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Synergies of quality and sustainability - shared value in the building supply network

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Abstract

Background
The field of CSR has developed from charity into an integration of shared value into the business model. In developing countries there are enormous needs for better housing. This therefore could be an area where companies might be able to create shared value. It is however unclear how shared value would look like in the building supply network and to what extent this already exists.

Purpose
The purpose is to detect future areas of research by identifying opportunities for shared value in the building material supply chain. Shared value is viewed as a possible example of synergy for quality and sustainability research and development.

Methodology
A literature review is carried out searching for “shared value” and “Porter”. The findings are combined with stakeholder theory, the process view and customer focus. Additionally the sustainability reports of the 15 largest cement and building material companies in the world were studied with the purpose of identifying examples of the shared value concept. Working with shared value is visualised with an example using the process of building material supply in Dar es Salaam, Tanzania.

Findings
Findings indicate that the concept of shared value is widely spread, but that its application in the cement and building material supply industry still is limited. The concept seems to have a good potential in identifying and creating value for both business and other stakeholders. Shared value can be seen as enlarged business focus from shareholders to stakeholders.

Practical implications
The results provide both ideas for further research and indicate how companies within the building material network could work with shared value.

Originality/value
The paper more clearly links shared value to stakeholder focus.

Keywords
Shared value, sustainability, quality, building, supply network, cement, construction.

Article classification: Research paper
Introduction

Focus on sustainability took a hit with the Global Financial Crisis in 2008, but the importance of the issue is paving its way back into nations and organisations. Corporate social responsibility (CSR) could be seen as organisational work with sustainability and continues to gain momentum (Porter and Kramer, 2011). The field of CSR has developed from charity into an integration of shared value into the business model (Porter and Kramer, 2006 and 2011). Companies are asked to reinvent their business model using stakeholder focus. One of the companies that have adopted the shared value approach is Nestlé.

“We believe that for a company to be successful over the long term and create value for shareholders, it must create value for society. At Nestlé, this means creating superior, long term value for shareholders by offering products and services that help people improve their nutrition, health and wellness.” (Nestlé, 2014).

Examples here are combining information on nutrition with products that are good for health and working with water issues. By improvements in the supply chain the total value generated is increased. This differentiates the shared value as defined by Porter and Kramer (2011) from only sharing the existing value produced. The level of innovation in different branches varies. Buildings are not a consumer product and the building sector might therefore not have been subjected to less pressure for change including pressure to work with shared value. In developing countries there are enormous needs for better housing and infrastructure (Lynch and Matthews, 2007). This therefore could be an area where companies might be able to create shared value. It is however unclear how shared value would look like in the building supply network and to what extent this already exists.

The purpose of this paper is to look at possibilities for shared value in the global building supply chain and if this work could benefit from synergies with quality management. Additionally existing examples are studied and future possibilities are discussed with the view of identifying further areas of research.

Methodology

A literature review is carried out searching for the expressions “shared value” and “construction” using the database Scopus. Additionally the sustainability reports of the 15 largest cement and building material companies in the world are studied to see if the expression shared value is used in the sustainability or in the yearly report. Cement companies are chosen since these often also have a vertical integration into building material. Cement also has a very high carbon footprint and the price of it has a significant effect on buildings in developing countries, which means that the social footprint is important. Examples for shared value generally and for cement and building material processes specifically are studied. The building material process is described from raw materials over cement to concrete products. Main aspects for the building material process are identified and shared value opportunities are identified. These opportunities are exemplified with a study of the building material supply process in Dar es Salaam, Tanzania, which is based on several site visits with observations and interviews.

