CSR and Innovation: A Holistic Approach From a Business Perspective

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1 Introduction

1.1 Terminology: CSR and Its Relatives

Even though the actual impact of Corporate Social Responsibility (CSR) activities is sometimes questioned in literature (Hahn et al. 2011), it is undisputed that CSR is gaining more and more attention in academic research as well as in business (Altenburger 2013; Carroll 2015). Porter and Kramer (2008) stated that "myriad organizations rank companies on their performance of their corporate social responsibility [. . .]. As a result, CSR has emerged as an inescapable priority for business leaders in every country." Yet, the term is still ill-defined. "No unique definition emerged in last few decades in the history of CSR that can be used for all purposes", writes Rahman in his overview paper on CSR definitions (Rahman 2011), and Schneider even captions a book paragraph stating that the "term CSR [is] not stable and clearly defined" (Schneider 2015), even though co-editor Schmidpeter emphasizes the increasing importance of CSR: "The discussion about social responsibility of companies [. . .] is in full swing. Corporate boards, politicians and academics debate on the responsibility companies assume and on how sustainable management may contribute to solving current social challenges, but also on how it helps to improve competitiveness" (Schmidpeter 2015).

Early definitions of companies' social responsibility usually center on the question asked by Bowen in 1953: "What responsibility to society may businessmen reasonably be expected to assume?" (Bowen 1953). The very formulation of this question—addressing "businessmen"—relates to early-capitalism roots of social responsibility and links nineteenth century approaches to modern concepts. As

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early as in 1960, Frederick argues that "businessmen should oversee the operation of an economic system that fulfills the expectations of the public", and he continues by demanding that "production and distribution should enhance total socio-economic welfare" (Frederick 1960).

Schneider (2015) cites Dow Votaw (Votaw and Sethi 1973): "The term is a brilliant one; it means something, but not always the same thing to everybody. To some it conveys the idea of legal responsibility or liability; to others it means socially responsible behavior in an ethical sense; to still others, the meaning transmitted is that of 'responsible for', is a casual mode; many simply equate it with a charitable contribution"—and he declares that this statement is still valid.

No progress in more than 40 years? Among the countless efforts to define the scope of CSR and possibly even some methodologies to manage CSR, at least Elkington's book "Cannibals with forks" shall be mentioned, in which he coins the "triple bottom line" notion, spanning the triangle of social, environmental and economic aspects, or, catchier, promotes the "people, planet, profit" perspective (Elkington 1997, 2004). This very basic concept is still used and discussed also in recent publications (e.g. Carroll 2015; Hansen and Große-Dunker 2013; Schaltegger et al. 2012).

Even though there is still no commonly agreed unique definition of CSR in place, respective attempts have been made by multinational organizations, e.g. by the European Commission (EC) or the International Standards Organization (ISO). According to the EC definition, CSR aims at "maximising the creation of shared value for their owners/shareholders and for their other stakeholders and society at large" and at "identifying, preventing and mitigating their possible adverse impacts". This shall cover at least human rights, labour and employment practices, environmental issues, and combating bribery and corruption. Following the EC statements, community involvement and development, the integration of disabled persons, and consumer interests, including privacy, and are also part of the CSR agenda (European Commission 2011).

The standard ISO 26000 is titled "Guidance on social responsibility", and provides a guideline on the underlying principles of social responsibility, recognizing social responsibility and engaging stakeholders, the core subjects and issues pertaining to social responsibility, and on ways to integrate socially responsible behavior into the organization (ISO 26000: 2010). As usual with ISO standards, the document was developed on a multinational level, involving stakeholders from around 90 countries. The standard proposes to omit the term "corporate" and instead to use the term "social responsibility" to widen the scope of applicability: "The view that social responsibility is applicable to all organizations emerged as different types of organizations, not just those in the business world, recognized that they too had responsibilities for contributing to sustainable development" (ISO 26000: 2010). In the "terms and definitions" part of the standard, "social responsibility" is defined as "responsibility of an organization for the impacts of its decisions and activities on society and the environment, through transparent and ethical behaviour that

– contributes to sustainable development, including health and the welfare of society;
– takes into account the expectations of stakeholders;
– is in compliance with applicable law and consistent with international norms of behaviour; and
– is integrated throughout the organization and practised in its relationships."

So far we have used the letter "R" in "CSR" for "responsibility". Yet, some authors argue that "responsibility" may mislead the discussion. As early as in 1975, Sethi introduced the term "corporate social responsiveness" (Sethi 1975). Corporations—or, following the ISO 26000 perspective, organizations in general—should not just take over responsibility, but respond to the needs of society.

As Archie B. Carroll points out in a recent paper (Carroll 2015), other competing concepts have been promoted in the past decades, including Business Ethics, Stakeholder Management, Sustainability, and Corporate Citizenship. We will discuss these notions in more detail in the next section.

1.2 History: Development of Concepts

Even though discussions on CSR as well as the modeling of respective concepts started in the 1950s, the main roots of businessmen's (and businesswomen's) concern for social topics can be traced back at least to the nineteenth century. As Carroll states, "then, and now, it is sometimes difficult to differentiate what organizations are doing for business reasons, i.e. making the workers more productive, and what the organizations are doing for social reasons, i.e. helping to fulfill their needs and make them better and more contributing members of society" (Carroll 2008)—nonetheless there is quite some evidence for philanthropic activities in nineteenth century capitalism. Management historian Wren (2005) describes examples including the provision of medical care, bathhouses, recreational facilities, and even profit sharing. "In Britain, visionary business leaders in the aftermath of the Industrial Revolution built factory towns, such as Bourneville (founded by George Cadbury in 1879) and Port Sunlight (founded by William Lever in 1888 and named after the brand of soap made there), that were intended to provide workers and their families with housing and other amenities when many parts of the newly industrialized cities were slums", writes Smith (2002). Other examples, including Macy's, the Pullman Car Company or the foundation of the YMCA have been described e.g. by Heald (1970). Supporting Carroll's view on philanthropic efforts in general, also Smith (2002) states that "philanthropic industrialists of the Victorian period were motivated by a desire to do good, but they were also motivated by enlightened self-interest." It is clear that an improved working environment would improve the company's performance also from a business perspective. Nonetheless industrialists such as Cadbury, Lever, or Salt—who built the new city Saltaire close to Bradford, from where he moved the wool textile production to the new location comprising 850 houses for his workers—were pioneers in the dark era of

capitalism, and provided their workers a comparatively safe and healthy working environment, decades before governments initiated respective legislation. A brief history of industrialist philanthropy, spanning from the early days of capitalism to the present (e.g. the Bill and Melinda Gates foundation) may be found in the paper of Acs and Phillips (2002).

