A framework for raw materials management in process industries

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Firms in the process industries manipulate materials properties to produce upgraded raw materials for applications and products upstream in a supply chain. About 25% of the most research intensive firms in the world belong to the process industries, so proper management of raw materials is a key concern for many firms. This article explores the concept of "raw materials management". By studying the current world leader in powder metallurgy, the Höganäs Corporation, the article describes the external and internal factors impacting how raw materials are managed, and how raw material issues affect different aspects of firm performance. Managerial implications are presented elaborating three key-areas that firms should deal with when developing a strategic approach to raw materials management.

Introduction

Firms in the process industries utilize production processes that manipulate material properties to produce upgraded raw materials for subsequent use in a variety of application areas upstream in a supply chain (Barnett & Clark, 1996). Process firms thus use raw materials to manufacture non-assembled products by means of a production process where these raw materials are processed and transformed in a continuous flow and/or in batches (Lager, Blanco & Frishammar, 2013). Examples of such industries include petrochemicals and chemicals, food and beverage, mining and metal, mineral and material, generic pharmaceuticals, forest and steel. Process industries constitute a substantial part of all manufacturing industry and about 25% of the most research and development (R&D) intensive firms in the world belong to this cluster of industries (Lager, 2010).

Often referred to as commodities and sold in factor markets, raw materials are the basic materials from which products are manufactured or made (Oxford English Dictionary). Clearly, input material put heavy constraints on output products. Given the importance of raw materials as the critical input, and the increasing challenges related to raw materials supply, a systematic and effective approach to the management of raw materials is critical to any firm in the process industries.

The way companies deal with the raw material challenges affect both short-term operations as well as long-term business opportunities. For instance, from a short-term perspective, when supply of raw materials is smooth, operations may progress favourably but when it is interrupted, the impact on businesses is often immediate and severe. From a long-term perspective, changes initiated by the company or forced upon them by others could have both constraining and retaining effects on the value proposition(s) of the company. An example of the constraining effect on value propositions is changes of raw material quality that the process firms deliver to the market. Within the metal powder industry, changes in scrap metal quality (with higher degrees of alloying elements) put constraints on powder producers' ability to sustain their value proposition.

The volatile political and regulatory environment for raw materials has made raw material management more acute in corporation governance. Policies and regulations do not only affect the availability of raw materials, e.g. Dodd-Frank Bill affected the supply of cobalt from Congo, which at that time was one of the largest exporters of cobalt. Environmental regulations and trade barriers delimit the options of supply and increase the cost of global sourcing. Regulations also dictate what handling