The Effect Supply Chain Management Practices on Competitive Advantage in Ethiopian Leather Industry

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ABSTRACT: The understanding and practicing of supply chain management has become an essential prerequisite for staying competitive in the global race and for enhancing profitably. Supply chain management integrates both information flow and the flow of goods seamlessly between trading partners as an effective competitive weapon. The objective of this research is to present the relationship between supply chain management practices and competitive advantage. The data collection instruments used were a questionnaire and interview which was administrated to a total sample of 205 managers. Of which 178 completed correctly and returned the questionnaire and the response rate was 86.23%. Sample selection was based on random sampling which was obtained from Ethiopian leather industry association list. The data collected were analyzed using reliability and validity tests, factor analysis, descriptive statistics (mean and standard deviation) and inferential (correlation and multiple regression analysis) statistics. The results indicated that SCM practices are related to competitive advantage.

Keywords: Supply Chain Management Practice, Competitive advantage, Manufacturing, Ethiopia.

1. INTRODUCTION
Increasing competitive pressure, rapid pace of technological change, demanding customers, businesses environment becomes more complex and uncertain are motivating companies to focus on partnership as a means of distributing risks and enhancing business processes, through the development of joint skills and shared inter-organisational routines (Anderson and Christensen, 2000; Trent and Monczka, 1999; Thatte, 2007; Rich and Hines, 1997). Considering this, today’s global marketplace offers tremendous opportunities for manufacturing companies in achieving strategic competitiveness through effective supply chain. The current environment, in which organizations operate, has changed drastically with the growth in collaboration between competitors, supply chain partners, integrated supply chain systems, and advancement in technology and innovation (Arawati A. 2011).

From the globalization point of view, the success of off shoring depends on its supply chain efficiency in that particular industry. The different industries have different supply chain structure. Globalization implies functional integration between internationally dispersed activities in which industries and commercial firm have two types of international economic network; one is producer driven and another is buyer driven (Gereffi, G., 1994, 1999). The leather and garments is an ideal industry with the dynamics of buyer-driven value chains. Furthermore, the backward and forward linkages are extensive, and help to differentiate activities associated with the industry (Gereffi, G. and Memedovic, O. 2003). The chain is influenced by several factors such as; geographical location, labour skills, technology, transportation which affect the supply chain efficiencies, buyer market power, profit margin of the buying company in the chain (Mentser 2001). Supply chain is the process that seeks to provide for the management and coordination of all activities from sourcing and acquisition, through production, where appropriate, and through distribution channels to the customer.

The new competitive environment changes to more global, technologically oriented and customer driven, as product life cycles shrink and new products get introduced rapidly, as customers continually demand higher quality, faster response, and greater reliability of products and services then this will
have influence on who firms operate (D’ Souza, 2002). These pressures have fuelled a continuous change process within organizations, impacting all the areas of a business, from rapid technological changes, to a much shortened product life cycle (Womack and Jones 1996). Vokurka and Fliedner (1998) suggest that this new environment calls for organizations to be more responsive to customer needs. Thus, modern supply chains are expected to respond rapidly, effectively, and efficiently to customer demand (Towill, 1996; Duclos et al., 2003) so as to create competitive advantage in terms of increased quality, lower costs, reduced time to market, and product innovation (Henke et al., 1993; Aquilano et al., 1995). Most studies so far have focused on internal business function integration. However, excellence within the own company is not good enough anymore; there is also a need for external excellence in the whole supply chain. Li et al., (2005) argued that competition is no longer between individual organizations but between supply chains. Lummus and Vokurka (2000) state that successful companies are those that manage across all nodes of the supply chain from their supplier’s supplier to their customer’s customer.

In a global marketplace an increasingly huge competition forces companies striving to find strategies that give them competitive advantage over the competitors (Christopher, M., 1998). "Competition is at the core of the success or failure of firms" (Porter, 1985). The evaluation and understanding of one’s industry and resources is an important component of establishing a competitive advantage. "A firm is said to have a competitive advantage when it is implementing a value creating strategy not simultaneously being implemented by any current or potential competitors" (Barney, 1991). There is no surprise that competitive advantage can be expected to lead an organization to superior performance. Competitive advantage “comprises a capability that allows an organization to differentiate itself from its competitors" (Li et al., 2006). Competitive capabilities “are the attributes of an organization that attract customers; they are potential points of differentiation between an organization and its competitors” (Tracey, Vonderembse, & Lim, 1999).

