
CONFLICTING FORCES FOR INTERNATIONALIZATION OF HYDROPOWER EQUIPMENT PRODUCERS: RECONCILING SUSTAINABILITY AND CSR WITH MNEs' INTERNATIONAL STRATEGIES

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Abstract

We are looking for clarification for the presence of the global movement in businesses whose qualities give clashing reasonings worldwide extension. In such businesses, the serious estimation of some modern attributes is amplified by global development, while the estimation of others is sabotaged by these moves. Considering this situation in the process of transition to a sustainable development, the tension is growing. This work we have done; Based on case studies of hydropower equipment manufacturers presenting representative examples of multinational companies in the renewable energy industries. The data we have obtained from our studies; suggest that there may be plural approaches to effectively address such pressures, and firms' chronicles and upper hands shape the decisions they make despite these contentions. In this study, we outline the distinctive impact that sustainability concerns have in this tension.

1. Introduction

The major sources of competitive advantage in the hydropower gear industry give clashing reasoning to global development. From one perspective, internationalization of the creation is a significant methods for costcutting and development in an industry where value rivalry is basic, and size is an essential wellspring of upper hand. The worldwide hydropower market, as estimated in yearly limit establishments, contracted in 2018, proceeding with a multi-year pattern of deceleration. New limit was an expected 15.6 GW, raising complete worldwide introduced ability to around 1,150 GW. ([1] [The global hydropower installed capacity is 1,150 GW – evwind.es](#)) Internationalization is a critical segment of corporate technique for some organizations. Organizations working universally have a serious edge concerning volume impact and information, just as a

savvy admittance to assets. Internationalization is along these lines a fundamental segment for a manageable and deliberately stable situation of an organization ([2] [Porter, 1986](#)). Determination of promising methods of market section and development for an unfamiliar market is a fundamental part of internationalization ([3] [Anderson & Gatignon, 1986](#); [Agarwal & Ramaswami, 1992](#)). Based on the empirical investigations, different marketing techniques can be evaluated to derive successful strategies. However, the leading firms in the industry have been operating internationally for decades, and have recently expanded their international operations significantly ([4] [Credit Agricole Group, 2012](#)). The heterogeneity of the research results for international management to date, however, point to the conclusion that concrete strategies can best be derived from specific industrial sector investigations ([5] [Internationalization of Renewable Energy Companies: In Search of Gestalts](#)).

Particularly pertinent in the contemporary world, where firms are expected to behave in attitude that not only increase their own goals and profitability but also creates social and environmental values. The spontaneous problem with multinational enterprises (MNEs) is the reconciliation of differing and often conflicting perceptions of what constitutes social and environmental values and what the standards of these dimensions. ([6] [Theories of Internationalization and Foreign Direct Investment: How to Explain FDI from Emerging MNEs?](#))

There have been different definitions of multinational enterprise that is variously termed as "transnational enterprise" (corporation), "international corporations" (firms), "global corporation", "denationalized corporation", "supranational" or "cosmocorporation" It was long described as an "enterprise which owns and controls income generating assets in more than one country" ([7] [Dunning, 1973:13](#)). But simply all enterprises which control assets - factories, mines, sales offices and the like - in two or more countries are multinational.

The theory of MNE provides rich and diverse rationale for the international expansion of firms. Practitioner-oriented theories have acknowledged the existence of conflicting forces for internationalization, but have assumed that firms can address such conflicts by adequate strategic International Strategies of MNEs in the Renewable Energy Sector 189 choices, such as multi-domestic versus

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global strategies, local adaptation or global

standardization, centralized. These methodologies don't completely address the contemporary truth of a worldwide movement, whereby the weight of worldwide rivalry has drawn numerous ventures that up to this point have been home grown, precisely as a result of the presence of clashing powers that illuminate uncertain reasoning for internationalization, into global action. ([8] [Carr & Collis, 2011](#)). They are not recognize the tension ([9] [Tensions and Opportunities: An Activity Theory Perspective on Date and Storage Label Design through a Literature Review and Co-Creation Sessions](#)) on firms to act in a socially mindful way, and the clashing desires across nations, in disturbing these weights and presenting new ones. These kind of situations constraints firms' ability to create value via international activity and results in poor international performance. ([10] [Levy & Kolk, 2002](#)).

