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Corporate Responsibility and
Operations Management

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The Future Ain't What It Used To Be (Yogi Berra)

The world has changed since the “Limits to Growth” book of the Club of Rome in the 70s, and so has the discipline of Operations Management. The 80s and 90s brought dramatic innovations like Total Quality Management (TQM), Just-In-Time (JIT), Business Process Reengineering (BPR), and Time-Based Competition (TBC). These philosophies were mainly imported to Europe and North America from Japan, where they had been refined in the 60s and 70s and had formed the backbone of the reconstruction of its post-war economy.

The important point to realize is that these philosophies brought both the tools and the building blocks of the management systems required to integrate them with company strategy.

Operations began its rapid transformation from a neglected stepsister needed to support marketing and finance to a cherished handmaiden of value creation.

Operations became a primary focus of strategic importance for companies around the world.

Operational Excellence: The Engine Fuelling Strategic Attacks and Defences

Processes are the Conduit

Gradually, the whole evolution came to be known as process management, a name that emphasized the crucial importance of processes in value creation and management. Process management was given further impetus by the core

competency movement, stressing the need for companies to develop technology-based and organizational competencies that competitors could not easily imitate.

The confluence of the core competency and process management movements caused many of the transformations in the 90s, including the unbundling of value chains, outsourcing, and innovations in contracting and supply chains.

People now recognize the importance of aligning strategy and operations, a notion championed by Skinner as early as 1969.

Lean Organizations

As companies developed their core competencies and included them in their business processes, the tools and concepts of TQM and JIT were applied to new product development and managing supply chains, and they typically involved multiple organizations spread across the globe. Oftentimes, companies started upstream with JIT supplier relations, subsequently moved downstream to optimized logistics, including Efficient Consumer Response (ECR), and later Customer Relationship Management (CRM). These supply chain trends inspired similar trends at the corporate level as companies moved from lean operations to lean enterprises (Womack and Jones 2005).

The combination of these process management fundamentals, information and communication technologies, and globalization has provided the foundations and tools for managing today's outsourcing, contract manufacturing, and global supply chains.

The Supply Chain is the Business Model

Many successful and innovative companies now formulate their strategies and business models in simple operational terms. Asked about ZARA's business model, a senior executive said, "At ZARA, the supply chain is the business model". Operations Management has moved from a narrow focus on costs to an appreciation of the customer (service, willingness to pay) and to a closer scrutiny of assets.

OM provides the methods for analyzing and improving value drivers at the process level and for measuring and balancing costs, revenues and assets to create economic value. Operational excellence is the engine behind strategic attacks and defences.

So What?

Your 10 Euro T-Shirt Has Circled the Globe Three Times, Sir

There are two important consequences of the changes in Operations Management described above. First, a simple product like a handheld electronic device may travel the world multiple times before you buy it at a retail shop. Since these products have become relatively cheap commodities with short lifecycles, there are billions being sold. What happens to them at the end of their short life? Their environmental footprint (extraction, production, use and end-of-life recycling or

recovery) may be enormous and all too often society pays for these negative externalities. Scattered supply chains contribute to increased carbon emissions, but also to risks related to poor working conditions in remote areas (social footprint) and even ethical issues (e.g. child labour). And it is not only handheld devices that circle the globe, simple supermarket products like flowers, shrimp, or a T-shirt may have flown multiple times around the world before they reach your home. While being cheap and therefore widely affordable, their environmental and social footprint may be pretty abysmal.

The obvious question is whether this is sustainable.

It Wasn't Me!

The second consequence of scattered global supply chains relates to the fact that the OEM or the retailer selling the product only “touches” the product for a very short period of time. A simple electronic product may be in the factories of HP for only a day during its total nine months lead time from raw materials to final product in the store. And during that long voyage hundreds of organizations over the globe may have touched (parts of) the product directly or indirectly.

That poses a challenge about who is responsible for negative externalities, how are they measured, and who should pay for them?

The problem is clearly that today the sheer scale of these environmental and social impacts is so huge that they become a threat to our globe (conflicts for access to scarce resources, global warming).

