

Blue Ocean Strategy and Operations Management

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The emphasis is on Blue Ocean markets and businesses are struggling to create more products with greater value and lower cost. Innovation delivers value in a frugal product and process. Achieving competitive advantage involves efficient management of all aspects of the operation consistent with applying the principles of Operations Management. There are established techniques effective in achieving Blue Ocean Strategy. A conceptual outline is provided here of useful techniques and how they help achieve Blue Ocean Strategy.

Keywords: operations management, blue ocean, product design, value added, low cost

INTRODUCTION

A current issue that has been addressed by many business leaders is that the business environment is changing as a result of increasing globalization, economic changes, changes in personal preferences, and digitization. The uncertainty that this has caused has made the global market more volatile, complex, and ambiguous. The one constant factor is that there will be a growing demand for products that are of higher quality and of lower cost. This is the essence of the Blue Ocean strategy that aims for products that are of greater value to the customer and are a combination of more for less. The more for less syndrome has transformed from a short-term response to market needs to a long-term strategy. Businesses that realize this reality stand to prosper and those that continue to live in denial will suffer.

It appears that enterprises are in the race to create more blue ocean markets for the future, with far greater speed compared to the past. Firms, whether well-established or in the small-to-medium range, with their varied advantages and disadvantages, are left with few options other than innovating new products and services. Even business models to be focused increasingly on sustainability, have to be customer-centric, and have to have value-innovation goals. The management of the processes of converting input resources into outputs as goods or services, that is known as Operations Management (OM) plays an ever-important role for firms to establish competitive advantages in a business environment that has sharply changed due to penetrating globalization and digitization. Operations hold a vital position in any business unit, in pursuing increasing productivity and putting the organization in a more competitive position in the market, to increase revenues and market share, with greater profitability, and higher levels of quality and customer satisfaction.

Whether with consumers beginning to actively participate in product creation in areas such as product/ service innovation, supply chain management in an expanding international business platform, or managing human resources with a rising percentage of knowledge workers, firms need to utilize Operations Management to improve an R&D approach tailored to customer needs for mass customization, creating sustainable solutions and co-creating values with prosumers, group of consumers participating in the producer process (Prabhu & Radjou, 2015).

All these efforts have the goal of establishing distinctive competitive advantages. This paper will discuss how competitive barriers removed by the speeding up of changes in the global business and social environment impact the way businesses are run, and the role of Operations Management principles and techniques in aiding firms to stay relevant and ahead of the competition. The business landscape is giving rise to competition from emerging markets, and is attuned to frugal innovation, which forces developed economies to rethink and innovate products and systems and compete in the global market. The process of competition even has an impact on the core business model, forcing innovation in areas that no one had thought to look before.

THE RISE OF FRUGAL ECONOMIES AND DIGITAL PENETRATION IN BUSINESSES

Widespread economic changes, advancements in technology, the rising growth of emerging markets and deep penetration of digital are reasons that give rise to frugal innovation in the developed world. It is of special note that this trend of producing more and better with less resources started from resource-constrained economies, then gradually spread to the more developed countries and has become the new norm in innovation as well as operation management across many industries.

Advanced economies have entered an age of relative austerity in which the idea of frugal living and consuming is becoming popular. In the recent decade, the middle classes in the US, Canada, Europe, Japan, Australia and elsewhere have witnessed their incomes deteriorate and their purchasing power shrink. As stated in Prabhu and Radjou (2014), the growth of real median household income in the US was limited to 19% between 1967 and 2013 so that fewer Americans define themselves as middle class and many believe they have fallen into a lower income class. With rising inflation and shrinking income, consumers have become more sensitive for pricing when considering purchases. In parts of Europe where recession persists, intensifying poverty is further destroying middle-income purchasing power. Spain and Greece have suffered the most, but more affluent states such as France and Germany are no exception with falling average salaries and rising living costs. As a result of these economic pressures, North American and European consumers are becoming increasingly aware of getting value when they spend and are selecting less expensive products. The same trends prevail in Japan where consumers are shifting from premium brands to low-priced private-label products in retail stores.