More comprehensive and systematic Corporate Social Responsibility (CSR) approaches emerged in the 1950s. Carroll (1979) declares Howard R. Bowen's publication "Social Responsibilities of the Businessmen" (1953) as the first milestone in CSR history, "considered by many to be the first definite book on the subject." Since, as stated above, the definition of CSR is still blurry, it was all the more in the "childhood" of this concept. In the early 1960s it was at least clear that CSR has something to do with responsibility taken beyond just the economic aspects. The topic was undoubtedly on the agenda and intensively discussed, which is also reflected by Milton Friedman's reaction to it. In his best-selling book, "Capitalism and Freedom" (1962), the later Nobel-prize winner argues: "The view has been gaining widespread acceptance that corporate officials and labor leaders have a "social responsibility" that goes beyond serving the interest of their stockholders or their members. This view shows a fundamental misconception of the character and nature of a free economy. [. . .] Few trends could so thoroughly undermine the very foundations of our free society as the acceptance by corporate officials of a social responsibility other than to make as much money for their stockholders as possible. This is a fundamentally subversive doctrine."

Even though Friedman still ranks as one of the most influential economists of the twentieth century, his harsh rejection of the CSR concept did not really affect the further development of the topic, at least not in the mid and long term. In fact, the CSR concept became more and more comprehensive. McGuire declared in 1963 that social responsibilities should go beyond just economic goals and legal compliance. As already mentioned above, the term "responsibility" was criticized as just covering the assumption of an obligation, but not focusing on the outcome of related activities. Ackerman and Bauer (1976) thus propose the use the term "responsiveness" instead. A similar view was promoted by Sethi (1975).

In his seminal 1979 paper, Archie B. Carroll proposes a four-step classification of CSR performance. The basic and most relevant responsibility is still the economic one. Needless to argue—if the company does not survive in the market, any discussion on its social responsibility is obsolete. Secondly, there is the responsibility to comply with the law. Going beyond these basic levels, Carroll distinguishes between ethical and discretionary responsibilities. Even though "ethical responsibilities are ill defined and consequently are among the most difficult for businesses to deal with", they are clearly demanded by society. "Discretionary (or volitional) are those about which society has no clear-cut message for business" (Carroll 1979).

"During the 1990s, CSR practices became commonplace, more formalized, varied, and more deeply integrated into business practices", states Carroll in 2015, and discusses some alternative concepts: "Business ethics is a system of thought that is rooted in moral duty and obligations. It can also be seen as principles or values. Business ethics is concerned with the rightness or fairness of business, manager and

employee actions, behaviors and policies taking place in a commercial context" (Carroll 2015). Translated into corporate reality, business ethics are reflected e.g. in anti-bribery rules, fairness rules and codes of conduct. Business ethics thus have a narrower focus, dealing primarily with how to act in a correct way when doing business. Main operative areas concerned may be sales, contracting, accounting, and the relations to stakeholders, which brings us to the next concept discussed:

According to Carroll, the stakeholder approach became popular in the mid-1980s, and is still important today. This is—by the way—also reflected in the new revisions of the ISO 9001 and ISO 14001 standards (released in 2015), in which stakeholder identification, consideration and management gained much importance.

The term "sustainability" was coined in the report of the so-called Brundtland Commission, which published its results in 1987. The commission headed by former Norwegian prime minister Gro Harlem Brundtland put environmental topics on the political agenda, and asked for "sustainable development" (Brundtland 1987). Nowadays—and following John Elkington's notion (1997)—sustainability is usually defined as the triad of economic, environmental, and social issues. Corporate reports covering CSR or related concepts nowadays are quite often published as "sustainability reports". According to Carroll (2015), 95% of the Global Fortune 250 companies issue publications dealing with their performance not just on economic level, but also related to environmental and social aspects.

A fifth concept discussed by Carroll is that of "Corporate Citizenship" (CC), distinguishing between a "broad view", in which CC is more or less identical to CSR, and a "narrow view", in which CC just covers the discretionary or philanthropic level of his four-level concept presented in 1979.

Another important facet of more recent discussions is pointed out by Altenburger (2013), referring to the corporate responsibility initiative of the Harvard Kennedy School (2013): Stakeholders do not just ask how profits are used for social or environmental topics, but how these profits are earned.

1.3 Business: Does CSR Pay Off?

But all discussions about CSR and Business ethics, sustainability and corporate citizenship may be interfered by a very simple question: Does CSR pay off? This reminds us of Milton Friedman's view that the sole responsibility of a businessman is to make profit—the more the better. Although the importance of CSR and similar concepts is in fact increasing, the tension between serving the shareholders by making profit and also considering other stakeholders by assuming additional responsibility has not vanished. In fact, the discussion became more and more prominent around 20 years ago, as Epstein and Roy argued in 2003. Schaltegger and co-workers (2012) trace back the discussion to the mid-1990s, citing publications e.g. by Burke and Logsdon (1996), Hamilton (1995), or Porter and van der Linde (1995a, b). Meanwhile, several authors have examined the relationship between financial performance and sustainability, discussing also the "CSR business

case" (e.g. Altenburger 2013; Boons et al. 2013; Hockerts 2007; Schaltegger et al. 2012). As mentioned by Altenburger (2013) Kurucz and co-workers (2008) analyzed CSR studies and identified four major discussion threads: cost and risk reduction, gaining competitive advantages, legitimacy and reputation, and achieving win-win situations for corporations and the society. An overview of concepts, review, and practice can be found in the paper of Carroll and Shabana (2010).