Competitive capabilities should also allow firms to establish higher levels of performance. With the emerging importance of SCM and growing competitiveness between supply chains it is in a firm’s best interest to seek out ways to capture a competitive advantage. In the current dynamic competitive market, it is supply chains rather than companies that compete. Firms cannot retain their higher competitive advantage by improving the efficiency of the products and process alone; rather the firms need to improve the efficiency of product, process, and SC in integrated way.

The goal of SCM is to integrate both information and materials flows seamlessly across the supply chain as an effective competitive weapon (Childhouse and Towill, 2003; Feldmann and Müller, 2003; Li et al., 2006). Christopher (1998) has stated that an effective SCM is a powerful tool to achieve competitive advantage for all parties in the supply chain. The essence of SCM is that it is a strategic weapon to develop a sustainable competitive advantage by reducing investment without sacrificing customer satisfaction (Lee &Billington, 1992). In similar way, Tan (2001), stated the ultimate goal of SCM is to integrate various members of the supply chain in a seamless manner to achieve a high level of customer satisfaction, and thus a long-term competitive advantage.

SCM has been recognized as an important issue and has generated a substantial amount of interest among managers and researchers. Since the 1980s, SCM has been regarded as one of the most effective ways for firms to improve their competitive advantage. SCM has been documented to be positively associated with enhanced competitiveness and improved firm performance (Li et al., 2006). In addition, SCM has been widely considered to be an effective management tool for firms to maintain business stability, growth, and prosperity.

Given this as it may, manufacturing began in Ethiopia following the emergence of a strong central government, political stability, and installation of the railway to Djibouti and the establishment of Ethiopian foreign relations in 1900 (Loop, 2002). Ethiopia has a long tradition in processing and
exporting leather and leather products. However, the modern the leather and shoe industry was among the first players in the industrialisation process with the establishment of two tanneries industry in the 1920s. Asco Tannery (currently Addis Ababa Tannery) was the first tannery established in the country in 1925. Currently, there are 23 tanneries, 6 leather products enterprise and 15 shoe manufacturing (ELIA, 2011).

Ethiopia has a major comparative advantage in hides and skins, the primarily needed for the leather sector, which makes it very appropriate for leather product exporting, as it ranks 1st and 8th in Africa and in the world in livestock population respectively: its livestock population is estimated 49.3 million cattle, 25.02 million sheep, and 21.88 million goats according to FAO’s 2010 estimation (WIC, 2012). However, this comparative advantage is not yet turned into a competitive advantage in the global market.

Due to various reasons only 3 million hides and 16 million skins per annum reaches the tanneries (ELSA and ELIA 2013). Moreover, the Ethiopian manufacturing industries in general and leather factories in particular are prone to serious weaknesses and constraints hindering their productivity and competitiveness. The growth of manufacturing industries is limited by insufficient finance, lack of machineries and facilities, shortage of highly qualified workers, natural and manmade defects and deteriorated quality of hides and skins, backward technology, poor managerial, technical, as well as marketing skills.

Even if the contribution of the manufacturing sector market share in domestic and export earnings have increased over the last few years, considering the poor productivity, unutilized capacity, low level of competitiveness, and low market share of the leather industry, a lot remains to be done. Thus, the problems which contributed a lot towards the above limitations and backwardness of the sector should be rectified by implementing a supply chain management practices in one of the manufacturing industries of Ethiopia in such a way that it can be extended to others with a little modification. In this thesis, leather industry is selected as a centre of the case study to analyse the above problems so as to set solutions by using the supply chain management practice.

The purpose of this study is, therefore, to empirically test a framework of identifying the relationships between SCM practices and competitive advantage. The practices of SCM are proposed to be a multi-dimensional concept, including the internal operation, downstream, and upstream sides of the supply chain.

Objectives of the Study
The general objective of this research is to examine the effect of supply chain management practice on competitive advantage in Ethiopia Leather Industry.