These changes are not temporary but look likely to be persistent. As the rise of inflation overtakes economic growth in established economies, economic forecasts describe consumers with a focus on value and behaviors that differ sharply from the free-spending ways of the past. Strategy&, a global management consultancy company and a division of Price Waterhouse, identifies the frugal buyers of the coming decade as value-sensitive consumers. A new strategy focused on value at a moderate price (cost) is important for competitive advantage in the new business environment.

It is not only consumers who have become more cost-conscious. Governments throughout the developed world are also tightening budgets. Ageing populations, escalating health-care expenses, the pensions burden, huge debts and deficits since 2008 have combined to introduce a new spirit of austerity in the US, Europe and Japan. However, within this landscape, the frugal innovation revolution is about more than austerity. Consumers in the developed world are becoming not only more value conscious but also more *values* conscious. They increasingly care about social harmony, worry about ecological degradation and the depletion of natural resources, and want businesses to play their part in making the world better. 81% of consumers say they will make personal sacrifices to address social and environmental issues (Anonymous, 2016). According to the 2014 Edelman Trust Barometer, an annual global study of consumer attitudes, 84% of respondents believe that business can pursue self-interest

while doing good work for society. As Carol Cone, who heads Edelman's social business practice argues, that "to increase trust levels among consumers – and earn the 'license to lead' – businesses must learn to simultaneously create more operational and societal value while also impacting less the environment. "Citizen consumers" will vote with their wallets for brands that are socially inclusive and environmentally active." (Prabhu & Radjou, 2015).

There are reports that indicate that an increasing number of American consumers consider the environment when they shop, and some consider the environment critically important (Anonymous, 2014). At the same time, over 80% of Europeans believe that a product's environmental impact is a critical element in their purchasing decisions. 84% of consumers globally report they prioritize socially and environmentally responsible products whenever possible (Anonymous, 2016). An even greater concern for businesses is that 90% of millennials (the 70 million or so Americans in their 20s and early 30s), who contribute \$180 billion annually to spending, are inclining to shift to more socially and environmentally responsible brands. Despite their tight budgets, millennial consumers also seek for high quality and sustainable products. To gain the trust of these values-conscious consumers, companies need to go beyond transactional thinking and strive to achieve a better understanding of the actions needed to solve critical societal issues.

Governments across the developed world are also playing a role in this process. New regulations require businesses to be resource efficient. The US under the leadership of President Obama passed a new law requiring US carmakers to improve fuel efficiency from the current average of 27.5 miles per gallon to 54.5 miles per gallon by 2025. Similarly, in 2012, the European Parliament passed a stricter recycling law that requires by 2020 electronic and electrical goods suppliers and retailers to collect, and potentially recycle, 85% of the electric and electronic scrap they generate. In early 2014 the European Parliament voted in favor of requiring member states to meet stricter binding national targets for 2030 to deal with climate change. The directive includes a 40% reduction in greenhouse gases (compared with 1990 levels) and at least 30% of energy to come from renewable sources. As noted by the European commissioner for the environment, a combination of utilizing environmental benefits and innovative growth opportunities is needed to counter the economic turmoil and rising prices for raw materials of the present time.

Perhaps politicians are aware that consumers' standards are shifting, valuing quality over quantity. Studies show that between 15% and 28% of Americans have willingly reduced their material belongings in favor of greater self-sufficiency, with the goal of leading a humbler and more meaningful life. In Japan, a country famous for intensive working hours, almost 50% of consumers across generations now spend more time at home. Across the developed world – from New York to Paris to Tokyo – consumers now view frugality as a means to *increase*, rather than decrease, their quality of life. It is evident that consumers are looking for a substantive improvement in the quality of life and are not to be satisfied with the appearances of it. The positive side of the post-crisis gloom is that citizens' search for a more balanced lifestyle is helping to create a new economic system – a frugal economy. It represents an improvement of the more excessive trends of 20th century overconsumption and waste.