The issue was also addressed by Michael Porter and Mark Kramer in their influential work published in 2006 in Harvard Business Review. The authors declare that "CSR has emerged as an inescapable priority for business leaders in every country" and "debates about CSR have moved all the way into corporate boardrooms", but deplore that "efforts have not been nearly as productive as they could be". For two reasons: first, because business and society are treated separately, although they are interdependent; and second, because companies are forced to treat CSR topics in a generic way instead in that most appropriate to the company's strategy. To resolve this tension, Porter and Kramer see just one option: To escape the zero-sum game and create win-win situations. Business and society have to be integrated in a way that fits the company, its business, its strategy and its possibilities to contribute best: "The essential test that should guide CSR is not whether a cause is worthy but whether it presents an opportunity to create shared value." Porter and Kramer advocate going beyond "responsive CSR" (discussed above) to "strategic CSR", characterized by "strategic philanthropy that leverages capabilities to improve salient areas of competitive context" and by transforming "value chain activities to benefit society while reinforcing strategy". How can this be achieved? "The interdependence of a company and society can be analyzed with the same tools used to analyze competitive position and develop strategy", answer Porter and Kramer and suggest e.g. to evaluate all company processes along the value chain and to integrate CSR aspects whenever appropriate.

2 Models: Understanding and Approach

As shown above, the discussion on CSR is still multifaceted and extensive. The still blurry definition of CSR on the one hand and the increasing importance on the other, has opened a broad field for concepts, approaches and interpretations. It seems to be a natural reaction to complexity to try to systemize phenomena and activities. As statistician and quality management theorist George Pelham Box put it, "all models are wrong, but some are useful"; therefore some models treating different perspectives on CSR shall be discussed.

2.1 Sustainability Innovation Cube

As discussed above, CSR and sustainability are undisputedly important topics on today's business and society agenda. The same applies to innovation: Thousands of papers are published year by year on innovation, a myriad of books try to find the key to successful innovation. Concepts like "disruptive innovations" (Christensen 1997; Christensen and Overdorf 2000; Christensen and Raynor 2003), "open innovation" (Chesbrough 2003, 2006), lead user and customer involvement approaches (von Hippel 2005; Schweitzer 2014), empathic design (Leonard and Rayport 1997; Littman and Peters 2001), the Blue Ocean concept (Kim and Mauborgne 1999, 2005), the Business Model Canvas (Osterwalder and Pigneur 2010), of the Lean Startup approach (Ries 2011)—for an overview on concepts see August et al. (2015)—are not just discussed in the inner circle of innovation management groups, but are almost common parlance.

As CSR, also innovation, innovation management, and, related to innovation, creativity are vast fields of research, and combining CSR with innovation does not really make it easier to keep an overview. Aiming for a systematic view on it, Erik Hansen, Friedrich Grosse-Dunker and Ralf Reichenwald developed the "Sustainability Innovation Cube" (2009) to structure innovations' sustainability effects. The tool is meant to be used by decision-makers in companies to reduce innovation risks related to economic, environmental, and social aspects. The model consists of three dimensions:

- Target dimension: This dimension analyses the effects of innovations of the target area of sustainability. The triple bottom line approach of Elkington (1997, 1998, 2004) is used, i.e. Hansen and co-workers categorize the target dimensions into ecological capital, social capital, and economic capital. The ecological dimension is determined by the consumption of resources and influences on the ecosystem (Fichter 2005), including pollution, changes to the atmosphere, buildings, effects on biodiversity etc. It is clear that the social impact is related to stakeholders both inside and outside the organization (Achterkamp and Vos 2006).
- The life cycle dimension allows for all phases of the life of a product or service, including manufacturing, use/maintenance, and end of life (disposal or recycling).
- As a third dimension, Hansen and co-workers consider the kind of innovation and differentiate between technological, product/service and business model innovations.

Combining these three dimensions with three aspects each, Hansen and co-workers arrive at the Sustainability Innovation Cube (SIC), consisting of 27 single cubes or intersection areas. To assess the impacts in each of these areas, the authors offer a portfolio of 76 methods that may be applied, either as "support methods" to assess effects ex-ante, or as "methods for analysis" to assess existing products and services ex post.

2.2 *Business Model for Sustainability Concept*

Does CSR pay off? This question was already raised above, and beyond pure philanthropy the answer to this question is crucial for the long-term success of CSR.

Stefan Schaltegger et al. (2012) picked up this question and discuss business cases for sustainability, aiming at increasing corporate economic value *through* environmental and social activities. As the authors state, "a business case for sustainability has to be created and managed—it does not just happen". This leads the authors to business model innovation and a concept that supports creating business models which lead to corporate financial profits, while serving the environment and society. Schaltegger and co-workers first explore the drivers of business cases, referring also to the work of Hansen (2010), Collins et al. (2010), and Revell et al. (2010):

- Cost and cost reduction
- Risk and risk reduction
- Sales and profit margin
- Reputation and brand value
- Attractiveness as employer
- Innovative capabilities

The next step is to "map out interrelations between business case drivers and the business model." For this, "a general business model has to be introduced". Schaltegger and co-workers identify four key elements:

- Value proposition (offerings representing a value to the customer)
- Customer relationship
- Infrastructure (network of partners that are needed to create the value proposition and manage the customer relationship)
- Financial aspects (e.g. cost and revenue structures)

Relating the six business case drivers with the four elements of a business model results in a 24 field matrix, for which the authors describe the value enhancing impact. Combining e.g. "attractiveness as employer" with "customer relationship" results in "Better customer service as a result of higher employee motivation"; "Risk and risk reduction" combined with "financial aspects" leads to "improved risk and credit rating resulting from lowered sustainability risks".

What are the main obstacles to implement sustainability business cases? Schaltegger and co-workers recall that in spite of business model innovation being hyped as the next big thing in innovation management, a variety of hurdles has to be overcome as also reviewed by Chesbrough (2010). Schaltegger and co-workers conclude that "sustainability-oriented innovations are obviously predisposed to not fit with the dominant logic of an established business model". Yet they see support by using accommodative and proactive sustainability strategies.

The model presented by Schaltegger and co-workers surely helps to build business models that lever the synergies between economic and operational advantages

on the one hand and environmental and societal benefits on the other hand. Thus, it may also be used to advocate sustainable business models in an organization. An interesting extension of the model presented is to use Osterwalder and Pigneur's (2010) nine sector "Business Model Canvas" instead of the four element model used by Schaltegger, Lüdeke-Freund and Hansen. Of course this adds complexity to the model. On the other hand, it links the concept to a model that is quite popular in strategic and innovation management, thus lowering board members' and managers' inhibition thresholds to adopt the concept of business cases for sustainability. Two related approaches will be discussed below.