The example given to us is on "hydropower equipment production", we will follow the same path. That's why to study these forces, we choose the topic of hydropower equipment production. The main sources of competitive advantage for hydropower equipment production industry - technological skills, cost, and size, etc.-represent opposing directions to international expansion and require contradictory strategies to organize these activities. Also, this industry representative of the renewable energy industry is particularly interesting in the context of sustainable and responsible investment discussions. Hydroelectric equipment manufacturers represent possible solutions for global warming and clean environment by producing equipment that enables renewable energy generation. However, production activities also create pollution. Therefore, they are a part of both the problem and the solution. For example, the polluter-pays principle – a central tenet in environmental law and policy – requires that economic operators assume the costs of internalizing their pollution ([11] [United Nations International Law Commission, 1998](#); [United Nations Commission on Sustainable Development, 1997](#)) – could play a role when it comes to interpreting IIA rules on expropriation and the extent to which they require States to compensate investors for increased costs arising from climate change measures.

Based on case studies of the world's leading hydropower equipment manufacturers, included in published and unpublished company reports and based on the opinions of their observers working in this field, we reviewed the articles showing the strategic choices these companies made.

The study we are examining makes important contributions to many theoretical issues. Contributed topics are; The first advocates a new way of thinking about international strategy, based on balancing opposing forces rather than making a choice between them. The study that we examined also serves to bridge the gap between the characteristics of industries and the

characteristics of firms in shaping firms strategies and industrial competition models ([12] [Ghemawat & Spencer, 1986](#)). This interaction is vital because the strategic choices firms are limited by the characteristics of their industries and are therefore the basis for explaining firms strategies and patterns of international activity. Another contribution of the study we are examining is to expand the understanding of internationalization of firms in the hydropower equipment industry, which has not been adequately researched but is the most important industry.

2. Theoretical Foundations

The MNE theory suggests that it drives companies to grow and helps develop internationally. These factors includes intangible assets in the form of technological capabilities, branding and differentiation skills, and managerial and organizational skills that enable firms to manage large-scale operations and create the internal synergy underlying value creation through international activity. International activity also supports economies of scale, for example by increasing the advantages of global purchasing and achieving efficient production scale. As with any theory, there are conflicts in this theory. To the extent that the conflicts between them have been acknowledged, they were maintained to be temporarily separated.

The product life cycle theory suggests that in an orderly manner over time, at different stages of the life cycle ([13] [Vernon, 1966, 1979](#)). It is the distinctions among these powers that drive the development over the existence cycle, whereby the connection among R&D and creation is basic at beginning phases of the cycle, though cost turns into a serious basic at the development and decay stages. Practice-arranged conversations have been driven by the presumption that MNEs' essential decisions empower them to moderate the contention between the powers that intensify and weaken worldwide development. They can choose multi-homegrown or worldwide systems, nearby variation or worldwide normalization, decentralized or decentralized authoritative structure, and they can settle on global, worldwide or transnational methodologies for dealing with their worldwide exercises.

Prahalad and Doz (1987) and Doz and Prahalad (1991) were express in keeping up that polarization is lacking for a hypothesis that tries to diagram the executives standards for a complex and multi-dimensional association as the MNE, nor is it of legitimacy for training. In any case, the common deduction in conversations of MNE hypothesis and its applications for training has kept on being overwhelmed by a polarizing approach. As in the sample article given to us, we will talk about the harmony of this approach within itself. We refer to the hydropower equipment industry where, as we outline below, the co-existence of conflicting forces manifests itself compellingly, but has not stopped the internationalization of some firms within this industry.

We also detail this discussion in terms of sustainability and Corporate. MNEs are progressively liable to request to offset their business objectives with those of their partners and society in huge ([14] [Canter, 2009](#); [Porter and Kramer, 2011](#)). Their reactions to these weights have changed drastically over the long haul ([15] [Kolk and Pinkse, 2005](#); [Lee, 2008](#)) and in their later design speak to generous test. Tending to these weights is especially trying for MNEs. By goodness of their exercises in numerous nations, these organizations defy various and regularly clashing weights for moral conduct that make social worth. MNEs are likewise dependent upon double weights of nearby and worldwide networks whose requests for socially capable conduct may not generally be in arrangement.

3. The Hydropower Equipment Industry

Hydropower equipment is used for the production of electricity with water energy in hydropower plants. The first large-scale commercial hydropower plants were built in the last decades of the 19th century, and sparked demand for advanced equipment that conserve commercial production.

Demand for hydropower electricity is determined by the general demand for electricity, the demand for electricity from renewable sources of energy and the relative cost of alternative sources of electricity. These demand determinants have been very favourable over the last decades, and have propelled the growth of production and consumption of hydropower electricity. The demand for electricity generated from renewable resources has substantially increased during this period, a result of rising concerns regarding depletion of fossil-fuel reserves and global warming, coupled with geopolitical and military conflicts, and recently significant rise of fuel price ([16] [Renewable and Sustainable Energy Reviews, 2007](#)).

