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Opportunities in the wake of crisis

Halvor Holtskog^a, Geir Ringen^b

^aGjøvik University College, Teknologivegen 22, Gjøvik, 2815, Norway

^bSintef Raufoss Manufacturing, Enggata 40, Raufoss, 2830, Norway

* Corresponding author. Tel.: +0047 416 79 834; fax: +0047 611 53 625. E-mail address: geir.ringen@sintef.no.

Abstract

This study reveals the history of a Norwegian automotive supplier that went bankrupt during the financial crisis in 2009. The crisis swept through the industry and hit hard for those actors who already struggled to keep up with the cost pressure. A few people kept faith in knowledgeable workers and innovative ideas, and the company arose from the cumbersome situation to become a sole supplier of critical wheel suspension systems to European premium brands. The company managed to ascend and invest in R&D and innovations that save weight, reduce number of components and save cost. The main research question asked in this study is what strategic capabilities are demonstrated when turning a crisis into opportunities. The study shows interesting features about how a supplier can adapt to a completely new market situation by focusing on, and combining, R&D, customer relations, co-creation, employee competency, sustainability and ability to adapt. The essence is that the crisis was not entirely negative - it also gave opportunities for those who dared to invest in human capital, technology and niche markets.

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1. Introduction

Firms are facing an ever increasing pace of globalization and changing reality, resulting in increased competition and more dynamic markets. These two factors are easy to observe in the automotive industry, a market which has been viewed as a globalization frontrunner for many years. First, the struggle to meet growth strategies in mature markets has led to excessive capacity and thereby intensified competition. Second, rapidly changing customer requirements and regulative directives with regard to sustainable development and improved safety set the scene for how car manufacturers have to be adaptive in order to survive.

Increasing pressure to develop products of higher quality, with added functionality, at a lower cost, and in shorter time frames unquestionably brings about some dichotomies. Only suppliers that can manage such conflicting objectives and in an adaptive manner consistently and timely bring new and innovative products to market will be regarded as long-term partners. In turn these objectives have to be derived into strategies and related processes to develop the needed

internal and external capabilities. The following view organizational capabilities from different theories and perspectives.

1.1. Strategy

Strategy theory talks about capabilities and how to develop them. Basically companies need something that set them apart from the rest of the competitions. Done right (differentiation), the company will earn an excellent financial performance. Or as Foss argues; "Strategic management is about coordinating activities related to the delivery of value to customers in a way that is not only supportive of success but also different from the competition". [1]

Porter [2, 3] and Barney's [4] works represent this thinking each in different ways, while Porter offered a systematic and strategic way of advancing the market, Barney looked at how (unique) value could be created inside the company. Such value is a result of coordinating unique resources in a different way. This resource-based perspective has to meet the criteria; valuable, rare, in-imitable and non-substitutable if they

are to contribute to any competitive advantage [1]. Later Barney changed his criteria from VRIN to VRIO where the O stands for organization [4, 5]. Also Mintzberg's work [6, 7] where he connected organizational structure with performance can be seen as a part in the resource-based view. This increased focus on organization design and management processes inside organizations has yielded a very good understanding of key indicator for achieving financial success. Foss et al. [1] made the point that it should depart from current norms in such a way that an entirely new management practice, process or structure can be regarded as an innovation, but not necessarily make a revolution more a shift in a continuous way. This can be perceived in a way that organizational design and management processes may be strategic resource of its own right. The findings are results of top-down approach and believing that the most valuable knowledge is centered on management.

1.2. Innovation

Clark and Wheelwright [8] defined innovation as *"The aim of any product or process development project is to take an idea from concept to reality by converging to a specific product that can meet a market need in an economical, manufacturable form."* They also concluded that product development can create competitive advantage in at least three areas: market position, resource utilization, and organizational renewal. However, the ability to achieve and maintain these advantages is not a given. For instance Dougherty and Hardy [9] noted that many organizations have difficulty with sustained product development success or managing a number of product development efforts over time. Hence, product development capability can be defined as the long term ability to use and integrate existing organizational and inter-organizational competences to introduce new and successful products [10].

1.3. Economic theory

In strategic economic theory there has been debate about capability and boundary of firms or organizations for several decades [11-15]. This debate has been divided into two groups; capability view and organizational economics [16]. The first group largely concentrates on agents and individuals' process knowledge and what kind of knowledge it is (team theory, contract theory, and transaction cost economics). Knowledge in these theories are generally asymmetric information, incomplete and imperfect contracting, ownership patterns and incentive design [16]. Argyres et al. argued that capability view dominates with its capability first-thinking. They concluded that capability

first view cannot be the whole story and claimed that organizational economics can contribute to significantly enhance the understanding of capability building [17]. Capability is defined as *"internal firm attributes that enables a firm to coordinate and exploit its other resources"* [5]. This definition focuses solely on internal processes and resources, and it has an underlining understanding that optimal use of these resources or attributes will make the company profitable. Another view concentrates on transforming input to output, which points to value-adding activities [18]. The key is to have capacity to create these transformations repeatedly - indicating that there is a continually flow of value-adding activities.