2.3 *Classification of CSR Relevant Innovations*

While Hansen et al. (2009) construct a 27 sector cube based on the three dimensions target, life cycle and innovation type and Schaltegger et al. (2012) combine business case drivers and business case elements, Ulrike Gelbmann et al. (2013) ask which areas of an organization are influenced by innovation and which effects may be found related to sustainability aspects. Partly based on the work of Grieshuber (2012) and Teece (2010) they differentiate between six impact areas:

- Organization, Management (e.g. introduction of respective strategies and management systems)
- Social (e.g. internal: working time model, work-life-balance; external: sponsoring, volunteering)
- Processes (e.g. improvement of process performance in terms of sustainability)
- Portfolio offered, products and services (e.g. improvement of products and services)
- Business model (e.g. changes of business models or introduction of new ones)
- Innovation system (e.g. stakeholder management, partnering)

In addition to identifying what is changed and which effect this may have, the authors also shed a light on possible reasons or goals that drive these innovations.

2.4 *Impact of Innovation on CSR: Assessment Based on Business Model Canvas*

In 2010, Alexander Osterwalder and Yves Pigneur presented their book "Business Model Generation" (Osterwalder and Pigneur 2010), which became a huge success and added new methodologies to the (innovation) manager toolbox. Even though Peter Drucker described as early as in 1994 a business model as "theory of a business" (Drucker 1994), it was Osterwalder's work (Osterwalder 2004; Osterwalder et al. 2005, 2014; Osterwalder and Pigneur 2010) which fueled also scholar discussion on

business models. According to Upward and Jones (2016), more than one million copies of the book "Business Model Generation" were sold—a number that may even impress quite successful novelists—and as Upward and Jones state, "the widely known business model canvas (BMC) [. . .] has become a de facto reference standard and is taught in management and entrepreneurship education worldwide". Compared to decades ago, innovations of business models have gained much more importance (see also the review of Bocken et al. 2014), and major game-changing innovations are not so much based on new technologies, but on new ways to offer products and services and to create revenue. Considering the widespread use of the business model canvas—which may be interpreted as covering the "profit" aspect of the triple bottom line—it offers itself to use this model as a basis to consider and cover also the dimensions "planet" and "people". In recent years, a couple of related approaches have been suggested in literature, as by Nancy M. P. Bocken and co-workers, who develop a set of so-called "sustainable business model archetypes" (Bocken et al. 2013). In her very comprehensive master thesis Lara Obst (2015) states that Osterwalder and his co-workers (e.g. Osterwalder and Pigneur 2011) mention sustainability aspects in connection with their business model canvas, but also cites Nancy M. P. Bocken and co-workers (Bocken et al. 2014), who state that the business model canvas is "poorly suited for assessing a firm in generating wider sustainability". Responding to this issue, a couple of business model canvas alternatives have been developed recently. In the following I will present two comprehensive approaches and suggest the use of an approach that covers "planet" and "people" aspects when using the original Osterwalder and Pigneur business model canvas as a tool for innovation.

The "Strongly Sustainable Business Model Canvas" was presented by Antony Upward in 2014 (Upward 2013), mapping the four pillars "process", "values", "people" and "outcome" of their own business model canvas approach to the CSR dimensions of "economy", "society", and "environment". In subsequently published articles, Antony Upward and Peter Jones (Jones and Upward 2014; Upward and Jones 2016) investigate ontologies for sustainability-oriented business model designs, supporting the "Flourishing Business Model Canvas".

An approach that refers more directly to the model of Osterwalder and Pigneur was presented as "Triple Layered Business Model Canvas" ("TLBMC") by Alexandre Joyce and Raymond Paquin (2016), who claim to present "a practical tool for coherently integrating economic, environmental, and social concerns into a holistic view of an organization's business model". The authors start from the business model canvas of Osterwalder and Pigneur as representing the economic layer, and add layers with similar structures to cover environmental and social aspects. As a proof of concept, they analyze the Nespresso business model in terms of environmental as well as social aspects using the TLBMC approach. Based on experiences gained in field testing, the authors conclude that "the TLBMC seems well suited to support creatively developing more sustainable business models through a two-step approach", namely first, the analysis and communication of the current situation, and second, the possibility to explore possible innovations. Joyce and Paquin refrain from trying to integrate "multiple types of

value into a single canvas", arguing that the separation into three canvasses, linked vertically by the 9-segment structure, allows to explicitly investigate the economic, environmental, and social dimensions of a business model. The author of the current article supports the approach of Joyce and Paquin, acknowledging especially the closeness to the original business model canvas of Osterwalder and Pigneur, since this may facilitate the adoption of the methodology in the many organizations which already use the business model canvas to analyze and innovate their business models. Yet, from a practitioner's point of view, there may be a need for a simpler and even more integrative methodology, which thus can be applied easily by practitioner teams that are already using the business model canvas of Osterwalder and Pigneur.

2.5 Integrated Balanced Sustainability Business Model Canvas

In the following the principles of the proposed "Integrated Balanced Sustainability Business Model Canvas" ("IBSBMC") shall be discussed. The methodology suggests to start from the original model of Osterwalder and Pigneur and to complement the current situation as well as considered changes of the business model with environmental and social perspectives.

2.5.1 Basic Ideas and Intended Benefits

Before going into detail, let us discuss some basic questions:

- Why should other CSR aspects be integrated into one business model canvas along with the "profit" perspective?

  The use of business model canvasses as tools for making current business mechanisms transparent and for further developing these mechanisms is widely used in practice. Since the focus so far lies on the "profit" perspective, the direct integration of the "people" and "planet" aspects into one canvas suggests to ensure as much as possible that these additional aspects are treated as integral part of the entire business case, reducing the risk of simply neglecting or even suppressing the "planet" and "people" dimensions.
- Why base the new approach on that of Osterwalder and Pigneur?

  As mentioned above—and supported by the impressive figures reported by Upward and Jones (2016)—the model of Osterwalder and Pigneur has not just gained much attention in academia, but also wide acceptance as a management tool in business.

  Additionally, the approach of Osterwalder and Pigneur is explicitly designed and used as a methodology for business model *innovation*, thus laying the foundation for a comprehensive analysis and consideration of the effects of

business model *changes*. Integrating "people, planet and profit" into one single canvas and using the model of Osterwalder and Pigneur as starting point ensures that the analysis and innovation teams work jointly using a methodology that is already well established in many companies.

