8988	.48215	3.90
External Knowledge Assimilation	93	2.11	4.89	3.8601	.51756	4.00
External knowledge transformation	93	2.17	4.71	3.8259	.51016	4.00
External knowledge Application	93	2.55	4.73	3.6628	.47094	3.68
Potential Absorptive Capacity	93	2.62	4.78	3.8794	.42880	3.94
Realized Absorptive Capacity	93	2.44	4.60	3.7443	.40819	3.78
Knowledge Absorptive Capacity	93	2.53	4.52	3.8119	.37875	3.86
Export performance	93	1.77	5.00	3.4339	.59356	3.42
Valid N (listwise)	93					

Table III: Zero order

	1	2	3	4	5	6	7	8
External Knowledge acquisition (1)	1							
External Knowledge Assimilation (2)	.471**	1						
Potential Absorptive Capacity (3)	.847**	.868**	1					
External knowledge Transformation (4)	.303**	.542**	.497**	1				
External Knowledge Application (5)	.416**	.552**	.567**	.384**	1			
Realised Absorptive Capacity (6)	.429**	.657**	.638**	.846**	.817**	1		
Knowledge absorptive capacity (7)	.711**	.846**	.910**	.738**	.761**	.900**	1	
Export Performance (8)	.505**	.215*	.413**	.148	.475**	.366**	.431**	1
N	93	93	93	93	93	93	93	93

Notes: * p , 0:05, ** p , 0.01

Table IV: Regression analysis results using the global independent variable – Knowledge absorptive capacity

	Unstandardized Coefficients		*Standardized Coefficients*	t	Sig.	Collinearity Statistics	
	B	**Std. Error**	***B***			**Tolerance**	***VIF***
(Constant)	.938	.610		1.539	.128		
Knowledge absorptive capacity	.669	.152	.427	4.396	.000	.961	1.041
Sector	.068	.066	.098	1.030	.306	.992	1.008
Ownership	-.112	.118	-.091	-.947	.346	.989	1.011
Export experience	-.016	.057	-.028	-.287	.775	.960	1.042
Dependent Variable: Export performance							
R^2	*0.204*		*F*	*5.625*			
Adjusted R^2	*0.167*		*Sig.*	*0.01*			

Table V: Hierarchical regression results using knowledge absorptive capacity sub-domains

	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	3.469	.982	1.117	1.131	.558
Knowledge acquisition		.635**	.670**	.671**	.570**
Knowledge assimilation			-.071	-.066	-.254
Knowledge transformation				-.009	-.058
Knowledge application					.516**
Control Variables					
Sector	.084	.108	.112	.112	.101
Ownership	.030	-.143	-.149	-.149	-.145
Exporting experience	-.138	-.001	.003	.003	.004
Model *F*	.879	9.005**	7.220**	5.949**	8.199**
Adjusted R^2	-.004	.258	.253	.244	.354
F Change	.879	32.451**	.350	.005	15.626**
R^2 Change	-	.262	.003	.000	.110
Durbin-Watson					1.943

Notes: * *p* , 0.05, ** *p* , 0.01

Appendix 1

RESEARCH QUESTIONNAIRE

KNOWLEDGE ABSORPTIVE CAPACITY AND EXPORT PERFORMANCE OF SMES IN UGANDA

A. Background information

1. Respondents position

……

2. Gender MALE [1] FEMALE [2]

3. The highest level of education

Secondary [1] Diploma [2] Degree [3] post graduates [4]

4. Please indicate the number of years your company has been exporting [ ]

5. Please indicate the number of employees in this company

50 and Below [1] Between 51 and 500 [2]

6. Please indicate by ticking the sector in which your firm operates in.

Manufacturing [1] Services [2] Agro Processing [3] Horticulture [4]

7. This firm is

Domestically owned [1] Foreign owned [2]

Please indicate your level of agreement to each of the following statements(Using 1=strongly agree, 2= Disagree, 3 =Neither Disgree nor agree, 4 = Agree, 5= strongly agree). Please tick as appropriate.