1.4. Knowledge

Knowledge and information was pointed out as being at the heart of the organization by Holmström and Roberts [19]. Knowledge and information are embedded into various systems and routines in the firm, which gives certain logic to how the firm works. And the firm's performance is often limited by the dominant logic to which they are accustomed [20].

Knowledge in the view of organizational economics and capabilities is an entity that is most often studied at the firm level. Knowledge production needs to meet two criteria: (1) knowledge can be used to solve problems (know-how or expertise) or (2) knowledge is embedded into the brain of the individual employee and is the basis for talent [21]. From these criteria the assumption is that acquisition of knowledge is costly, not free and public, and it requires managerial effort for effectively utilization of the individual talent [22]. Taking a task-based approach Garicano and Wu argued that difficult tasks often create innovations whereas simpler tasks are to be found expressed in routines - and they are related through complementarities or substitutability [21]. Performing complementary tasks lead to homogeneous teams where workers with similar talent are matched and trained to resemble one another. There is little scope for individual superstars [21]. Substitutability is the opposite of complementarities. An example is when one strong project team wins the organization's resources on the cost of another team. In this way strong projects with high potentials are supposed to survive and be strengthened in a competitive and more heterogeneous environment.

These two extremes, Complementarities and Substitutability, are two ends of a continuum that builds on the outcome of the task-based view; universal vs. local knowledge creation. Between these extremes there will be lots of shades.

2. Research Methodology

This paper summarizes a case study of a Norwegian supplier to the automotive industry. A case study is one of several ways of doing social science and understanding complex social phenomena - used in many situations to contribute to our knowledge of groups, organizations and related phenomena within a real life context [23]. As Harrison [24] put it, case study research is of particular value where the theory base is comparatively weak. Thus, a case study done properly could be said to add more than explanations and descriptions. The essence of a case study is that it tries to understand a decision or set of decisions, why they are taken, how they are implemented, and with what results [23]. This study concentrates on one single case company, arguing that generalizing from one case is correct until another case leads to different conclusions [25]. A moderating factor is that the authors have studied Norwegian automotive suppliers over a period of six years, claiming to have proper knowledge about the industry and the nature of such companies.

The study is based on interviews with key personnel at the case company. Interviews are used “*to explore the complexity and in-process nature of meanings and interpretations*” [26]. We choose the category semi-structured interviews, where the interviews were planned interactions between the researchers and the interviewees. The aim was to create an informal setting, more like a conversation, where the interviewee would open up and provide rich [23]. In total seven managers were interviewed, and each interview was tailored to the profession or role of the informant. All the interviews took place in autumn 2012, and they were recorded and transcribed, and analyzed by defining a set of common features that is transformed into strategic capabilities and related processes the company has done to achieve its current level of capability.

3. Results

3.1. Case company

The case company develops and manufactures lightweight aluminum based products to the automotive industry. The product portfolio consists of dynamically loaded structures and components like sub-frames, control arms, knuckles, and hubs. These products are crucial for handling and safety of cars, consequently; robust design and quality are key characteristics of the company. The company was established in 1996 in the southern part of Norway close to an aluminum primary smelting plant. The purpose of this establishment was to supply casted hollow core sub-frames to Volvo. The idea was to take hot metal directly from the smelting plant

and into casting cells, thus saving energy and money. Aluminum competence was to be found both locally and from other parts of Norway with experience from downstream aluminum activities. Since then the case company has grown its intellectual capability and manufacturing capacity to its current position as a global supplier to the premium automotive market.