Defining shared value

Shared value is mentioned in Porter and Kramer (2006) and is talked about as: “...both business decisions and social policies must follow the principle of shared value. That is, choices must benefit both sides.” In Porter and Kramer (2011) shared value is defined more explicitly: “The concept of shared value can be defined as policies and operating practices that enhance the competitiveness of a company while simultaneously advancing the economic
and social conditions in the communities in which it operates. Shared value creation focuses on identifying and expanding the connections between societal and economic progress.” Porter and Kramer (2011) write about how Nestlé has worked with value increase in the entire supply chain by helping poor suppliers increase their productivity and quality. The point made is that Creating Shared Value (CSV) is different from focus on doing social good like within the Fair Trade movement. In Fair Trade focus is on seeing that suppliers of for example coffee get their fair share of the value created, which is a redistribution of value created. The Global Reporting Initiative guidelines define economic sustainability as the generation of sales value and the distribution of it, which means that it would not qualify to be viewed as an example of CSV (GRI, 2013). Porter and Kramer (2011) elaborate on the CSV by stating: “The concept rests on the premise that both economic and social progress must be addressed using value principles. Value is defined as benefits relative to costs, not just benefits alone. Value creation is an idea that long been recognized in business, where profit is revenues earned from customers minus the costs incurred. However, businesses have rarely approached societal issues from a value perspective but have treated them as peripheral matters.” This could be seen as going from pure shareholder focus to stakeholder focus. The criticism of Crane et al. (2014) of the CSV concept where they call it unoriginal and refer to the discussion on stakeholders, supports the relevance of seeing societal issues in the light of stakeholder theory. Societal issues from a value perspective could be interpreted as utility for customers and interested parties. Jonikas (2013) combines CSR and CSV using a model with stakeholder focus, where stakeholders are defined as customers, suppliers, personnel and business associates. However, value creation is also portrayed for business itself and society even if these are not classified as stakeholders. Freeman and Reed (1983) define a stakeholder as: “Any identifiable group or individual who can affect the achievement of an organization’s objectives or who is affected by the achievement of an organization’s objectives”. Isaksson (2013) refers to Garvin (1984) and proposes to use the value based quality perspective in a sustainability context. Stakeholder utility is related to stakeholder harm. The stakeholder concept could be further enlarged and made also to include future generations and nature, which could result in seeing the main stakeholders as Humanity and Nature (Isaksson and Garvare 2003). The Triple Bottom Line of economic, environmental and social performance is often described as Profit, Planet and People. The shared value approach could be seen as recognition of the importance of seeing beyond Profit and working with the ratio of Profit to Planet harm and Profit to People harm. Porter says in an interview: “I think the idea of shared value is fundamentally about the ability to both create economic value and let us call it social or societal benefit simultaneously. It is really not about doing good and not about charity. Fundamentally, it is about business”, (Driver, 2012). An interpretation is that Profit should be the same or increase and the ratio Profit to harm should increase. Companies will focus on creating profit, but with the understanding that if this profit also creates People value and minimises People and Planet harm then there is a strategic fit which will secure both profits and the continued license to operate. “The essential test that should guide CSR is not whether a cause is worthy but whether it presents an opportunity to create shared value – that is, a meaningful benefit for society that is also valuable to the business.”, (Porter and Kramer, 2011). There are three ways to create opportunities for shared value: 1) By reconceiving products and markets; 2) By redefining productivity in the value chain and 3) By enabling local cluster development, (Porter and Kramer, 2011). There is no detailed advice in Porter and Kramer (2011) on how to operationally work with shared value, but others have discussed the concept. Maltz et al. (2011) state: “In order to strategically guide socially responsible investments, management must place considerable emphasis on identifying exactly the entities with standing and how competencies can be exercised to affect externalities. They can then identify the kind of externalities they wish to focus on and reduce the number of alternatives considered.” One way mentioned of identifying “entities with standing” is to use...
the stakeholder approach. It could be argued that with the problem being global unsustainability that the entities with standing should be People and Planet (Isaksson et al. 2014). A way of simplifying the study of a system such as a supply chain would be to focus on the main Profit, People and Planet values involved. The social issues mentioned in Porter and Kramer (2011) could be seen as People and Planet value and People and Planet harm. People value could be seen as earnings and as utility of a received product (goods or services). People harm is often related to poverty and could be seen as the price paid for a product (Isaksson et al. 2010). For Planet, focus is mostly on harm, which could be linked to planetary boundaries (Rockström, et al. 2009). The idea of Maltz et al. (2011) to simplify is important in order to make a first Pareto-inspired approach on the most significant value and harm for the chosen main stakeholders. Maltz et al. (2011) postulate that: “Consistent with Porter and Kramer (2002), we propose that stakeholders with standing be those that the enterprise deems to contribute resources that are important to the maintenance of competitive advantage.” This approach gives priority to Profit, which risks missing important opportunities of system value creation. In the end the enterprise decides which way to go, but this should be based on all available facts, which suggests that all important stakeholder value and harm should be identified as a start before the “entities with standing” are chosen. In Table 1 an example of People/Planet – indicators are presented for some main global processes. Here, priority issues have been identified based on the Pareto principle. The company that in the best way is able to maximise the People value/Planet harm and People value/People harm ratios without transgressing any stakeholder minimum values is the one that should profit most. This could be seen as creating shared value. In a resource constrained economy it could be foreseen that the company that produces most of the People needs per harm caused will be the one to retain its license to operate.