- What is meant with "balanced"?

  Every change to a system will impact "profit, planet, and people"—otherwise one could not speak of "change". From a CSR perspective, the objective of changes to the current system may be described based on the European Commission view of "maximising the creation of shared value for their owners/shareholders and for their other stakeholders and society at large" and of "identifying, preventing and mitigating their possible adverse impacts". Using the term "balanced" which may remind us of the Balanced Scorecard of Kaplan and Norton (1992, 1996) is on purpose. The aim of Kaplan and Norton was to design a "set of measures that gives top managers a fast but comprehensive view of the business", complementing "the financial measures with operational measures on customer satisfaction, internal processes, and the organization's innovation and improvement activities". "By combining the financial, customer, internal process and innovation, and organizational learning perspectives, the balanced scorecard helps managers understand, at least implicitly, many interrelationships." (Kaplan and Norton 1992).

  Analogously, the Integrated Balanced Sustainability Business Model Canvas aims at helping managers to understand the impact of business model changes not just on profit, but also on people and planet, and to find balanced solutions.

2.5.2 Integration: Considering All CSR Aspects

As mentioned in the example above, to cover the environmental and social impacts of changes in the economic level of the business model canvas would imply that all sectors of the environmental and social layer be mapped into each single sector of the economic layer. This view diverges to some extend from the "vertical coherence argument" of Joyce and Paquin. The impact of changes to the single sectors of Osterwalder and Pigneur's canvas can be identified using a questionnaire:

Key Partners:

- Does the new supplier offer a better overall CSR performance? (And in more detail some examples:)
- Does the new supplier (or partner in general) subscribe to our own value charter?
- Under which conditions are the products manufactured?
- Which materials are used to produce these products?
- What social impact does a change of supplier have at the current supplier?
- What impact would purchasing products from a new supplier have on transportation and logistics?

Key Activities

- How does a change of our key activities change our CSR performance? (And in more detail some examples:)
- What effect does a change of key activities have on our own staff (e.g. need for higher qualification and other competences; restructuring)?
- If we expand / reduce our key activities, which effect does this have on our partners?
- If we reduce our key activities (by outsourcing of activities), is there a risk of losing governance and steering possibilities related to CSR topics?

Key Resources

- How does a change of our key resources change our CSR performance? (And in more detail some examples:)
- If we change the financing system, which effect would this have on CSR (e.g. dependence from possibly less transparent sources)?
- Does the exchange of certain materials needed in production offer the possibility to substitute minerals extracted under problematic circumstances in terms of ecology or labor environment?
- What effect does a change of key activities have on our own staff (e.g. need for higher qualification and other competences; restructuring)?

Value Proposition

- How does a change of our value proposition change our CSR performance? (And in more detail some examples:)
- Does our altered value proposition help our customers to live up to their ethical convictions?
- How does a modified value proposition change our customer relationships and our addressed customer segments?
- Which environmental and social risks are related to our new value proposition?

Customer Relationship

- How does a change of our customer relationship change our CSR performance? (And in more detail some examples:)
- Does a change of our customer relationship improve the possibilities of our customers to give us feedback on CSR topics?
- Do we reduce the autonomy of our customers (e.g. free choice of offers)?
- Does a change in customer relationship increase customer dependency to increase profitability?

Channels
- How does a change of our channels change our CSR performance? (And in more detail some examples:)
- What effect does a change in our marketing strategy have on complying with our values?
- Are new redistributors complying with our value codex?
- What social effects may result from re-arranging our sales channels?

Customer Segment
- How does a change of our customer segment change our CSR performance? (And in more detail some examples:)
- Does addressing new customer segments make our products unaffordable for our current customers?
- May there be ethical concerns when addressing new customer segments?
- Can we expect new customer groups to handle our products in an environmentally friendly way, e.g. when it comes to correct disposal?

Cost Structure
- How does a change of our cost structure change our CSR performance? (And in more detail some examples:)
- What social impact does cost saving by restructuring have?
- Do financial gains in procurement thwart our CSR programs and goals?
- How do increases of efficiency or organizational changes impact e.g. employees' health?

Revenue Stream
- How does a change of our revenue stream change our CSR performance? (And in more detail some examples:)
- Is a secured revenue stream based on customers depending on us?
- Will a change in the pricing mechanism be accepted by our customers as "fair"?
- If revenues are coming from new sources, are these compliant with our CSR values and regulations?

CSR related questions that may arise from changes to the Osterwalder and Pigneur business model canvas sectors are very diverse, in many cases also addressing CSR issues that are related to other sectors of the canvas. The example questions shown above give just a very rough impression of which consequences may have to be considered when developing a new or altered business model. It is very clear that the list of questions presented here is a by far not exhausting, and a questionnaire or checklist still needs to be developed. From a practitioner's point of view, sources to compile related catalogues include of course academic literature,

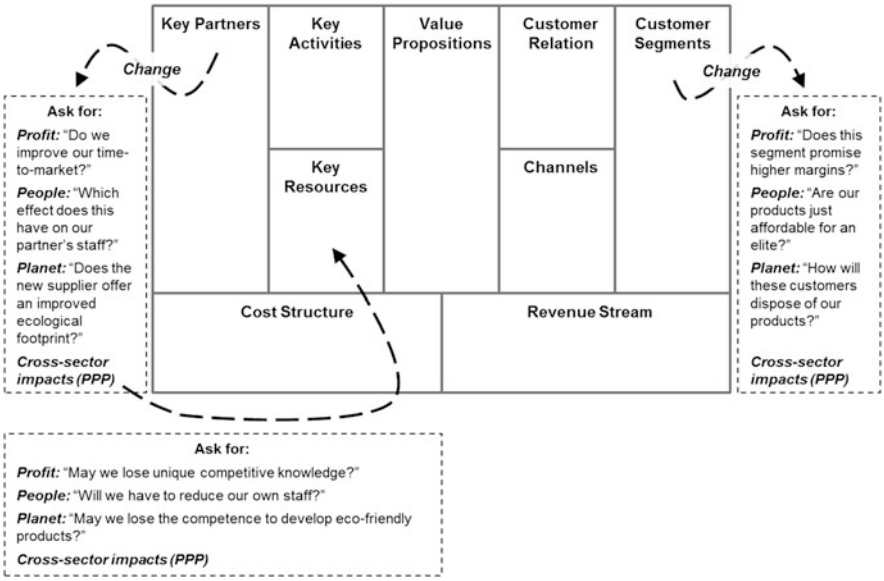

Fig. 1 Simplified illustration of an IBSBMC application

but also questionnaires on CSR already used in practice when assessing suppliers for qualification purposes and in the course of regular evaluation.