In addition to the changes in consumers' perception and behavior already noted for the Western world, there are similar growing influences among the largest emerging consumer economies of China and India. While they have to innovate, and grow with huge consumer populations, constraints on resources that have forced developed economies to rethink how to design products/ services have created an awareness of untapped potentials from the market at the bottom of the pyramid. Markets in the developing economies can nurture global business through their sheer size, rate of growth and consumer demands. Everyone knows that the world's poor are distressingly plentiful. Fully 65% of the world's population earns less than \$2,000 each per year—that's 4 billion people (Hammond, & Prahalad, 2002). The market for goods and services serving the world's poor – families with an annual household income of less than \$6,000 – is massive. The 18 largest emerging and transition countries include 680 million such households, with a total annual income of \$1.7 trillion – roughly equal to Germany's annual gross domestic product. Brazil's poorest citizens comprise nearly 25 million households with a total annual income of \$73 billion. India has 171 million poor households with a combined \$378 billion in income. China's poor residents account for 286 million households with a combined annual income of \$691

billion. Surveys show that poor households spend most of their income on housing, food, healthcare, education, finance charges, communications and consumer goods. Multinational corporations have largely failed to explore this global market, even though the rewards for doing so could be significant (Hammond, & Prahalad, 2004).

What these figures indicate is that while assuming that the poor have no money sounds obvious on the surface, it's not entirely true. While individual incomes may be limited, the cumulative buying power of poor populations is quite significantly large. The average per capita income of villagers in rural Bangladesh, for instance, is less than \$200 per year, but as a group they are devoted consumers of telecommunications services. Grameen Telecom's village phones, which are owned by a single entrepreneur but used by the entire community, generate an average revenue of roughly \$90 a month—and as much as \$1,000 a month in some large villages. Customers of these village phones, who pay cash per usage, spend an average of 7% of their income on phone services—a far higher percentage than consumers in existing markets do (Hammond & Prahalad, 2002).

It's also incorrect to assume that the poor are too concerned with fulfilling their basic needs to squander money on luxury goods. In fact, the poor often do buy luxury items besides daily essential goods. For example, in the Mumbai shantytown of Dharavi, 85% of households possess a television set, 75% own a pressure cooker and a mixer, 56% own a gas stove, and 21% have telephones. One of the explanations for this phenomenon is that buying a house in Mumbai, for most people at the bottom of the pyramid, is not a realistic consideration. Neither is getting access to running water. They accept that condition, and rather than saving for tough periods, they spend their income on things that can immediately improve the quality of their lives (Hammond & Prahalad, 2002). These unexpectedly hidden potential markets present an opportunity for any firms that can understand the provision of appropriate solutions.

For instance, as markets become increasingly global, improvements through effective OM could be made in areas such as cost reductions in supply chain and market expansion, with revenue boost and increasing effectiveness as well as the speed of doing business being credited to the development of Internet and other digital technologies. But the expansion of opportunities on an international scale requires firms to adopt relevant global strategies. Three primary strategies that Nag (2019) introduced in his book, based on Michael Porter's devised set of strategies for businesses to use are (1) Differentiation Strategy, (2) Cost-Leadership Strategy and (3) Response Strategy. A more recently developed strategy mentioned followed the three primary ones is Mass Customization Strategy. A firm can adopt one or a combination of these strategies to achieve its mission. There is no mandatory or set of structures firms must follow, because creating a strategy is an innovation process itself. Operations Management activities are based on and guided by organizational strategies. As enterprises drive to establish and maintain competitive advantage and to gain more market share of their target segments, one of the goals organizational strategy tries to achieve is to lay out a process designed with a view to realize the objectives. In this way Operations Management is becoming increasingly vital for firms to compete in the global digital era.

OPERATIONS MANAGEMENT ADJUSTMENTS TO ACHIEVE EFFICIENT MASS CUSTOMIZATION AND SUCCESSFUL PRODUCT AND PROCESS DESIGN

During the 20th century, established corporations such as General Motors (GM) and General Electric (GE) invested lavishly in R&D labs intending to industrialize and centralize the innovation process. These labs consisted of thousands of engineers and scientists charged with pushing technological boundaries in order to invent the next big innovation. These firms' industry dominance enabled them to drive their new products and services out to customers. They employed large sales forces and spent weightily on mass marketing, especially TV and print media, to encourage demand. Successful as this model was for decades, its useful cycle is ending. The industrial R&D model based on science and technology is increasingly unfit to the 21st century's fast paced digital economy. In a world of growing financial constraints, resource scarcity and increased competition, including highly empowered, cost-conscious and

eco-aware customers, there are several reasons why the industrial R&D model is losing its effectiveness. Some of the disadvantages as derived from the literature are: 1) High Investment for low value of return; 2) Time-consuming and inflexible R&D; 3) Rewarding innovation quantity over quality; 4) Complex, expensive and environmentally unfriendly products; 5) Alienating customers through treating them as passive users. A need for new models is highlighted.