Table 1. Defining main user value and harm for some global processes, from Isaksson et al. (2014).

<table>
<thead>
<tr>
<th>Stage</th>
<th>Producing shelter</th>
<th>Transporting</th>
<th>Producing food</th>
</tr>
</thead>
<tbody>
<tr>
<td>Define main user value and main harm produced</td>
<td><strong>People value</strong>: Space in m² of &quot;reasonable&quot; living area per person used over a year. Main Planet harm is carbon emissions. <strong>People harm</strong>: For a large part of the global population, price of housing is an important harm factor. Yearly m² living space per CO₂-emission and per price.</td>
<td><strong>People value</strong>: For personal transports the value is person * km of &quot;reasonable&quot; transport. Main Planet harms are energy consumption and carbon emissions. Main People harm could be seen as time used. Person * km per energy consumption, carbon emissions and time.</td>
<td><strong>People value</strong>: Edible and &quot;reasonably&quot; healthy MJ of energy. <strong>Planet harm</strong>: Energy, Nitrogen and water use and also affect on biodiversity. <strong>People harm</strong> could be seen as price paid. MJ of edible energy and person per energy, Nitrogen, water and price.</td>
</tr>
</tbody>
</table>

Taking the process of producing shelter, the value produced is living space, which can be compared to carbon emissions and the price for the living space. The company, which does this best, should be able to take a larger market share and thereby secure profits, while also securing the licence to operate.

**Results from literature and cement company web sites**

A search on Scopus for “Shared Value” results in 1240 hits. When this is combined with “Porter” the number of hits is reduced to 91. When this is additionally combined with “construction” 14 hits remain. Out of these 14 hits only 3 deal with shared value in the construction process. Lassch and Yang (2007) provide examples from Daewoo building and present diagrams comparing International Development on the y-axis and Pure Business on
the x-axis. In the middle between the axes a section of joint activity is formed. However, this still does not clearly reflect that shared value is about focusing on an area where the total value creation will increase creating a win-win for the actors (Porter and Kramer, 2011). Martinuzzi and Krumay (2013) propose four different ways of categorizing CSR-work. The creating shared value approach is categorized as Strategic CSR. Focus in this conceptual paper is on defining categories, only proposing a limited number of examples and nothing relevant for construction. Lynch and Matthews (2007) write about great opportunities for shared value in construction mentioning that forecasts indicate that 80% of infrastructure investment will be done in developing countries. However, there is still no clear focus on increasing the value creation in the supply chain. It seems that there might not be much written in literature on shared value in construction.