Growth in demand has increased investment in hydropower plants. This growth has propelled substantial demand for hydropower equipment. Hydropower electricity is clean, green and renewable, and provides affordable solution to some major environmental and sustainability concerns. The production of equipment for the generation of hydropower electricity raises the challenge of pollution by the usage of heavy machinery ([17] [Bonsor, 2012](#)). In international context, the concern is magnified by the environmental cost of transporting heavy equipment over distance.

The first table of the article we are working on shows us that the world's hydroelectric equipment supply was dominated by three major companies known as Alstom Power, Andritz Hydro and Voith Hydro, the Big Three, which had a combined world market share of approximately 60% in 2011. The remaining 40% consists of small companies. The three big companies differ from smaller competitors in terms of their technological capabilities and the range of products they offer and therefore generally do not compete directly

with them. These companies provide the design, manufacture, services and supply of products and systems and produce the full range of equipment for hydroelectric power plants. The big three companies diversified to varying degrees beyond hydropower equipment, specifically for shipping, shipping and others, as well as manufacturing equipment for other energy sources. On the contrary, their smaller counterparts tend to be more specialized and focused.

Table 1. Major Producers of Hydropower Equipment.

	Home Country	Global Market Shares, %, 2011
<i>The Big Three</i>		
Andritz Hydro	Austria	28
Alstom Power	France	23
Voith Hydro	Germany	23
<i>Others</i>		
Dong Fang Electric	China	n.a. (no. 1 in China, by sale volume)
Harbin	China	n.a. (no. 2 in China, by sale volume)
Impsa	China	n.a.
Zhefu	China	n.a.
Sinohydro	China	n.a.
Other Chinese	China	n.a.
Toshiba	Japan	n.a.

Sources: Big Three Annual Reports 2011; Credit Agricole Group.

4. Competitive Advantages In The Hydropower Equipment Industry And International Activity

The main sources of competitive advantage in the Hydropower equipment sector are technological capabilities, cost and size. The equipment used for hydroelectric power generation is complex and technologically advanced, and this is critical to the ability to use the latest technology and to use it commercially. The things produced are customer specific and the production is based on the distinctive characteristics of individual customers. This feature eliminates the possibility of standardization of production in connection with many parts of the production.

However, at the same time, the ability of hydropower equipment manufacturers to differentiate themselves with their technology is quite limited because most of the equipment they produce is built to order to customers' specifications.

Consequently, cost is an important differentiation tool and low cost bidding is the main determinant of competitive success. The employed workforce includes highly skilled scientists and engineers who carry out R&D activities and are responsible for the design of components. Except this; Supervisors, auditors, production and assembly personnel (welders, electricians, pipe fitters and the like) are included. Cost reduction can be achieved by the efficient use of labor and capital used effectively in the procurement of machinery, intermediaries and raw materials.

The custom nature of production limits the ability to reduce costs through standardization and scaling, because production cannot be accelerated and automated. More standardized parts of the production, such as welding, forging or other single production step, are usually sourced from specialist suppliers.

With the three main elements we will summarize below, international activities significantly affect the competitive advantage.

Technological Capabilities

As in the article given to us, we will start with technological capabilities. The production and development of technological capabilities in the industry are linked to the location of the company in question. The R&D departments of these three major companies that we mentioned earlier have traditionally been entirely based on their own countries and relied solely on the scientific and engineering capabilities of the countries. This approach has several important advantages. First, it often provides the most effective technological developments, because firms have developed specific technological capabilities based on the nature and type of human capital in their home country. Moreover, there are many advantages that companies can benefit from in their own countries (tax exemption, etc.). Another important point is the close interaction between R&D and production. Implementing R&D in home countries, places restrictions on the internationalization of manufacturing, including outsourcing. Technological advances made by research teams should be tested and modified in use, according to feedback from production. The need for close interaction is such that it can neutralize remote communication and strongly support face-to-face physical interaction.

Cost

As mentioned in the previous section, there are two main components of cost in industry (labor and raw materials). Cost savings can be achieved by lowering costs and increasing the efficiency of these components. International activity is critical to ensure the cost of both components is reduced. The potential cost savings with employment of foreign labor is therefore very important. Cost imperative naturally determines the choice of countries where production will take place, and costs decrease in low-cost countries. Production facilities in such countries provide companies with access to labor at much lower costs than in their own countries ([18] [Just How Low are China's Labor Costs?](#)).

International activity is also effective in lowering the costs of raw materials and intermediaries, providing access to low-cost alternatives in both outsourcing and procurement. Provides access to low-cost outsourcing targets and intermediary and raw material suppliers. Components, which are part of the expertise of the companies, are usually produced internally so that the companies can guarantee their quality and control the delivery times. Here, cost reduction can be achieved by employing lower cost labor force as discussed above.