Convergence of Social Needs and Competitive Advantage: The Roots and Branches of Sustainability

The Evolution of Concerns for People and Planet

The transformation of Operations Management was paralleled by a similar rise in importance of *Environmental Management*. While TQM appeared in OM in the 70s, *eco-efficiency* entered the radar screen with the report of the Club of Rome. In the 80s, highly mediatised environmental accidents like the Exxon-Valdez, shift the focus to *Environment, Health and Safety (EHS)*. Globalization in the 90s and the corresponding protectionist quotas lead to concerns about *social issues* in poor communities in under-developed countries. This brings *accountability and reporting standards* to the forefront.

In this new millennium, NGOs and pressure groups use the modern media and technology just as creatively as companies do, and put corruption and governance centre scene (slavery, child labour). Enter *Ethics*. Today, we have lived through crazy swings of energy prices, shortages of other basic resources (copper, steel), and an increase in natural disasters which have been linked to *climate change*. There has been an avalanche of reports accumulating more and more evidence that human activity is at the origin of the greenhouse effect.

In short, global supply chains were made possible by modern information and communication technologies, but the same technological advances also brought the darker sides (the negative social and environmental externalities) of global growth and development to the forefront.

Enter Sustainability

The World Commission on Environment and Development (1987), aka the Brundtland Commission, defined sustainable development as:

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

While this definition has been criticized for its all-encompassing scope, the sustainability movement has nonetheless gained traction because of the evident inefficiency of our current products and production processes.

Because of these growing societal concerns, businesses are under strong pressure to measure their impacts on the natural and social environment and to engage in triple bottom line (3BL) reporting to account for the energy and other resources they use, and the resulting footprint they leave behind.

Employees need to take pride in their work and need to believe their companies operate in a prudent and responsible manner and care about employee health and safety. Concerning the planet, aligning sustainability goals with employees (people) and market incentives (profit) can be difficult. That is, profit people and planet are not that easily balanced.

However hard it may be, people can speak up while the planet cannot defend itself.

But community pressures and the threat of liability can drive companies to improve their environmental performance. Clearly, companies are most likely to improve their performance when public pressure results in strong regulations. Sometimes companies lobby for regulations if they have developed an environmentally friendly technology and believe that regulations requiring their technology would give them a competitive advantage.

Does It Pay To Be Green?

Porter (1991) argued:

“The conflict between environmental protection and economic competitiveness is a false dichotomy based on a narrow view of the sources of prosperity and a static view of competition”.

Tough environmental standards can trigger innovation. The result in many cases is a process that not only pollutes less but also lowers costs and improves quality.

Since the early 90s, the debate on whether synergies exist between profits and sustainable practices has become muted, primarily because the public has been largely indifferent to the economic and policy arguments. Throughout the world, the public and its political representatives have been demanding improved performance on environmental, health, and safety issues.

The question for companies has become not whether to commit to a strong environmental, health and safety record, but how to do so in the most cost-effective manner.

The Role of Operations Management in the Sustainability Movement

A Three-Legged Stool

Corporate Responsibility needs to become part of the bloodstream of a company. It should be an integral part of normal everyday business. Any employee at any level faces issues where she needs to make trade-offs and allocate scarce resources (time, energy, money, and staff). It should not be that these decisions are taken under the profit paradigm with environmental and social concerns being only an afterthought. Any decision at any level in the organization should naturally and properly balance concerns for economic as well as environmental sustainability, natural and social.

As any engineer will testify, a stable (sustainable) stool requires three legs. A first crucial leg is tangible top management commitment translated in a clear and operational strategy. The second leg concerns the translation of the sustainable strategy into an execution plan.

Strategies get executed in products and processes (and the corresponding management and information systems, standards, procedures, operating instructions), so this is where Sustainable Operations Management comes in.

Finally, the third leg is the individual who needs to carry sustainability in his heart and mind. In this chapter, we only deal with the second leg. While we acknowledge the fundamental importance of the other two legs, we would like to emphasize that perhaps the sustainable management and information systems supporting product development and supply chain execution have not received proper attention.