Figure 1 shows a schematic and for illustration purposes very much simplified example of how to use the IBSBMC: A substitution of a key partner in the business model may lead to a variety of effects. A set of questions should be answered related to profit, people and planet. Of course it is important to keep in mind that such changes may have direct and indirect effects, the latter including

- effects that materialize somewhere up or down the value chain (e.g. having an impact on the supplier of our supplier), and
- effects in other sectors of the business model canvas (e.g. change of key partners may have an impact on own key resources).

2.5.3 Balance: Supporting Sustainable Decision-Making

Looking at CSR and innovation the Integrated Balanced Sustainability Business Model Canvas (IBSBMC) can be used to:

- Consider the impact of economically driven changes of the business model on CSR aspects and performance (asking, in a generic way: "If we change this part of the business model, what are the consequences in terms of CSR performance?"—implicit approach)

- Consider how scenarios could look like that improve the CSR performance while also offering economic gains (asking, again generically: "Which positive move in terms of CSR would also improve our business performance?"—explicit approach).

Using this scheme also strongly and inherently supports the claims and requirements stated by Michael Porter and Mark Kramer (2006). The authors identified that treating business and society separately is one of the reasons for low effectiveness of CSR efforts and argue that "the interdependence of a company and society can be analyzed with the same tools used to analyze competitive position and develop strategy"—in our case using the business model canvas integrating "people, planet, and profit".

Decision-making of course may and shall be supported by an if possible quantitative assessment of alternatives (which reflects, by the way, also the philosophy of ISO 9001). The model under discussion therefore proposes to use an "Innovation Sustainability Balance Sheet" (ISBS) to provide as much clarity as possible. It is consciously avoided to suggest that such an analysis will result in undisputable and final quantitative data, because many elements of this balance sheet cannot be precisely quantified. Furthermore, the "values" of different elements may not be easily comparable, since the quantification of these effects is done in so-to-speak "different languages": While immediate business effects will be quantified in monetary units, ecological footprint impacts may be reported in CO_2 equivalents—an approach that already includes some "translation" uncertainties (not every ecological effect may be properly quantified as CO_2 equivalent). Of course CO_2 equivalents may be converted into monetary units by simply using the current market price for CO_2 certificates, but again the appropriateness of this conversion may be disputed. Yet, we are still moving on comparatively safe ground. But what about quantifying the effect of providing new jobs and related education offerings in some developing country? Is this correctly quantified by the "product value" generated by these jobs? Concluding it is clear that the quantification of innovation effects in terms of sustainability entails uncertainties and needs decisions based on management judgement. Nonetheless, the use of an innovation sustainability balance sheet is suggested to—if not scientifically quantify—at least make transparent CSR impacts of innovations and deliver a semi-quantitative basis for discussion and decision making.

For illustration purposes, let us briefly discuss the effects of a change to the business model of a—purely fictitious—company. Let us think about a European company that produces high-end electronic systems which have to comply with very demanding requirements. Even though these systems (physically, electronic boards mounted in racks) are not for military use, they are critical to the customers' operations. A failure of these systems may lead to large business losses and in the end to liabilities and loss of reputation. Let us assume that these boards are currently produced in Europe, employing 60 people.

In our fictitious example, the company is looking for cost savings in the production of these boards. The idea is to outsource the production to a manufacturer in a developing country in the Far East—a country that does not yet possess a large-scale

end experienced industry in this sector (meaning: not Japan, Korea, China or the like).

Let us think about some questions that may be relevant in this scenario from a CSR perspective. Talking about production costs: How much cheaper would just the production of a single board be? Considering that most electronic components on a board are manufactured by some specialized supplier, there will be almost no gain in terms of materials savings. As in many cases, cost reductions will mainly result from lower labor costs. Since we talk about small batches of high-end electronic systems that have to comply with demanding functionality and quality requirements, the share of personnel costs to the total production costs will be considerably higher than in mass production. Thus, it seems reasonable to suggest that in terms of "profit" the idea to outsource the production is a good one—so far. What has not yet been considered are a couple of other costs that may not be as obvious at first sight. Of course one-time investments will be necessary to develop the new provider to meet the standards required. Even if all monetary investments e.g. in production lines and manufacturing machines are done by the local company, the outsourcing company will have to invest at least time and effort—and related expenses—to build up the competences of the subcontractor. Supposing that the co-operation works fine, most of these expenses will be one-time costs. Yet, even in the age of global communication, the continuous alignment between customer and contractor will require more efforts, flexibility and cultural understanding than if this is just done between teams working in possibly even the same building.

In the case of outsourcing, inevitably the question about the fate of the own employees arises. In fact, many different scenarios are conceivable, depending on the business situation of the company, the employability of the staff, the possibility to further develop the employees' competencies, the regional environment etc. For illustration purposes, let us depict two extreme scenarios, starting with the unfavorable one: In this case, the company is one of the few employers in an already disadvantaged region. The business performance of the company is critical, that is why cost saving potentials are desperately sought. The life cycle analysis of the company's portfolio reveals that the product in question is more or less the only relevant one; currently there are no products in early stages of the life cycle. The staff's education is focused on, not to say limited to performing the specific tasks needed (operation of production equipment, inspection of boards, cabling of racks, inspection of incoming material etc.). Working for years on the same tasks employees may also not be willing to further develop, learn and accept new challenges. It is clear that in this environment the outsourcing of production parts would result in negative impacts on the "people" perspective, even taking into account the quite good social and educational system established in most European countries.

What would a favorable scenario look like? The production of the boards and racks forms just a small part of the company's business, and the order situation is so good that one of the main organizational challenges is to manage work overload and deliver in time. Even if the education of the staff working on the racks in question is limited, training and further education would allow the transfer to other areas of

operations with possibly even higher added value. This would also support employability in case that the company fails despite the currently good performance. Of course, a corporate and personal culture of continuous learning and flexibility would be the foundation to open new professional perspectives. Since some of the employees currently working in the possibly outsourced operational area would be needed to manage the co-operation with the supplier, also intercultural experience would complement the person's competence basket.