Size

International expansion is an important growth tool in the industry and therefore enables firms to take advantage of

size. As mentioned above, the huge increase in demand for hydroelectric electricity, along with many factors, has created many growth opportunities in the international arena and encouraged companies to grow. However, most of the international activities of these companies are directed towards developing markets, countries that differ significantly in terms of expectations from companies and socially responsible business activities, especially in recent years. These conflicts and their devastating consequences for firms in the industry have been vividly demonstrated in a series of recent projects that raise important environmental and ethical issues and subject relevant firms to serious criticism ([19] [Hvistendahl, 2008](#)). Many of these projects have taken place in emerging markets, and their controversy and detrimental consequences for hydropower equipment manufacturers involved demonstrate the challenge of acting sustainably against conflicting expectations and standards and following CSR principles.

In Table 2 of the article that we reviewed, industrial features that encourage and hinder internationalization are presented to address these challenges.

Table 2. Industrial Characteristics of the Hydropower Equipment Industry and their Impact on Internationalization.

Support Internationalization	Inhibit Internationalization
Price competition → cost pressure	R&D most effective in home country
Local adaptation – proximity to clients	Different location needs – R&D, manufacturing
Transportation costs	Interaction R&D/manufacturing
Scale economies	Quality control (tailor-made output)

5. Forces For Internationalization And “The Big Three” Strategic Choices

In this part examines the three major companies in the article we are working on. The article makes these examinations through the following; It presents important milestones in the historical development of the Big Three and provides a comparative summary of some of the characteristics of these firms. The differences between them are notable for their importance in the overall activities of the hydroelectric sector, in relation to each other and over time. It shows the competitive advantages of the Big Three in the hydroelectric equipment segment in relation to the main sources of advantage in the sector - technological capabilities, cost and size. The article that we are working on examining how the outlined differences cause the Big Three to adopt different solutions to the tension created by the conflicting forces for internationalization and to result in the different balances they establish to address these tensions.

6. Discussion And Conclusion

In the article that we are working on, we have tried to examine the paths followed by multinational companies in internationalization. We highlighted the influence of demanding forces for sustainable investment in growing the tension represented by international activity. We addressed this issue based on the three largest multinational companies in the hydropower equipment industry ([20] [Alstom Power](#),

[Andritz Hydro and Voith Hydro](#)). As we have reviewed and our study has shown, these firms have followed differently to address tension and have built their international activities in different ways and with varying degrees of success. It has resulted in different combinations of competitive advantage that support different balances between competing forces for internationalization and different ways of addressing sustainability and CSR issues.

The work we have examined and conducted is the opposite widely expressed views that suggest that international activity in this sector may not be suitable for such industries. Our study rather reveals that the firms in question have the ability to establish a balance between opposing forces. This balance varies from firm to firm. And this change seems to vary between firms based on their unique distinctive features and can in itself be a critical source of competitive advantage. All this shows us that there are many ways to achieve the same goal within any industry. Finally, the increasing awareness of these issues in the contemporary world and the adoption of these needs by multinational companies make our contribution very timely and most important.

7. References

[1] [The global hydropower installed capacity is 1,150 GW – evwind.es](#)

[2] [Porter, 1986](#)

[3] [Anderson & Gatignon, 1986; Agarwal & Ramaswami, 1992](#)

[4] [Credit Agricole Group, 2012](#)

[5] [Internationalization of Renewable Energy Companies: In Search of Gestalts](#)

[6] [Theories of Internationalization and Foreign Direct Investment: How to Explain FDI from Emerging MNEs?](#)

[7] [Dunning, 1973:13](#)

[8] [Carr & Collis, 2011](#)

[9] [Tensions and Opportunities: An Activity Theory Perspective on Date and Storage Label Design through a Literature Review and Co-Creation Sessions](#)

[10] [Levy & Kolk, 2002](#)

[11] [United Nations International Law Commission, 1998; United Nations Commission on Sustainable Development, 1997](#)

[12] [Ghemawat & Spencer, 1986](#)

[13] [Vernon, 1966, 1979](#)

[14] [Canter, 2009; Porter and Kramer, 2011](#)

[15] [Kolk and Pinkse, 2005; Lee, 2008](#)

[16] [Renewable and Sustainable Energy Reviews, 2007](#)

[17] [Bonsor, 2012](#)

[18] [Just How Low are China's Labor Costs?](#)

[19] [Hvistendahl, 2008](#)

[20] [Alstom Power, Andritz Hydro and Voith Hydro](#)