The 20th century witnessed the birth of three significant organizational innovations: the corporate R&D lab (pioneered by Thomas Edison, who founded GE); mass production (developed and refined by Henry Ford); and “big-box” retail and mass distribution (developed by Sam Walton, the founder of Walmart). All three centralized company functions – from R&D and purchasing to manufacturing, sales and marketing – with the goal of generating economies of scale. Although this centralized approach helps mass production, thus reducing per unit costs, it also expends a lot of energy and has become costly to sustain. Even worse, this approach reduced not only consumers, but many employees also to being passive users of products and services, excluding them from involvement in a production process that, typically, would occur distantly from where they live. However, developed world consumers are rapidly and dramatically evolving into creative producers of personalized products and services. Some of these new trends originate from 3D printing and do-it-yourself (DIY) platforms such as TechSchop and FabLab, which cut production costs. This new group of consumers participating in the producer process is termed *prosumer*. A new era of distributed manufacturing will be less resource intensive and will yield higher-quality, mass-customized products and services that are also affordable and sustainable (Prabhu & Radjou, 2015). Due to the fact that many prosumers felt restricted in the real world by physical boundaries, they choose the online environment where they can create applications and communities with an unprecedented level of freedom of speech. These virtual prosumers develop their own features and become knowledgeable digital users who employ software technologies for collaboration and participate actively in a service or goods product design and implementation. They often have an impact on the social network around the product usage (Izvercianu & Seran, 2011).

Companies need to differentiate their products or services to gain market share. Innovation is indispensable to competitive advantage with customer relationships creating the condition for market acceptance, firms need to focus on ways to involve prosumers into co-creating innovation alongside companies (Belardo, & Belardo, 2002). The results of such an activity present a mutual favorable situation, with benefits for both market stakeholders. The traditional focus of a company has always been on prioritizing its own objectives and resources, with relative relationship marketing results like commitment, trust and loyalty. Another new priority for the company to consider focusing on is prosumer orientation. In addition to this, by integrating consumers and especially prosumers in new product or service processes, firms can achieve a wide range of benefits to include new product development (Enkel, 2005) or service design and improvement (Sigala, 2012), which ultimately determine innovation.

Some approaches managers should consider in integrating prosumers into the product or services innovation and creation are:

1. Engage target consumers throughout product and customer life cycles via direct interaction instead of trusting secondary market research. R&D teams would be most efficient in identifying realistic and unmet needs if they are exposed to customers in their natural settings. This continuous observation throughout the product development cycles will expose R&D engineers to relevant customer insights, which might save the whole product design process time and finance as well as other resources in developing products that meet real market demands.
2. Seek affordable, good-enough solutions to the immediate unmet needs faced by customers instead of trying to impress them with technical complexity or widgets, complicating the best simple solution to meet their requirements.
3. Involve customers from the outset, share prototypes with end-users. Firms should actively seek ways to engage consumers in the early stages of product development to ensure that the result is a market-desirable offering. By designing just good-enough, usable products R&D teams could already be sharing their prototypes with early adopters in the market, via some

online platform such as Affinova's tools for greater exposure, hence resulting in more relevant feedback to the process.

4. Utilize big data analytics. As discussed earlier, with increasingly connected consumers to the internet and digital channels, mobile phones and digital networking allow researchers to tap into huge amounts of detailed and specific data sets to detect customer needs and trends, so that firms could respond with appropriate solutions (Prabhu, & Radjou, 2015).