3.2. Core capabilities

3.2.1. Customers

The history of the company does not sum up to a linear success in terms of economic profitability. The Volvo contract implied an extensively ramp-up of the factory, and a steep learning curve for the whole organization. In the beginning especially degree of automation and product control caused additional resources and costs. Back then the factory had all time high in number of employees – which numbered over six hundred. After a while BMW was added to the customer portfolio, a necessity to increase production volume and to diversify. Customers like Porsche, Audi, Rolls Royce, Ferrari, Bentley, Jaguar, PCA, and system integrators are today supplemented to the list. In the end of 2007 the origin owner decided to complete its sale of automotive castings business, including plants in Michigan (US) and the case company in Norway. The new owner was an equity capital fund, in which demonstrated little competency in developing an automotive supplier business. This situation became severe worsen in the wake of the financial crisis, and the company went bankrupt in 2009. Then the value of innovative products and inimitable competence demonstrated its value. Key customers took place in the administrators in bankruptcy, and they, together with visionary people, secured a plan for future production of critical aluminum components. For instance a German premium brand had just launched a new model and had no alternative at the moment (although they tried – by providing the production tools to other aluminum cast suppliers). During the negotiation phase personnel at the case company were paid double the normal salary to stay, realizing that losing competency at that point would be devastating for potential new owners. Two key customers guaranteed operations until 2013 – hence giving little, or none, expectations about future investments. These days, autumn 2012, the case company is sold to a major competitor.

3.2.2. Competence

In 2011 the case company won the prestigious price; "Engineering achievement of the year", based on their competence and advanced technology for developing and producing aluminum casted products, where the specific case was the rear sub-frame to a specific

customer. The same product was given the prize; "European Aluminium Award 2010" in the category Industrial Products – Automotive and Transport. Compared to traditional sub-frames this product reduced number of system components from 24 parts to one single piece, substituting usual multi-part steel solutions and allowing a high degree of functional integration holding the same requirements to strength, stiffness and quality. This system integration resulted in a total weight reduction of 8 Kg - from 24 to 16 Kg. By using a low pressure die casting process, a combination of vacuum and riserless casting, together with high degree of aluminum purity and process control, hollow thin-walled frames make it possible to achieve the above mentioned weight reduction. However, the success story has at least one additional dimension to the technological aspect. Releasing the technology potential into added product features is about market understanding and ability to convert that information to real customer value. All the interviewees point to the sustained and dedicated engineering workforce as an important exploratory factor. First; despite different ownerships, top management focus, and macro trends – the company has always managed to keep focus on product development, and second; the company has a relatively low turnover on their engineering base, meaning that knowledge is continuously accumulated. One of these knowledge flows is knit to the continuous reduction of product wall thickness, which derives from many years of experimentation. The first product was heavily influenced by Volvo's safety approach – resulting in a product which up today never has caused demand for spare parts. From this starting point the case company has persistently asked themselves; can we reduce wall thickness and at the same time add geometry complexity? Today, the company spends about ten per cent of the turnover on R&D and they actively seek external funding for specific and long term research projects (for instance the Norwegian research Council).

3.2.3. Sustainability

Weight reduction becomes increasingly important in the automotive industry. From 1990 CO₂ emissions caused by the transportation sector increased from 20.6% to 28.4% of total emissions in the EU, where the mode road transports contributed by about 75% in 2007 [27]. The effect of CO₂ emissions to global warming, and the linear relationship between CO₂ emissions and vehicle weight, has made EU initiate new regulations. For instance will all cars registered in the EU from 2015 comply to a limit curve set by legislation, stating that a fleet average of 130 grams CO₂ per kilometer has to be maintained. Such regulations call for new solutions and new performance standards at all levels. Reduction of vehicle weight will be a factor in meeting these

requirements due to the inherent relationship between mass and fuel consumption [28]. It is estimated that a 10 percent reduction in mass will result in a 3 to 7 percent reduction in fuel consumption.

Materials like aluminum, high strength steel and composites are part of the solution when automakers seek to safely and cost-effectively lower the weight of vehicles. As automakers apply aluminum, the focus is increasingly toward the system cost, which allows aluminum to compete successfully with other materials because of the advantages it brings in primary and secondary weight savings, fuel savings, structural performance and design flexibility. The potential of aluminum, with the same constraints as high strength steel, could safely reduce vehicle body weight by up to 40 percent. Therefore, increasing aluminum intensity is the logical next step for many OEM's.

These trends seem promising for the case company, inducing that their products are part of future solutions. The origin of establishing the case company was easy access to and delivery of hot metal, high grade aluminum, directly from the smelting plant and into casting dies. Compared to competitors this tight connection saves one preheating process of aluminum up to 750°C. This process simplification saves time, money and energy. But the real impact to improved sustainability, measured in energy and CO₂ emissions, is gained in the product's use phase due to weight reduction.