1. To analyse the relationship between supply chain management practices and competitive advantage in leather firms;
2. To assess the relationship between strategic supplier partnership and competitive advantage;
3. To investigate the relationship between information sharing and competitive advantage;
4. To examine the relationship between information quality and competitive advantage;
5. To analyse the relationship between customer relationship and competitive advantage;
6. To investigate the relationship between internal operation and competitive advantage;

Literature Review and Hypotheses
The research objectives in this study were designed to investigate the effect of supply chain management practices in terms of strategic supplier partnership, customer relationship, information sharing, information quality, and internal operation on competitive advantage of the firm.

In order to achieve a competitive advantage, supply chains need to be managed appropriately. The set of practices developed by an organization to effectively manage the functioning of a supply chain are
known as supply chain management practices (Li, et al., 2006). An extensive literature review was carried out to identify different dimensions of the supply chain management practices. The rationale used in the study followed the selection of supply chain management practices which cover both the internal operation, upstream, and downstream sides of the supply chain (Lazarevic et al., 2007; Li et al., 2005).

While many SCM practices frameworks have been proposed there has been a lack of knowledge on actual industry practices for implementing effective SCM (Tan, 2002). Let’s see some of the proposed SCM practices.

Li et al. (2005) developed and validated a measurement instrument for studying supply chain management practices. Data for the study were collected from 196 organisations. In addition, the measurement scales were tested and validated using structural equation modelling. The authors classified the SCM practices into six constructs; strategic supplier partnership, customer relationship, information sharing, information quality, internal lean practices and postponement. They tried to cover the unifying aspects of supply chain management that includes upstream of supply chain (strategic supplier partnership), information flow across a supply chain (information sharing and information quality), downstream of supply chain (customer relationship) and internal supply chain processes (internal lean practices and postponement). In addition, Li et al. (2005) recognised the importance of other dimensions that not been included in the constructs such as quality management practices, internal integration, geographical proximity, cross-functional teams, agreed vision and goals and agrees supply chain leadership.

Koh et al. (2007) proposed SCM practices from the following perspectives: close partnership with suppliers, close partnerships with customers, just in time supply, strategic planning, supply chain benchmarking, few suppliers, holding safety stock and sub-contracting, e-procurement, outsourcing and many suppliers.

Tan et al. (2002) identify six aspects of SCM practice through factor analysis: supply chain integration, information sharing, supply chain characteristics, customer service management, geographical proximity and JIT capability.

Lazarevic et al., (2007) disclosed that, in order to make the SCM effective there must be effective implementations of the supply chain management practices, namely good supplier and customer relationship, information sharing, internal operation, information technology (SCM) and training of employees among the upstream, internal and down streams of the supply chain.

Narasimhan and Das had proposed eight supply chain practices in their study. The authors had surveyed purchasing managers from various industries from National Association of Purchasing Management (NAPM) list. The items were; earlier supplier involvement in product design, early supplier involvement in process design, supplier responsiveness to order delivery changes, supplier responsiveness to order volume changes, supplier ability to modify product, use of appropriate measurement/reward systems in purchasing, use of value analysis in purchasing, use of cross-functional teams in purchasing.

Min and Mentzer (2004) developed measurement scales of the SCM-related constructs, namely; a supply chain orientation and supply chain management. For the purpose of this research, only the supply chain management construct will be discussed. The authors had divided the supply chain management into seven constructs; agreed vision and goals, information sharing, risk and reward sharing, cooperation, process integration, long-term relationship, agreed supply chain leadership.