In order to support the innovation process, there are considerations for firms to take when it comes to execution agility to improve efficiency and effectiveness as well as keeping the cost down during each innovative stage. With resource scarcity, R&D teams could enjoy the advantages of using dynamic portfolio management tools to identify priorities and focused projects. The portfolio management will reduce the risk of unfocused and wasteful scattering allocated resources to develop products that might not match with real market demands. Another activity to prevent firms from developing over-engineered products is using just-in-time design method, where good enough prototypes are presented to consumers and more functions/ features are only added based on feedback of early users.

OPERATIONS MANAGEMENT SHIFT FROM ECONOMY OF SCALE IN INDUSTRIAL ERA TO FRUGAL SUPPLY CHAIN MANAGEMENT AND MANUFACTURING

The future role of supply chain strategies will rely on a thorough understanding of today business environment's challenges. Supply Chain Management issues are no longer considered simply a tactical, manufacturing, or logistics issue, but a strategic capability that is critical to the success of the company. This section will discuss some observation of the shifting trends in supply chain management and manufacturing to adapt to today's business.

Local Sourcing

The business world is now witnessing a shift from low cost to local sourcing. Western multinationals are already sourcing from local suppliers in emerging markets as part of localization strategies. Apart from meeting local sourcing requirements, this also allows firms to create more affordable products. This trend is becoming more apparent in mature economies too, where sourcing smaller quantities from smaller firms located near factories and R&D facilities reduces costs and risks. Manufacturers often locate R&D teams near manufacturing facilities so that R&D and manufacturing engineers can collaborate more closely with one another and with local suppliers and respond more quickly to demanding consumers. These large manufacturers are taking their lead from big retailers. In 2010, for instance, Walmart, the US's biggest importer, devoted to doubling the sales of locally sourced products in the US by 2015. Waitrose, a UK supermarket chain, sources nearly 70% of its food from suppliers situated within a 30-mile radius of a location. This is an interesting return to much earlier marketplaces, where the countryside around a large town supplied that town with food through local markets. In modern markets the risks of variations in supply and quality are offset by reduction in transportation and storage costs, the changes being managed by logistics and operations management.

Sharing Resources

Rather than letting their production and distribution assets idle, some manufacturers now allow other firms, including rivals, to use their facilities. It has long been common in areas like Africa and India for competing telecoms providers to share mobile-phone towers, and Western telecoms companies are now doing the same. Western firms are also learning from health-care firms in Africa which imitated Coca-Cola's "cold chain" (a temperature-controlled supply chain) as a cost-effective way to preserve life-saving medicine and have it delivered rapidly to remote villages. In many respects, the developments listed are the business-to-business equivalent of the sharing economy in which companies trade and share supply-chain assets (Prabhu, & Radjou, 2015).

Distributing to the Last Mile

Fulfilling orders for customers in far-flung locations is a difficult challenge. The so-called last-mile challenge exists because it is costly for companies to implement physical distribution (such as bank branches or retail stores) in locations with few users. Innovative distribution models, which make use of dependable locals and networks, are often used in emerging markets. The development of drones is likely to be the next major impactor on this problem. Innovations in distribution are driven as much by possible cost reductions as by performance (Mangiaracina et al., 2019).

Decentralize Supply Chains with Smaller, Nimbler Factories

Decentralized supply chains, whereby production happens as close as possible to the point of consumption, will help bridge the supply-demand gap. One way to do this is by shifting production from big factories with inflexible manufacturing processes to smaller, nimbler plants that are flexible and versatile. Danone, a French multinational food products company, was capable to build in Bangladesh a yogurt-making micro-factory only 10% the size of Danone's existing factories and much lower cost to build. The success of this decision encouraged the corporation to build low-cost micro-factories in other markets including their established market in Europe. Local sourcing of the supply chain is an emerging trend that has seen enormous success in reducing costs and making products available to customers with shorter lead times than previously thought possible (Sharma and Loh, 2009).