Three out of the fifteen largest cement manufacturers mention shared value, but none give any details of how this is being worked with, see Table 2. Mostly the reports are pointing on future work like Votorantim that writes: “In a further initiative aimed at local community development, we completed new research on our supply chains with the aim of identifying opportunities to create shared value in the locations where we operate. This project will begin to be implemented in 2013.”, (Votorantim, 2012).

Table 2. Shared value in cement sustainability reports for the 15 largest cement and building material companies in the world. Companies are placed in order of cement production volume with highest first.

<table>
<thead>
<tr>
<th>Plant</th>
<th>Shared value</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holcim (Switzerland)</td>
<td>Mentioned</td>
<td>Only comment on that shared value should be measured; 2011 report</td>
</tr>
<tr>
<td>Lafarge (France)</td>
<td>Mentioned</td>
<td>Only in listing the distribution of value produced (GRI) and not in the sense of Porter &amp; Kramer (2011)</td>
</tr>
<tr>
<td>CNBM</td>
<td>Not found</td>
<td>Shared competitive advantages mentioned</td>
</tr>
<tr>
<td>Anhui Conch</td>
<td>Not found</td>
<td></td>
</tr>
<tr>
<td>Heidelberg (Germany)</td>
<td>Not found</td>
<td></td>
</tr>
<tr>
<td>Jidong</td>
<td>Not found</td>
<td>No sustainability report found</td>
</tr>
<tr>
<td>Cemex</td>
<td>Not found</td>
<td></td>
</tr>
<tr>
<td>China Resources</td>
<td>Not found</td>
<td>No sustainability report found</td>
</tr>
<tr>
<td>Sinoma</td>
<td>Not found</td>
<td>No sustainability report found</td>
</tr>
<tr>
<td>Shanshui</td>
<td>Not found</td>
<td>No sustainability report found</td>
</tr>
<tr>
<td>Italcementi</td>
<td>Not found</td>
<td></td>
</tr>
<tr>
<td>Taiwan Cement</td>
<td>Not found</td>
<td>No sustainability report found</td>
</tr>
<tr>
<td>Votorantim</td>
<td>Mentioned</td>
<td>Project to start 2013; Integrated report</td>
</tr>
<tr>
<td>CRH</td>
<td>Not found</td>
<td></td>
</tr>
<tr>
<td>Ultratech (India)</td>
<td>Mentioned</td>
<td>Creating shared value is mentioned as important</td>
</tr>
</tbody>
</table>

The review of cement plant sustainability and yearly reports indicates that shared value in some cases has been noted as a concept but there is no indication that it is actively worked with.

**Case Study of VGK in Dar es Salaam**

Porter and Kramer (2011) write: “Society’s needs are huge – health, better housing, improved nutrition, help for the aging, greater financial security, less environmental damage.” Housing needs in the Third World are definitely huge. Sub Saharan Africa hosts many of the poorest countries in the world. Tanzania is one of them. Dar es Salaam, the largest city is quickly
growing and building is a very important process employing many people and providing the housing necessary for further growth. One of the cement companies, TPCC, has identified the importance of working in the supply chain (Isaksson et al. 2012). In Figure 2 a generic process model adapted from Isaksson et al. (2010) has been applied for VGK block making, one of the TPCC customers. Output from the block making process is expressed with three parameters, which are: Value performance in strength (MPa) times tons of blocks produced; Value per environmental harm (CO2) and Value per social harm (price). The logic is that when the company maximises the value production it will also maximise its market share and Profit, while helping its direct and indirect customers (buyers of blocks and house builders).

Figure 1: VGK block making. The model is based on interpretation of data from site visits using a model from Isaksson et al. (2010).

Based on Porter & Kramer (2011) there are three ways to create opportunities for shared value:

1) By reconceiving products and markets
Products currently used are mainly solid blocks, which are far from ideal in many respects. They are heavy to work with and contain cement in very low quantities, which leads to problems in using the full strength potential of cement (Isaksson et al. 2012). A better solution would be to use hollow blocks, but there is little tradition in doing this. Here, the multinational cement company Heidelberg Cement to which TPCC belongs could play a role in using their competence within technology and marketing to support the introduction of better products.