From an ecological and health & safety viewpoint, it may be challenging to develop a production system that meets European standards as defined e.g. by the European Union. For instance, complying with "REACH" (Registration, Evaluation, Authorisation and Restriction of Chemicals), the EU regulation on chemicals, is not required throughout the world (simply because European Union laws of course are not binding in other countries). Similarly, the content of the ISO 45001 standard, defining minimum requirements to an occupational health and safety management system, is much disputed, which for some years impeded the alignment and common understanding on global level. Since outsourcing may not be understood as simple transfer of responsibilities, but includes taking responsibility to guide and develop suppliers, the outsourcing customer usually will have to invest—be it time for consulting and guidance, be it travel costs, audit costs etc.

Obviously, several other issues have to be considered when assessing the fictitious example discussed above. And of course, also the time perspective would have to be defined: Which period should be considered when evaluating these aspects in terms of a business case (for profit, people and planet)? Since some consequences are one-time, others are developing (or disappearing), and again others are sustainable effects, the overall balance will depend on the time period taken as basis.

Summarizing, it is evident that many questions have to be answered and prerequisites for the balancing to be defined by the organization itself, based on its objectives, culture, values etc. Based on these definitions the "Innovation Sustainability Balance Sheet" helps to make effects of changes and innovations transparent. At least within the organization's system of definitions, specifications and values it becomes possible to compare different scenarios, be it to contrast the current situation with an intended future one, or to evaluate the impacts of different scenarios and thus to decide on which to pursue.

Figure 2 shows a schematic illustration of two scenarios reflecting possible impacts of the outsourcing plan discussed above. The somewhat trivial and ordinary example of the outsourcing of electronic board production is chosen on purpose to show what variety of effects not just on profit (the driver for the outsourcing activities), but also on planet and people may materialize even in simple and widespread business model changes. As discussed above, the current situation and environment of the company will influence the triple bottom line balance. This forms the easier part of the evaluation, which can rely on existing information and should result in quite accurate forecasts. The less quantifiable and less foreseeable balance items usually will emerge in the course of the implementation of the plan, due to possibly sloppy analysis and planning and due to incidents that could not have been reasonably anticipated.

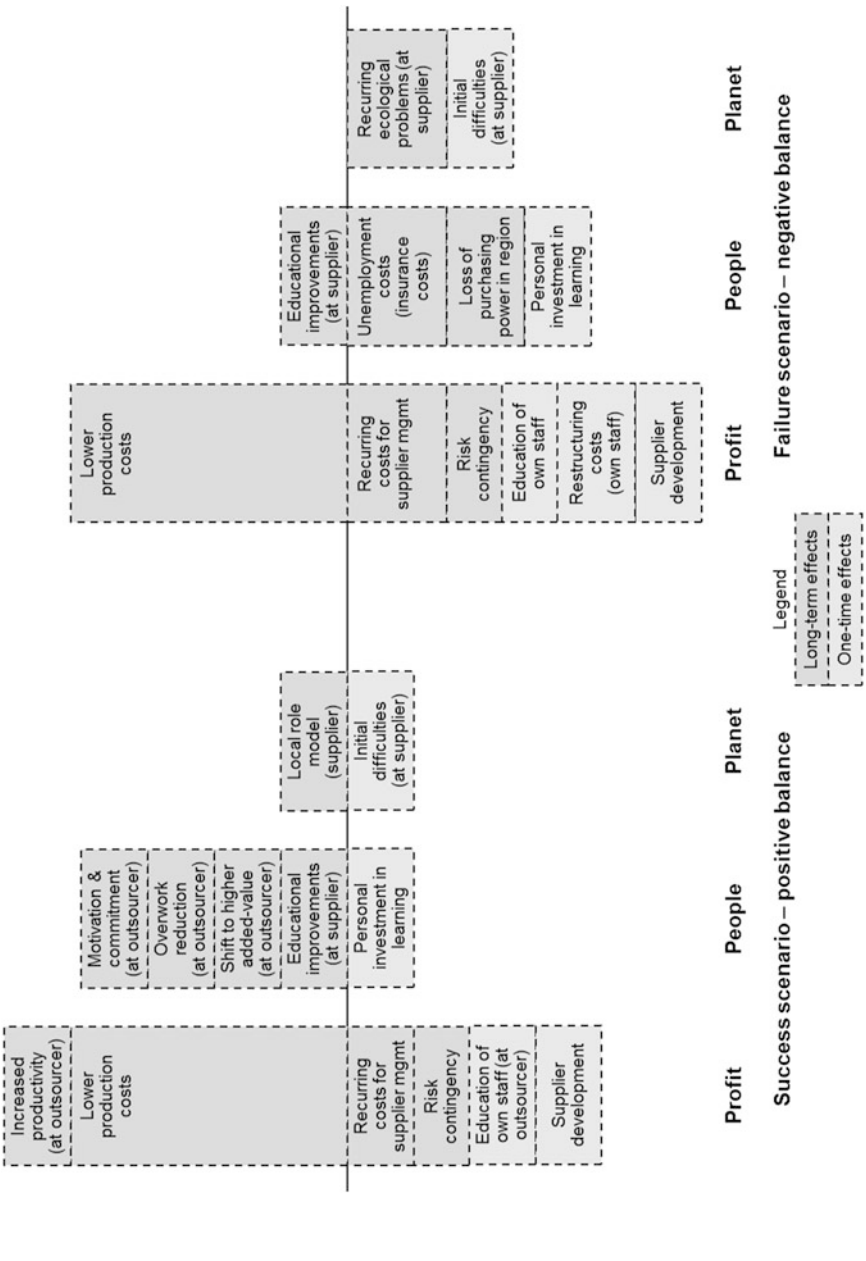

Fig. 2 Simplified illustration of an Innovation Sustainability Balance Sheet (ISBS) analyzing possible impacts of an intended business model change (outsourcing)

The contrasting juxtaposition of two scenarios in Fig. 2 reflects all kinds of effects. Some balance items are strongly influenced by the initial environment and boundary conditions such as the availability of working alternatives at the outsourcer and the willingness of employees to further develop their competences. Some items may not have been foreseen in the initial business case design, such as recurring environmental management problems at the supplier's side. The success scenario also shows some kind of positive chain reaction across the triple bottom line: The outsourcing leads to a reduction of chronic work overload, which makes it possible to further educate the employees and to motivate them to keep learning. This increases the employability as well as the value of the work done by the highly skilled personnel. Commitment to stay at the company increases, which again improves the return on investment of training programs and reduces costs arising from educating new employees. And finally, higher motivation leads to better work results in terms of effectiveness and efficiency, again adding to the company's financial performance.