MANAGING HUMAN RESOURCES, JOBS, AND WORK IN A BUSINESS LANDSCAPE OF KNOWLEDGE WORKERS AND AN ENLARGED SERVICE SECTOR

Since the introduction and growth of digital channels and the internet, information is penetrating to whichever customer base that has access to the network. Consumers have become more informed than at any period in the past. In 2015, the International Telecommunication Union (ITU), a United Nations body, predicted that 3.2 billion people would be online, edging towards a half of the world population that is currently standing at 7.2 billion. About 2 billion of those will be in the developing world, the report added (Anonymous, 2015). This number rose from just 400 million internet users worldwide in 2008, an eighth of the 2015 figure. A growing and better-informed consumer base, deep penetration of digital channels and increasing advancement of technology all contribute their share in giving rise to knowledge workers. The management of this rising labor force is a central focus for any firms seeking to establish sustainable competitive advantages.

The change in access to information and knowledge poses significant challenges to the creation of business value. In an industrial economy business value, measured in terms of high rates of productivity and the associated costs, came first from machines and then from labor efforts. According to Drucker (1993), information-based and knowledge-based production had not resulted in higher productivity rates in service and knowledge work. Drucker explains this by, first of all, the immaterial and complex nature of information and knowledge as economic resources: that they cannot be treated and processed in the exact same way as material economic resources. Knowledge and information, Drucker argues, is not productive in and by itself; putting more information into a service does not make a person perform that service more effectively as such. The same is true in the case of the knowledge worker; his specialized knowledge is not productive in and of itself. Knowledge only becomes productive by fusing different kinds of specialized knowledge into something that makes a difference (Drucker, 1993). The same study points out that the means of production have become dependent on the knowledge and information closely associated with the knowledge worker.

Drucker believed that managerial success in a new economy rests on the aptitude to build a new organizational and managerial system that is able to differentiate productive activity from the aspect of people keeping busy (Bang, Cleemann, & Bramming, 2010). The central premise of these propositions is that businesses must be to return to the fundamental strength of a business consisting of accountability and measurability. It is the discipline of test, productivity measurements, and profitability requirement. Where these are lacking, businesses are essentially out of their depth (Drucker, 1973). In the later part of

the twentieth century, building on this agenda, accountability and measurability become the premises for business value, with work organized around the factory or firm as having a one task-purpose. However, due to the immaterial nature of information and knowledge, the traditional factory defined as the one task-purpose organization, cannot depend on traditional economic factors such as consumption and investment as indicators of business value.

Therefore, Drucker suggests that the focus of the modern factory must be at the level of costs: minimization of costs becomes the visible aspect of how to measure economic results, as costs are the only known factor in the organization's economy. A tight focus on costs, implying a continuous strive to lower costs, is key for the assessment of performance and results. The consequence is that all work is reorganized around the *task* and its flow and the costs of the organization is measured by time. Time becomes the variable and controllable aspect of a process, and the benefit accrued from process redesign is the reduction in time so obtained. In effect, the production, the organizational structure, its management and employees, all become factors that are organized around the task's time flows.

As the application of automation increases in all business areas, it becomes increasingly difficult for competing businesses to differentiate their work. Innovation becomes the answer to this difficult problem, and the innovation relies heavily on intellectual capital. Thus, human capital and customer capital become primary sources of innovation. An extension of the concept that human capital refers to employee capabilities is that customer capital represents the relationship with important stakeholders (Potra & Izvercian, 2017).

Half a century ago, Peter Drucker presented the term “knowledge worker” to describe a new class of employee whose fundamental production was no longer capital, land, or labor, but rather the constructive use of knowledge. Today, these knowledge workers, a group that might be referred to as professionals, represent a large and growing percentage of the employees of the world biggest corporations. As stated by Bryan and Joyce (2005), in industries such as financial services, health care, high tech, pharmaceuticals, and media and entertainment, professionals now account for over 25 percent of the workforce, and in some cases undertake some of the key line activities. New business ideas are continuously generated among these groups of employees. They make it feasible for companies to deal with today's speedily-changing and ambiguous business environment, and they generate and administer the intangible assets that are the main way many companies across industries now create value. Dynamic professionals make big enterprises competitive. A few startups which have grown into giants in knowledge-based industries that attract global best talents are GAFAs (Google, Amazon, Facebook, Apple) (Galloway, 2017), Airbnb, Uber (Stone, 2018) and many more if somewhat smaller organizations.