2) By redefining productivity in the value chain
Productivity for block makers is currently defined as the number of blocks of a certain size produced per bag. There are very few measurements for strength. This could partly be due to the fact that the official standard for blocks from the Tanzania Bureau of Standards specifies strengths which are almost twice of what blocks currently used measure in average (Isaksson et al. 2012). When the target value is irrelevant, there is little point in measuring. Instead it is
up to the customers to kick the blocks to see if they are good enough. Often the number of blocks per bags is also used as a quality measure. The lower the number, the better the blocks supposedly are. However, issues like vibration, choice of sand used and water to cement ratio play an important role and it is possible to produce poor blocks with a low blocks/bag ratio. This view of quality could also be an obstacle for productivity increase. The measure of performance should be related to how the block works in the building in creating living space. Value could be seen as strength*tons of product or as strength*volume (m³). In order to create the theoretical benchmark we could look at what cement performance is on its best when tested in laboratory conditions by the cement producer. Cement is tested using imported standard sand and making a mortar with the same ingredients as the VGK blocks, cement, sand and water based on the EN 196-1 testing standard. The cement mortar is tested for final strength at 28 days and achieves with the cement used 50 MPa, with a cement weight percentage of 22%. In the mix used by VGK the cement content is about 6%. A straight dilution would indicate that the strength should be 6/22 of 50 MPa, which is about 12 MPa, whereas block strengths with VGK normally are about 3-4 MPa. The indication is that as much as 70% of the cement strength potential is wasted in this type of application, which is the most common building material in Dar es Salaam. In order to study the effect of dilution only mortar has been tested in the laboratory with the same mix that block makers use. Results confirm that the main problem is the low cement content. Results do not seem to be linear under a certain level of cement content. The VGK performance is typical for the mostly used technology which includes a simple pan mixer and a vibrator (Isaksson et al., 2012). There could be a significant value in making better use of the cement resource. When realised, this could lead to cheaper blocks with a much lower carbon footprint. The current carbon footprint is about 1.5kg per block. Increasing the cement productivity to its maximum could theoretically reduce the footprint with 70%. By using the right measurement focus would be more on reconceiving the product, something that would require competence currently only possessed by the cement producers, which are the strongest and most competent players in the supply network.

3) By enabling local cluster development
Local cluster development could include working with local block makers, vocational training institutes, universities and Tanzania Bureau of Standards (TBS). There is currently a joint research project between TBS, Ardhi University and the cement plant TPCC that studies quality and productivity in the block making process in Dar es Salaam. This could be a start of a cluster.

All three approaches proposed by Porter & Kramer (2011) seem relevant and highlight value creating opportunities in the study process of block making, which is part of the building process as described in Figure 1. With focus on value created and harm caused it becomes possible to define indicators for success in the supply chain. When this is done companies involved can focus on the value creation, which also should increase Profit.

Conclusions
The shared value concept is widely cited within different fields, but the theory on how to apply it is still emerging. With the cement manufacturing and construction only a few references to shared value have been found. Some of the producers indicate that this will be an area of future focus. The shared value has similarities with stakeholder focus (Crane et al., 2014), (Jonikas, 2013). If shared value would be studied at the global level then we could identify humanity and nature or People and Planet as the two main stakeholders (Isaksson and Garvare, 2003), (Isaksson et al., 2014). In a resource constrained economy focus would then be to maximise the ratio People value to Planet harm and People value to People harm while
seeing that no stakeholders are subjected to unduly harm. This could be done in any chosen system using the process approach and using process based system models (Isaksson, 2006). Porter & Kramer (2011) argue that focus is on profit, but doing that by looking at social aspects, which could be seen as the different stakeholder needs. Consequently the logic for any company would be to identify the main People and Planet aspects with the purpose of providing the best user value for the least harm done. This would then lead to market leadership and to a maintained license to operate. By creating more value in the system, profits could also increase.