Indeed, if the appropriate sustainable processes are not in place it is quasi-impossible to implement the sustainable strategy, irrespective of how innovative and great it may be.

Similarly, no matter how much an individual carries sustainability in her heart, she will be not be able to contribute if systems, processes, procedures and standards force her to make the daily trade-offs while ignoring sustainability considerations.

This explains the central role of Operations Management in moving the sustainability and corporate responsibility agenda.

Operational Excellence and Sustainability

Excellence in operations has gained acceptance as a requirement for business economic performance.

Our research at INSEAD has produced a framework of excellence which essentially reduces to Management Quality applied to Key Processes (Loch et al 2003).

Management quality is embedded in what the management committee pays specific attention to, and consists of achieving excellence in target setting, delegation, integration, employee development, employee motivation, measurement and communication. This Management Quality should be applied to Key Processes such as new product development, supply chain management and continual improvement of products and processes, but also to the process of policy deployment so all employees pull in the same direction.

Our framework of excellence has been tested extensively and leads to faster improvements in performance, mainly because of its consistent and coherent way of aligning all efforts and focusing them on key objectives.

The Operational Excellence Framework allows a company to translate its business unit strategy into a consistent operations strategy with a paired concrete execution plan at all levels and in all functions. Stated differently, it brings strategic intent into the bloodstream of execution.

For sustainability to be truly integrated in operations, it needs to become a central part of the process described above.

Global Supply Chain Excellence and Sustainability

Operational excellence as discussed above applies to a single unit or firm. Quite a few sectors have been able to perfectly integrate some elements of sustainability in the bloodstream of how they operate their industrial units. A good example being how Environment, Health and Safety concerns have been integrated in the operational excellence model of many chemical industrial units.

The 3Bs

However, as argued above, units are often a small pawn in a complicated chess game of globe-spanning supply chains involving hundreds of companies and operational units. In our view, supply chains should be viewed from end-to-end and their material (Boxes), information (Bytes) and money (Bucks) flows should be fast and reliable, i.e. flawless execution of the 3Bs related to customer orders is paramount for economic survival.

Today, we need to add sustainability to flawless execution: negative externalities should be avoided or at least compensated (e.g. carbon labelling, carbon markets, carbon offsetting). Environmental risks should be minimized.

The 3As

Flawless execution is based on a coherent business model and management quality. Examples of coherent business models can be found in successful firms like IKEA, ZARA, FedEx, Toyota, and many others. At ZARA, the supply chain is the business model and all systems and product design decisions are perfectly aligned with the

concept of bringing new designs to the market quickly. This consistency and coherence in the execution of the business model requires the use of enabling information and communications technology to be able to swiftly react to short-term market changes (Agility). It also requires a modular design of products and processes to allow for fast reaction to new market or channel opportunities (Adaptability). Finally, it requires an organization that is in line with the business model and can make fast decisions throughout (Alignment). This is the Triple-A Supply Chain as discussed by Lee (2004).

Triple-A supply chains are powerful translations of an original business model into design and execution (managerial systems and product/process choices). For sustainability to be part of that, it will need to be fully integrated into this Triple-A, modern supply chain thinking.

That means integration in the design of products and processes, organizational structures and systems, and enabling technologies.

The 3Is

The last component of global supply chain excellence concerns organizational alignment, or “putting all noses in the same direction” as the Dutch expression goes. Alignment requires clear definition of roles along the supply chain to ensure accountability and avoid duplication (Identity). It also requires clear agreements on information to inform all actors timely and precisely, so that wasteful discussions can be avoided (Information). Finally, alignment requires the right measurement and encouragement systems (Incentives).

It takes a high level of Management Quality to “put all ducks in a row” on matters of Identity, Information and Incentives.

While most executives and management scholars put a lot of emphasis on incentive alignment issues, we suggest that too little attention is paid to precise role definition and agreement on what information to be used when.

Linking the 3Is to sustainability immediately highlights the urgent need for better definition of Identity, Information and Incentives.