The same approach is shared by other scholars who sees a knowledge worker as someone who depends on his or her knowledge and ability to learn, and who works with the brain rather than the brawn (Vinson 2009). Lowe's (2002) definition of knowledge worker is limited to those with a university degree. Thomas Davenport (2005) sees knowledge workers as people with great levels of expertise, education, or intensive experience. Davenport states that the fundamental purpose of a knowledge worker's job involves the creation, distribution, or application of knowledge. These knowledge workers utilize their knowledge to perform their tasks and think essentially for a living.

The knowledge is an intangible characteristic in the specifics of a knowledge workers' major tool and resource. Knowledge consists of two dimensions, explicit and tacit. The explicit dimension is easy to solidify and share, by language, pictures and notes. The tacit dimension is associated to practical activity; it is greatly personal, partly or fully subconscious. It cannot be detached from its human owner. Because of the tacit knowledge that is the basis of judgment, knowledge as a whole is intangible. The intangibility of knowledge makes knowledge workers special and difficult to manage. The most important part of the work of knowledge workers occurs in their heads even though the final result may be materialized. It cannot be observed, supervised or measured. Knowledge workers often state that their finest ideas and solutions were conceived outside their professional working environment when they were relaxing, not officially at work. Even more, the results of the work of knowledge workers may differ from the short and long-term perspectives, which causes problems with standards, measurement and evaluation.

Literature offers some but not many concepts on how to manage knowledge workers. A literature review suggests that there is lot of room for future research on this topic. As a new rising and increasingly popular percentage group in the labor force, managing knowledge workers requires different approaches, tools and methods than managing traditional non-knowledge workers. As Peter Drucker conveyed, knowledge workers are employees who would oppose the command-and-control model that business took from the military 100 years ago (Brinkley, Fauth, Mahdon, Theodoropoulou, 2009). Managers cannot monitor the progression of the work of knowledge workers, which makes control or supervision challenging. Knowledge workers understand their work better than their managers and they are capable of and generally willing to be accountable for autonomous decision-making.

At the turn of the century Newell (2000) proposed six key requirements that are necessary to manage knowledge worker group productively: autonomy, achievement, keeping up to date, professional identification, participation in missions and goals, support and sharing. At much the same time Harman and Brelade (2000) advise managers to focus on six other factors important for knowledge workers: networking and broad contacts externally and internally, respect for individuals, creativity and innovation, trust, knowledge sharing and sound underlying systems and development. Suff and Reilly (2005) observe that knowledge workers are likely to thrive in some cultures, but also there are situations that inhibit their performance. Organizations should seek to develop the right climate. For example; is information sharing encouraged in practice or discouraged? Is direct involvement favored over indirect representative involvement? Is risk taking supported, tolerated or frowned upon. Knowledge workers will be sensitive to these organizational signals and will respond accordingly. They will not take risks if they think they will be penalized. They will not share information if they think it pointless. Knowledge workers will look after their careers and exhibit behaviors that help them further their ambitions in the context of what the organization appears to value” (Mládková, 2012).

A special task of the management of knowledge workers is the management of their performance. The CIPD (2004) emphasizes the need for a performance management system that knowledge workers feel comfortable with. The study says that knowledge workers are quite sensitive to performance management schemes because of the high degree of ownership they have over their skills and knowledge, which means they incline to take great pride in realizing progressive standards of performance. It recommends that knowledge workers be involved in the development of such performance evaluation structures, as knowledge-intensive outcomes tend to be vague and are often problematic to measure (Suff & Reilly, 2005). Perhaps the most complex approach to the management of knowledge workers and their productivity is offered by the research of the Gallup Organization on motivation and management of so-called *talented employees* (Mládková, 2013). Research for over 25 years focused on employees' performance and loyalty to their organizations. The term 'talented people' is close to our term 'knowledge workers' and the results of the research are entirely relevant to this group of employees (Buckingham, & Coffman, 2005).