The three ways to create opportunities for shared value defined by Porter & Kramer (2011) have been tested in the building material supply chain in Dar es Salaam Tanzania and found to be highly relevant. All three ways indicate an important potential and good opportunities to realise it. The main building product, the solid six-inch sandcrete block could be redesigned to enable increased productivity in creating more building value for less cement. Productivity is currently not measured in a way promoting improvement and should be redefined. Many of the important players in the cluster or supply network such as Universities, Cement plants, Tanzania Bureau of standards and block makers could be ready for further development provided leadership. The only organisations currently having the competence and the economic means of doing this development are the cement producers. Three of the largest cement plants in the world, Lafarge, Holcim and Heidelberg are active in Tanzania. Some initial work has been done at least by TPCC belonging to Heidelberg that has done research work with block makers, Ardhi University and Tanzania Bureau of Standards.

Discussion
The shared value approach is severely criticized by Crane et al. (2014) for introducing Creating Shared Value (CSV) as a substitute for CSR and for ignoring earlier research on stakeholders while contributing with little of new ideas. The criticism is mainly from an academic point of view. In practice new ideas might have to be repeated several times and for the right audience before they take hold. Focusing on stakeholder needs and looking at how total value creation could be increased in the system studied might not be new in the academic context, but there is little in practice that indicates that creating shared value is standard company procedure. Shared value is to focus on the possibilities of value adding in a business. Quality management has customer focus as an important principle. By focus on customers profit should follow. Shared value proposes focus on social issues which could be People or Planet issues. It could be seen that focus on stakeholder value in a system includes both the shared value and quality focus approach. This would indicate that quality methodologies like working with process based system models could be used to identify and realise customer value and shared value in supply networks.

The building process, defined as starting with raw materials over the use of houses to demolition and recycling consume some 40% of all energy in the world and the process is responsible for some 40% of all man made carbon emissions (WBCS&D, 2007). Out of this the cement production is responsible for some 5% of man-made carbon emissions (WBCS&D, 2002). The opportunities for producing more building value per emissions is huge and it is clear that this could be done on focusing on the building value created instead of the sales figure (Isaksson, 2007), (Isaksson et al. 2010). Even if the opportunity is there, reporting from cement companies still is based on the sales value (Isaksson et al. 2014). This follows the recommendations of the latest version of the Global Reporting Initiative G4-guidelines, which based on the indicators proposed does not mention shared value and proposes direct economic value generated and distributed (G4-EC1) as the first indicator, while ignoring customer value (GRI, 2013). This indicates, that the message of creating shared value should be repeated and
that further research in how to realise the value potential is merited. All three ways of creating shared value present interesting and potentially value creating areas for further research. This could be within research on new business models (Michelini and Fiorentino, 2012) or strategy development generally (Muller et al. 2012) or specifically on redefining productivity (Heiko and Chapman, 2012) and on how to measure building value (Isaksson and Steimle, 2009). (Isaksson et al. 2010). Global building processes could be subjected to the three proposed ways of creating shared value. With the majority of new buildings coming up in developing countries there should be a good possibility in reconceiving products and markets. Tanzania is a good example for the Sub Saharan Africa and existing opportunities. Current buildings made out of sandcrete and concrete blocks have bad insulation and will lead to increased use of air condition, which will increase the carbon footprint. There should be good opportunities in going from sandcrete and concrete blocks to providing affordable housing using for example light weight blocks and also to using concrete elements with better insulation and better building ergonomics. The productivity could be defined at the level of the supply network in the studied system, which could be a city. The challenge is to make somebody accountable for the indicator of creating acceptable living space compared to price and carbon emissions. Leading companies in the local cluster could probably benefit well from taking charge of the cluster development following the examples of Nestlé’s share value creation (Nestlé, 2014), (Porter and Kramer, 2011).

References