For example, how does a company like Nike manage to make all its suppliers abide by the same rules? What is their role in contributing to Nike’s sustainability strategy? How can Nike communicate its needs, measure their suppliers’ progress, and audit them properly? And how do they incite their suppliers to improve their sustainability performance?

Sustainable Global Supply Chains

Excellence in sustainable global supply chains, as we defined it above, means applying management quality to a coherent business model in order to obtain flawless execution on profit, people and planet.

It will require sustainability to be part of the bloodstream of the company, i.e. the way the company does things everyday, the way its employees make trade-offs and allocate resources.

One could argue that integrating sustainability in the bloodstream of daily business is yet another complication to an already intricate task. Indeed, in a few decades operations management has moved from isolated design and manufacturing to concurrent engineering and design for manufacturing. It has subsequently evolved to three-dimensional concurrent engineering by integrating the design of the product with the design of the manufacturing process, as well as the design of the supply chain.

The next logical step is the integration of sustainability concerns at the same time, i.e. what we have termed four-dimensional concurrent engineering. For example, as the product, the process and the supply chain are being designed, one should also take care of how components will be sourced from remote suppliers in developing countries (social footprint), how product returns will be handled, and how the product will be recycled at the end of its useful life (environmental footprint).

One could argue that this is just too complex, but research and experience seem to indicate that the news is not that bad. The difficulty lies in the quality of management and the management systems it installs, not in adding additional concerns.

If good management systems are being set up for supply chain management from an economic perspective, these same systems can quite easily be adapted to also provide the backbone for handling environmental and social issues.

Is There Anything New Under the Sun?

No, There Isn't!

One cannot forego the obvious question whether there is really anything new in all of this? First there was Quality, and quality needed to be integrated in the bloodstream of the company. In order to get there, the stool needed three legs: top management support through a clear quality strategy, integrating (hard-wiring) quality thinking in process and product design, and winning the hearts and minds of the people (soft-wiring). That is exactly what Total Quality Management means: the word Total is the key.

Then there was Environment, Health and Safety. After implementing TQM and obtaining ISO 9000 certification, and European Quality Awards (EFQM), a new wave of environmental ISO 14000 certification hit the industrial world.

Most of the companies who had firmly integrated quality in their bloodstream had very few problems with taking EHS and its corresponding certification on board. They pretty much used the same philosophy, the same systems, the same processes and information management techniques to ramp up for EHS.

Even better, going for improvement in environmental footprint gave them another wave of cost reductions and quality enhancements, just like the quality movement had allowed them to cut costs and do things faster earlier. It is only the companies who had implemented quality management as a token that found themselves having a hard time taking environmental issues on board.

The point being made is that the current extension to broader sustainability issues (social and environmental footprint) throughout the entire supply chain may not be that hard after all.

At least not for companies who have already managed to absorb the earlier waves properly and have learned how to integrate important new concepts into their bloodstream.

Yes, There Is!

Operations management is about measuring. You can't manage what you don't measure, as the old quality saying goes. One could argue that cost, speed, and quality can be measured, and that they are in modern supply chains. Companies have detailed and precise scorecards with carefully chosen sets of key performance indicators to help them monitor performance throughout global supply chains, and to react quickly to deviations from set targets. These KPI are linked into financial controls to monitor profitability and the whole system is made possible (visible, manageable and timely) by powerful web-based Enterprise Resource Planning (ERP) systems connecting the different players in the supply chain.

But how does one measure environmental impact? Granted, the discipline of Industrial Ecology has given us tools like Life Cycle Assessment, but LCA analysis is not simple. One has to define the boundaries of the system, measure the different environmental impacts, and weigh them against one another. There is very little agreement on how that should be done. Even if one restricts the analysis to a single environmental impact (say carbon emissions), there remains quite a bit of disagreement.

Measuring environmental impact of global supply chains remains a challenge and good measurement standards are long overdue. Good in this context should be interpreted as simple, verifiable and affordable so that they are practical in a global business environment.

Nevertheless, we have seen the emergence of carbon markets, and carbon offsetting. Quite a few new ventures emerge and do good business. Many offer their own measurement systems and the current situation is pretty chaotic. Standardization is necessary.