External knowledge acquisition	1	2	3	4	5
We generate a lot of information in order to understand the forces which influence our overseas customers' needs and preferences					
In this company, we generate a lot of information concerning trends in our export markets (e.g. regulations, technological developments, political, economic)					
We obtain ideas from customers to improve products and services					
Overall, we have sufficient knowledge about the foreign markets we are serving.					
We are well aware of the most appropriate and effective ways of communicating to our export market customers					
We are constantly updated on the dynamics involved in the distribution of our products in our external markets					
we have got information related to pricing in our target export markets					
Our management expects that the employees deal with information beyond our country					
The search for relevant information concerning the industry we operate in is done on a continuous basis					

We continuously get information on our competitors' strategies, weaknesses and strengths.					
Variance explained (Cum.=61.973), KMO = .684; Bartlett's Test of Sphericity Approx. Chi-Square = 305.772, Sig. at .0000; Determinant = 0.031					

External Knowledge assimilation

Our management emphasizes cross-departmental support to solve problems.					
In our company ideas and concepts are communicated cross-departmental.					
In our company there is a quick information flow, e.g., if a business unit obtains important information it communicates this information promptly to all other business units or departments.					
The mistakes and failures are always discussed in this enterprise, at all levels.					
The employees have the chance to discuss among themselves about new ideas, Projects and activities that could be useful to the enterprise.					
The firm has instruments (manuals databases, files, organizational routines, etc.) that allow what has been learnt in the past situations to remain valid.					
We have interdepartmental meetings at least once a quarter to discuss market trends and developments.					
Marketing personnel in our business unit spend time discussing customers' future needs with other functional departments					
Our management demands periodical cross-departmental meetings to interchange new developments, problems, and achievements					
Variance explained (Cum.=68.699), KMO = .721; Bartlett's Test of Sphericity Approx. Chi-Square = 278.899, Sig. at .0000; Determinant = 0.042					

External knowledge transformation

Our employees have the ability to structure and to use collected knowledge.					
Our employees are used to absorb new knowledge as well as to prepare it for further purposes					
Our employees successfully link existing knowledge with new insights.					
We have created good communication channels to continuously disseminate the incoming external information throughout the whole organisation					
We are able to renew our prior knowledge with the newly acquired knowledge					
Our employees are able to apply new knowledge in their practical work.					
Combining both new external knowledge with the existing knowledge in our organisation helps to improve our organisational outcomes.					
Variance explained (Cum.=60.694), KMO = .706; Bartlett's Test of Sphericity Approx. Chi-Square = 189.221, Sig. at .0000; Determinant = .113					

External knowledge application

Our product innovations are based on the information we normally generate from our export markets					
Adjustment to our product strategies is normally based on the information we generate from our external markets					
We have a culture of responding to the acquired knowledge from our export markets					
If a major competitor were to launch an intensive campaign targeted at our foreign customers, we would implement a response immediately.					
We rapidly respond to competitive actions that threaten us in our export markets.					
When we find out that customers are unhappy with the quality of our service, we take corrective action immediately					
We are well positioned to react to foreign market shifts with high levels of certainty					
We are quick to respond to important changes in our export business environment (e.g. regulation, technology, economy).					
Our export business strategies are driven by our beliefs about how we can create greater value for export customers					
Innovations in this organisation are based on the information we generate from our export markets					
All departments in our firm are involved in implementing our export market Strategies.					
Variance explained (Cum.=67.492), KMO = .603; Bartlett's Test of Sphericity Approx. Chi-Square = 290.894, Sig. at .0000; Determinant = .035					

Export performance

We have been able to venture into new foreign market segments	1	2	3	4	5

Our company has not registered an increase in sales volume over the years (*R*).					
We have been able to expand our operations in profitable markets					
The value of our exports has tremendously increased over the years.					
When we compare with our competitors, our export volumes seem to be lower (*R*)					
Compared to our competitors, our exports have rapidly penetrated into various foreign markets					
Over the five years our export sales have been increasing					
Our export sales are much higher than our competitors					
Compared to our competitors, our profits have increased over the years.					
Progressively, we continue to observe bigger profit margins from our export operations					
We are generally unsatisfied with our export performance (*R*)					
We are satisfied with the rate at which we are expanding into new markets					
Variance explained (Cum.=58.593), KMO = .833; Bartlett's Test of Sphericity Approx. Chi-Square = 440.446, Sig. at .0000; Determinant = .006					