3.2.4. Value chain

A manufacturing contract involves high volume and often large investments in tools and manufacturing equipment. The supplier/buyer relation is an important capability to develop for suppliers to the automotive industry. This relational contracting can be viewed from a transaction cost theory perspective, where the transaction is the basic unit of analysis, and where further advances includes harmonizing characteristics beyond the pure technological features [29]. There are basically three dimensions in transaction theory; asset specificity, uncertainty, and frequency. An example of asset specificity is the specific production tools and the tacit knowledge required in order to produce the specific part for the car platform. This dimension was demonstrated when one customer during bankruptcy of the case company in 2009 claimed the production tools released for trying to produce the same parts at an alternative casting supplier. However, the alternative supplier did not match skills, knowledge, and required equipment dimensions – thus failing to produce the desired output. Uncertainty derives from the need to cope with bounded rationality and opportunism, which can be called behavioral uncertainty, due to its behavioral origins. Frequency is the last dimension,

where Williamson claim “the benefits of specialized governance structures are greatest for transactions supported by considerable investment in transaction-specific assets” [14], but the larger cost of specialized governance can be more afford where there are large transactions of a recurring kind. In this case an automotive contract often grants the supplier seven years of production if certain requirements are continuously fulfilled. Such requirements are manifested through product properties, delivery conditions, quality and price. The latter often demands that a continuous improvement program is established at the supplier's plant. This program shall meet the requirements needed to reduce the part price every year it is in production. Although relatively tough criteria's, a seven years horizon gives fairly stable conditions for both parties and a high exit cost for the OEM. When the case company fell on hard times in 2009 the demonstrated product feasibility over time had evolved into trust between the parties. By showing trust Giddens argue for a mild form of hostage taking or be called upon [30]. The trusted party will then feel an obligation to act in a certain way. And the actions will be revised during the time of the relationship. This scenario requires a transparent value

chain where all party's costs and problems are visible. Then both the supplier and the purchaser jointly solve problems to build knowledge and strong ties in order to increase the pie rather than split it into small pieces or even reduce it [31]. To build this kind of relationships the same authors emphasized the importance of; long term relations and commitment, mutual assistance to improve quality, willingness to make customized investments, and shared technical and cost information. These factors are crucial knowing that if a supplier performs according to the plan it is 90% chance for the supplier to follow on to the next car model.

4. Discussions and conclusions

Table 1 summarizes and systematizes the data from this case study. We have chosen to make a distinction between defined key capabilities, levels, defined as impacted by internal and/or external forces, structural elements, and a short description telling and example or process of how the case company has managed to achieve their level of capability.

Table 1: Key capabilities

Capabilities	Level	Element	Description
Sustainability	Internal / External	Product	The product itself is made of aluminum which is a desired material when it comes to low weight, high strength, corrosion resistance, and formability. These features reduce fuel consumption and emissions in the use-phase of the product.
	Internal	Manufacturing process	The case company is located next door to a primary aluminum smelting plant that provides hot metal directly into the casting process. Hence, energy and cost are saved compared to the main competitors. This long term supplier- and customer relationship also results in superior product quality due to the fact that the purest aluminum is prioritized to the case company.
Identity and vigor	Internal Internal	Organization & Culture	High degree of uncertainty over years has made the organization robust and adaptive to changes. Many employees are rooted locally and want to put up an extra effort to help the company – based on the recognized direct link to company and society success.
		Management	During crisis strong and visionary management is demonstrated. This statement is supported by the fact that top management during the critical months in 2009 achieved bearable agreements with both key customers and internal key resources.
Low turnover key personnel	Internal	Organization	Many middle level managers and key technical personnel have been in the company from the origin. Internally, this continuity is rated high among the factors aligned to innovation success.
Product development	Internal	Organization	Continued emphasize on having product development capability, in terms of resources, long term research and development projects, and ability to experiment, is valued and perceived as a necessity to sustain in the automotive business when located in a high cost country as Norway.
Value chain	Internal / External	Customer relationship	Unique products and processes make the company both attractive for premium brands in the automotive business – but also near irreplaceable, in the short run, as a supplier for their customers. This mutual dependency is demonstrated several times during the company's history.
Quality	Internal / External	Product	The company was established based on a long term order to Volvo, and experience from this product life cycle shows few occurrences of in compliance to quality requirements. Robust design and high degree product control secure limited number of customer complaints.
Organizational adaptability	Internal	Organization & Culture	The organization has always had a strong belief in their competence and the products they are making. Despite numerous owners, managers, and business philosophies, the organization has adapted to new situations – but still preserved key capabilities.

Conclusion is to even in crisis stay focused on what are the core capabilities to the firm, but at the same time listen to others, like customer, to avoid lock-in mechanisms that can occur in substitutability. Combining both complementarities and substitutability is essential for creating knowledge during crisis. The

knowledge created need to be both local but also known by a larger audience, like potential customer. Likewise, is it important to have owners and employees that can look at longer time span and then keep the capabilities during severe crisis.

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