Souza and William (2000) suggested that cost and quality is a part of competitive advantage dimension. Thatte (2007) suggested cost, quality, dependability and speed of delivery as some of the
critical competitive priorities for manufacturing. (Vokurka et al., 2002; Fawcett and Smith, 1995; White, 1996; Tracey et al., 1999, Thatte, 2007) described the competitive advantage dimensions included price/cost, quality, delivery dependability, and time to market. (viz: Stalk, 1988; Vesey, 1991; Zhang, 2001). Koufteros et al. (1997); describe the following five dimensions of competitive capabilities: competitive pricing, premium pricing, value-to-customer quality, dependable delivery, and product innovation. Thatte (2007) suggested that dimension of competitive advantage: price, quality, delivery dependability, time to market, and product innovation. These dimensions, author used in this research. These concepts are supply chain management practices that encompasses supplier partnership, customer relationship, information sharing, information quality, and internal operation, and competitive advantage of the firm. Supply chain management practices as a multi-dimensional construct that encompasses upstream and downstream sides of supply chain (Li et al, 2006). This study examines the supply chain management practices that consist of strategic supplier partnership, customer relationship, information sharing, information quality, and internal operation and its relationship to competitive advantage. Hence, the following hypotheses will be tested:

H: Supply chain management practices are positively related to competitive advantage
H a: Strategic supplier partnership is positively related to competitive advantage
H b: Customer relationship is positively related to competitive advantage
H c: Information sharing is positively related to competitive advantage
H d: Information quality is positively related to competitive advantage
H e: Internal operation is positively related to competitive advantage

Methodology
Out of the 39 leather and leather product firms contacted as part of the survey, only 30 firms were taking as sample and it covers around 77%. Basically, questionnaires were administered on managers of the respondent companies whom were perceived to be responsible for supply chain activities within their respective companies. The data collected were analyzed using reliability and validity tests, descriptive (mean and standard deviation) and inferential (correlation and multiple regression analysis) statistics.

Sampling and Data Collection
The data collection instrument used was a questionnaire which was administrated to a total sample of 205 managers are classified by job title and respondents are also classified by their job functions are supply chain manager, production/manufacturing manager, marketing/sales manager, quality control manager, transportation manager, distribution manager, procurement/purchasing manager, warehouse manager from leather firms in Ethiopia.

Reliability Analysis
Reliability (internal consistency) of the items comprising each dimension was examined using Cronbach’s alpha (Cronbach, 1951). The Cronbach’s alpha was conducted to assess the reliability of each scale. Following the guideline established by Nunnally (1978), an alpha values score of higher than 0.70 indicate that all scales is generally considered to be reliable. For each of the item scales, factor analysis was used to reduce the total number of items to manageable factor. Principal components analysis is used to extract factors with eignevalue greater than 1. Varimax rotation is used to facilitate interpretation of the factor matrix. Sampling adequacy measurement tests are also examined via the Kaiser-Meyer-Olkin statistics to validate use of factor analysis.

Factors analysis result showed that the KMO value of 0.738 indicate sampling adequacy. The factor analysis was applied to the supply chain management practices areas: strategic supplier partnership, information sharing, information quality, internal operation practices, and customer relationship. Among 46 items in the questionnaire, two items are deleted during the factor analysis. A total of 44 items were reduced to five underlying factors loadings, depicted in Table xxx. Cronbach’s alphas
among 44 items in the questionnaires exceeded 0.7. Eleven items are identified for Strategic Supplier Partnership (SSP), seven items are identified for Information Sharing (IS), and five items for Information Quality (IQ), fourteen items are identified for Internal Operation Practices, and nine items are identified for Customer Relationship. These items are treated as dependent variables.

A similar factor analysis was applied to the competitive advantage of the firm (CA); Price (P), Quality (Q), Delivery Dependability (DD), Product Innovation (PI) and Time market(TM). Cronbach’s alphas among 14 items in the questionnaires are exceeded 0.7. Two items are identified for price, four items for quality and, two items for delivery dependability, product innovation, and time market. These items are also treated as independent variables. The KMO value of 0.926 indicate sampling adequacy.

Results and Discussion
Correlation Analysis

The result of the correlations between the independent variables (strategic supplier partnership, information sharing, internal operation, information quality, and customer relationship) and dependent variables (competitive advantage) of this study as shown in table 2 indicated that SCM practices are positively correlated to competitive advantage.

The study finding reveals that a positive correlation between SCM practices and competitive advantage with (r=0.290, p<0.01).Specific correlation result from the table 1 indicates strategic supplier partnership and internal operation are significantly and positively associated with competitive advantage, (r=0.331, p<0.01)and 0.363, p<0.01 respectively. Suffice to say that the more the effort being put into implementing SCM practices the direct impact it will have on competitive position of the firm.