Analysis of the hugely extensive volume of data determined twelve key factors, summarized through twelve questions, that affect the behavior of an employee in an organization. These factors are needed to attract, develop and keep knowledge workers in the company because they are considered as crucial for their labor productivity. Factors are presented as questions knowledge workers ask and answer continuously. These twelve questions are:

- Do I know what is expected of me at work?
- Do I have the materials and equipment I need to do my work correctly?
- At work, do I have the opportunity to do what I do best every day?
- In the last seven days, have I received recognition or praise for good work?
- Does my supervisor, or someone at work, seem to care about me as a person?
- Is there someone at work who encourages my development?
- At work, do my opinions seem to count?
- Does the mission and purpose of my company make me feel like my work is important?
- Are my co-workers committed to doing quality work?

- Do I have a best friend at work?
- In the last six months, have I talked with someone about my progress?
- At work, have I had opportunities to learn and grow? (Buckingham & Coffman 2005).

The research also displayed great impact by direct managers on the performance of knowledge workers. (Buckingham, & Coffman, 2005; Mládková, 2012). The research on knowledge workers and their management shows that knowledge workers are proud experts whose performance is influenced more by good co-workers, the availability of contacts and knowledge than by HR policies and the material benefits that their organization offers them. They highly value it if their manager continuously communicates with them, if s/he creates an appropriate environment for their work and aligns their objectives with the objectives of the organization. They do not wish managers to interfere in their work but do not dislike appropriate control.

AN INTEGRATED APPROACH TO BLUE OCEAN STRATEGY

Value Engineering is a technique established in Operations Management and one that has been used extensively in all the components of activity described above. The basic objective of value engineering is to deliver the same quality and performance at a reduced cost, or to deliver a higher quality and performance at the same cost. Value Engineering can be performed using the concepts of Lean Operations as a benchmark and as a guiding principle to make the application more consistent across the entire set of functions from product design to production systems and the logistics of delivery to the customer (Solaimani et al., 2019). Value Engineering can be effective in reaching management goals when applied as an afterthought in the context of the entire operation. When applied together with Lean Principles it becomes a driver for innovation and a vehicle to achieve a Blue Ocean strategy. The difference lies in the fact that Blue Ocean is not merely cost reduction but an integrated approach to a strategy that delivers great value at low cost.

Another approach of Operations Management that needs to be mentioned in the same context of an integrated system to achieve a Blue Ocean strategy is the technique known as Quality Function Deployment, or QFD. As its name implies, QFD was originally developed for achieving higher and more consistent levels of quality. Higher quality is also one of the waste elimination strategies used in Lean Operations. Vinodh and Chintha (2011) show the application of QFD in the lean context for a manufacturing organization. One can generalize in both directions, i.e. extend the lean design concepts from manufacturing to service, and also consider Blue Ocean as being more prevalent for manufactured goods than for service. It should also be considered that in Operations Management a product is considered to be of high quality when it exactly matches customer expectations in terms of performance and value, and the application of QFD is designed to achieve exactly that goal in a consistent and structured manner. Thus, QFD can be considered to be an effective method for achieving the Blue Ocean strategy.

In summary, the contribution of an integrated approach is to develop a product and its delivery system from the ground up, with no prior or preset design values. The resulting product and delivery system will achieve a desired Blue Ocean strategy of high value and low cost more effectively than if the process were constrained by predetermined concepts.

CONCLUSION

Economic changes are happening, and happening globally, with greater speed than ever before. Firms from small to medium to large corporations are under severe pressure to keep up not only with innovation to stay relevant in their competitive environment but also being agile enough in operations to adapt to a fluctuating business landscape. Widening inequalities in income gaps in both developed and emerging markets present both opportunities as well as pressure for incumbent businesses to cope with. Increasing globalization, growth and penetration of a digital infrastructure, a growing percentage of knowledge workers and changing trends in consumers' behaviors all require managers of Operations Management to

prepare not only for short-term competitive pressures but, more importantly, creating companies capable of innovating for long-term strategic competition with resource scarcity. Though there has been much research and suggested concepts for firms to utilize their operations management to adapt to changes, there are still a lot of space for creativity and future exploration. Operations Management must always be necessarily evolving if it is to respond effectively to the changing business landscape. It is not as it was in past decades. With today's sharply volatile business landscape, organizations and their executives need to be prepared with the most agile and lean structure, tangible as well as intangible resources to cope with changes and secure competitive advantages. Operations Management has the capacity to do that if it has the will to embrace frugal innovation.

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