Carbon labelling has also become quite fashionable. However, it can be expensive. Doing an analysis of the carbon footprint of a single stock keeping unit can easily cost 10000 euro to a retail company like Tesco. Not a very attractive prospect if one has 50000 SKUs in portfolio. There is currently no agreement, let alone standardization on how to do such analyses. So the multitude of carbon labels that will soon appear on the products we are buying may not mean much, or worse, they may not be trustworthy.

Arguably, this may be where the discipline of Operations Management, with its history of measurement and fact-based decision making, may be expected to make the largest contribution. There is an urgent need for clear, verifiable and generally accepted measurement systems.

The picture becomes even gloomier when one considers the social footprint. Measuring the social impact of company activities is very difficult. There are really

very few methodologies available and most lack quantification and verifiability. Here again, there is a perhaps an even more urgent need for Operations Management to come up with reliable measurement systems that can be developed into standards that can be audited.

A breakthrough in this area would really require several disciplines to work together. Clearly, Operations Management needs to draw closer to fields like Industrial Ecology. But while this is already happening, the integration of social issues in Operations Management (in a quantifiable and verifiable fashion) is still largely lacking.

Consequences for Operations Management

The Call of Duty

We must enlarge our perspective in OM in research and teaching to include people and planet because companies will be expected to do so. Opportunities to invest in sustainable technologies, operations and supply chains will increase rapidly because of the following factors:

1. The costs of materials and energy will continue to grow as the world economy expands and rapidly industrializing countries make strong demands on these resources.
2. Public pressure for environmental, health, and safety performance will remain strong, leading to strengthened property rights, additional regulations, international agreements on controlling negative externalities and preserving resources, and reductions in subsidies.
3. Increasing awareness of 3BL issues may lead consumers to select products made by companies with a proven track record.
4. People's growing antipathy to globalization is leading to strong non-government organization activity regarding businesses' sustainability performance.

If the discipline of Operations Management does not follow the call of duty, and does not fully engage in sustainability research and teaching, it will lose its relevance and, consequently, its license to operate.

The World is Flat

Academic disciplines are typically slow to adapt to changes in their environment. It took centuries to accept that the earth is round. Just recently, Friedman's book (2005) argued convincingly that from a global competition perspective, modern technology makes the world flat. How long will it take us to accept this notion this time around?

The world is not only flat for business but even more so for its externalities like global warming.

Hart (2005) suggests we might expect a slow and grudging acceptance of sustainable OM. While he does not use the term "sustainable OM", his framework can easily be adapted to operations:

1. *The current internal strategies* in companies are aimed at improving internal operations with continuous process improvements related to sustainability, such as employee involvement, waste reduction, energy conservation, and emission control.
2. *The current external strategies* are aimed at improving extended supply chains by analyzing upstream supply chains to make trade-offs in the choice of materials and processes and pursuing closed-loop supply chains for remanufacturing and safe disposal.
3. *Internal strategies for the future* include investing in capabilities to recover pollution-causing chemicals during manufacturing, to develop substitutes for non-renewable inputs, and to redesign products to reduce their material content and their energy consumption during manufacturing and use.
4. *External strategies for the future* include developing core capabilities in products, processes, and supply chains for long-term sustainability and pursuing strategies to facilitate it.

If corporations follow this framework, some areas in OM will become more central and be reinforced. How a specific company evolves will depend on the sector and the company.

Since processes like new product development and supply chains are crucial to value creation, and value creation will increasingly depend on the right balance between profit, people and planet, the role of OM in sustainable development has to be a central one.

It is clear that companies, policy makers and NGOs will turn to OM academics for adequate training programs and pedagogical materials covering the new realities. This call of duty should be heard.

The discipline of Operations Management should substantially accelerate the pace of integrating sustainability in its academic research communities (professional societies and journals), its pedagogical offerings (mainstreaming sustainability in education programs), and its outreach (having a credible voice in the public debate).

This book is a great first step to promote mainstreaming Sustainable Operations Management in teaching.

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