On the other hand, as indicated in Table 1 the statistical result of information quality, information quality, and customer relationship which equals 0.314,0.300, and 0.133 are well above the significance value of 0.05. Accordingly, it is evident that there is no statistically significant relationship between information quality, information quality, and customer relationship organizational performance.

| Table 1: Shows the Correlation between Independent and Dependent variables |
|-----------------------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| Competitive advantage       | Pearson Correlation | 1              | 2              | 3              | 4              | 5              | 6              | 7              |
| Sig. (2-tailed)             | N               | 178            | 1              |                |                |                |                |                |
| SCM practice                | Pearson Correlation | 0.290**        |                |                |                |                |                |                |
| Sig. (2-tailed)             | N               | 178            | 1              |                |                |                |                |                |
| Strategic partnership SSP   | Pearson Correlation | 0.331**        | 0.635**        |                |                |                |                |                |
| Sig. (2-tailed)             | N               | 178            | 178            | 1              |                |                |                |                |
| Information sharing         | Pearson Correlation | 0.063          | 0.711**        | 0.252**        |                |                |                |                |
| Sig. (2-tailed)             | N               | 178            | 178            | 178            | 1              |                |                |                |
| Information quality         | Pearson Correlation | 0.078          | 0.711**        | 0.252**        | 0.307**        |                |                |                |
| Sig. (2-tailed)             | N               | 178            | 178            | 178            | 178            | 1              |                |                |

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**. Correlation is significant at the 0.01 level (2-tailed).
*. Correlation is significant at the 0.05 level (2-tailed).
Source: Filed Survey, 2013

Regression Analysis
The parameters of this model are estimated using multivariate regression analysis. Table 2 and 3 shows the regression between all independent variables at construct and sub-construct (strategic supplier partnership, information sharing, internal operation, information quality, and customer relationship) with competitive advantage. Table 2 also shows coefficients of each model along with corresponding test statistics.

At construct it was hypothesized that SCM practices’ of a firm is positively related to competitive Advantage of a firm. The result of the hypothesis was found to be significant ($\beta=0.453 \ t=4.02$). This indicates that the higher the level of SCM practices by a firm, the higher the level of its competitive advantage. In other words ‘SCM practices’ of a firm has a direct positive influence on its competitive advantage. The successful SCM implementation will not only make an impact on the overall performance of the organization, but also on the competitive advantage of the organization. These practices are supposed to improve the organization’s competitive advantage using the price/cost, the quality, the delivery dependability, the time to market, and product innovation.

**Table 2: Regressing competitive advantage on SCM practice**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
<th>Number of obs = 178</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>6.74434107</td>
<td>1</td>
<td>6.74434107</td>
<td>3.04895429</td>
</tr>
<tr>
<td>Residual</td>
<td>73.4538387</td>
<td>176</td>
<td>.417351356</td>
<td>.0841</td>
</tr>
<tr>
<td>Total</td>
<td>80.1981798</td>
<td>177</td>
<td>.453097061</td>
<td>.0789</td>
</tr>
</tbody>
</table>

| ComAd | Coef. | Std. Err. | t    | P>|t| | [95% Conf. Interval] |
|-------|-------|-----------|------|-----|-----------------|
| SCMPra | .4526137 | .1125924 | 4.02 | 0.000 | .2304089  .6748186 |
| _cons | 1.386344 | .4386367 | 3.16 | 0.002 | .5206799 2.252009 |

Source: Filed Survey, 2013

**Table 3: Regressing competitive advantage on strategic partnership, Information sharing, Information Quality Internal operation, Customer relationship**

<table>
<thead>
<tr>
<th>Source</th>
<th>SS</th>
<th>df</th>
<th>MS</th>
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<tbody>
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<td>3.04895429</td>
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<tr>
<td>Residual</td>
<td>64.9534084</td>
<td>172</td>
<td>.377636095</td>
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<tr>
<td>Total</td>
<td>80.1981798</td>
<td>177</td>
<td>.453097061</td>
</tr>
</tbody>
</table>

Source: Filed Survey, 2013
ComAd | Coef. | Std. Err. | t | P>|t| | [95% Conf. Interval]

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<tbody>
<tr>
<td>strsupartdim</td>
<td>.2907337</td>
<td>.104595</td>
<td>2.78</td>
<td>0.006</td>
<td>.0842786</td>
</tr>
<tr>
<td>Infosharing</td>
<td>-.0348953</td>
<td>.0746492</td>
<td>-0.47</td>
<td>0.641</td>
<td>-.1822418</td>
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<tr>
<td>InfoQuality</td>
<td>-.1718552</td>
<td>.0926764</td>
<td>-1.85</td>
<td>0.065</td>
<td>-.3547847</td>
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<tr>
<td>Internalopp</td>
<td>.6353446</td>
<td>.1465732</td>
<td>4.33</td>
<td>0.000</td>
<td>.3460308</td>
</tr>
<tr>
<td>Customerrel</td>
<td>-.1477053</td>
<td>.1179504</td>
<td>-1.25</td>
<td>0.212</td>
<td>-.3805219</td>
</tr>
</tbody>
</table>

_ones_ | 1.051856 | .4467134 | 2.35 | 0.020 | .1701095 | 1.933602 |

Number of obs = 178
F (5, 172) = 8.07
Prob > F = 0.0000
R-squared = 0.1901
Adj R-squared = 0.1665
Root MSE = .61452

**Source:** Filed Survey, 2013

Others held fixed, an increase in strategic supplier partnership by one unit firms’ competitive advantage will improve by about 0.29 units. This expected because, selecting the right suppliers and forming strategic supplier partnership with firms is a key to success. A strategic partnership emphasizes direct, long-term association and encourages mutual planning and problem solving efforts (Gunasekaran et al., 2001).

When firms increase their internal operation by one unit, keeping other things constant, competitive advantage will increase by about 0.5 units. Internal operation is the starting point to make the environment favorable for integration with the external partners. According to lazarevic et al., (2007) internal operation is the most critical factor to measure the organization’s potential to go for external integration. These writers state that companies should be internally efficient and effective before embarking on external integration. On the contrary, Handfield and Nichols (1999), states that poor internal operations can lead to failure in coordinating with external partners.

Based on the F-value (8.07) and p-value (0.000) it can be concluded that the regression as a whole is significant. The R-square value for this regression is 0.1901 indicating that 19% of the variance in the dependent variable has been explained by the independent variables. Since the study is based on cross sectional data, this value may indicate better fitness of the model. Of the five independent variables, two variables have been found to be statistically significant at the 1% level of significance. As expected theoretically, both variables have a positive effect on competitive advantage. Moreover, the constant term is significant at the 5% level of significance this indicates that while all of the included explanatory variables are zero, competitive advantage is 1.05 units.

From these results it is clear that information sharing and information quality does not contribute significantly to the prediction of competitive advantage. One can argue that although information sharing and information quality are found to be non instrumental in the prediction of competitive advantage, having good internal operation and supplier relations includes collaborating and assisting one another with vital, on time, and quality information. Moreover, as observed from the table, customer relationship also does not contribute significantly to the prediction of competitive advantage. The results emphasize the fact that nourishing long term mutually beneficial relationships with suppliers and sharing quality information in real time throughout the supply chain leads to more responsive suppliers.

This model has diagnosed against some assumption as hetroscedasticity, multicollinearity, omitted variable errors, normality, and specification tests were carried out after the usual regression analysis is made. The results show that the model has no diagnosis such problems.
Conclusion

This research provides empirical justification for five key dimensions of SCM practices identified and describes the relationship among SCM practices and competitive advantage. The empirical results of this study gave researchers an insight about the specific SCM practice dimensions that positively impact competitive advantage of a firm. The results reveal that the practices of strategic supplier partnership as well as internal operation were most influential in increasing competitive advantage on an aggregate basis. However, the study did not find any relationship between information sharing, information quality, and customer relationship and competitive advantage. This finding also shows that supply chain management practice in Ethiopian leather firms is not used as a weapon in highly competitive global marketplaces. The study thus showed that SCM practices definitely impacts competitive advantage.

Reference