2.5.4 Integrated Balanced Sustainability Business Model Canvas: Summary and Outlook

In conclusion, the proposed Integrated Balanced Sustainability Business Model Canvas (IBSBMC) offers not just a methodology to analyze existing business models, but particularly to evaluate the impact of possible changes to the business model, and thus the impact of innovations on the triple bottom line. The complementing Innovation Sustainability Balance Sheet is a tool designed to illustrate the consequences of different scenarios providing an at least semi-quantitative overview. By this, it offers the possibility to compare these scenarios in a very transparent and clear way, supporting business model innovation decisions that aim at considering not just profit, but also people and planet aspects.

The model intends to provide a tool at hand to create a win-win-win situation as demanded by authors discussing the business case *for* CSR (Porter and Kramer 2006; Altenburger 2013; Boons et al. 2013; Hockerts 2007; Schaltegger et al. 2012) or even the business case *of* CSR (Schaltegger and Hasenmüller 2006; Schaltegger 2015). Due to its nature of being based on the model of Osterwalder and Pigneur it does not primarily aim to provide a tool for dedicated and explicit sustainability innovations. This is surely better covered by the methodology of Joyce and Paquin (2016), since this allows to start from the respective "environmental life cycle business model canvas" and the "social stakeholder business model canvas". Yet, if the generation of a new economic business model considering and possibly even building on sustainability aspects is in focus of the company's activities, the use of the Integrated Balanced Sustainability Business Model Canvas (IBSBMC) may offer the advantage of a leaner methodology and thus faster adoption in a company (which may already be used to employ the business model canvas of Osterwalder and Pigneur) and of a more integrated approach, understanding the triple bottom line as inherent to every business model. This is also in line with the claim of Porter and

Kramer (2006) that "the interdependence of a company and society can be analyzed with the same tools used to analyze competitive position and develop strategy", in our case the business model canvas as proposed by Osterwalder and Pigneur.

While the Integrated Balanced Sustainability Business Model Canvas (IBSBMC) offers a straightforward approach to consider multi-dimensional effects of business models and possible changes, the likewise proposed Innovation Sustainability Balance Sheet (ISBS) is to be understood as first draft of how CSR impacts can be quantified and depicted. Further development of this model is suggested, and it is clear that no matter how refined this model will be, in the end especially the "currency exchange" policies (e.g. "how much is enhancement of education worth for our company?") will result and be dependent from the organization's values, commitment and—based on this—its decisions.

3 Management System Standards and Innovation

Standards issued by e.g. the International Standards Organization (ISO) or national bodies increasingly gain importance in daily business operations, as the author of the current article can testify from everyday experience and practice exchange with managers in other corporations. At least large companies in European countries make their choice on selecting suppliers more and more also based on extensive assessments of the standard compliant CSR performance or on the question whether a company is certified or not. In some cases, the results of a CSR evaluation may even be decisive, proven compliance to international standards thus becoming an important competitive differentiator.

From a practitioner's point of view it is a bit surprising that the role of international standards and certifications is not much discussed in academic literature. While ISO 26000, focused on "social responsibility" of organizations, and ISO 14001, treating environmental management, is at least mentioned in several publications (e.g. Perera 2008; Schwartz and Tilling 2009; Hahn 2012; Altenburger 2013; Schmiedeknecht and Wieland 2015; Dal-Bianco 2015; Lorentschitsch and Walker 2015; Ebner and Goiser 2015), BS OHSAS 18001 and its successor ISO 45001 (occupational health and safety management) are discussed in only few papers related to CSR (e.g. Jørgensen et al. 2006). Interestingly, information security issues—covered by the respective standard ISO 27001—which may be assigned also to the social dimension of Elkington's triple bottom line, is virtually non-existent in CSR literature. In the next chapters some light shall be shed on the role of standards in CSR strategies and activities.

3.1 ISO 26000

Of course ISO 26000, the "guideline on social responsibility", issued in 2010 by ISO, is a comparatively often reviewed standard in the context of CSR in general (e.g. Altenburger 2013; Schmiedeknecht and Wieland 2015). The advantage of this standard is that it addresses the topic itself, the drawback is that it is not possible to be certified according to ISO 26000. For companies this means that the standard may be used internally as a guidance to set up, maintain and continually improve (and innovate) a CSR management system, but since no certification is intended by ISO, a company may not get an external and independent confirmation that a respective management system is in place and working well. As a means of a formalized, CSR oriented supplier evaluation and, based on this, supplier selection and management, ISO 26000 is thus of limited value. Some national certification bodies have derived certifiable standards, but in a global business environment respective certifications may not be considered and accepted by customers, so that only few companies go for certification. This may be illustrated by the amount of currently issued certificates: The respective Austrian standard is ONR 192500. According to the database of Quality Austria—the leading Austrian certification body and Austrian representative of IQNet, the network of 36 international certification bodies—at the end of 2016 just two companies were certified according to ONR 192500—compared to 9360 companies certified according to ISO 9001 (standard revisions of 2008 and of 2015).

Analyzing the connection between ISO 26000, strategic management, and CSR, Rüdiger Hahn (2012) first of all confirms that only a "few peer-reviewed scholarly articles have been published" on ISO 26000. Looking at the strategic dimension, Hahn concludes that "the process of strategic management is only partly covered by the standard". Overall, Hahn acknowledges that "ISO 26000 is an important step in broadly improving sustainability performance since the standard provides a basis especially for companies that have not dealt with CSSR in depth before", but suggests that the standard may not offer much help for companies that already have achieved an advanced level of CSR management.

In the comprehensive book, "Corporate Social Responsibility" (edited by Schneider and Schmidpeter 2015), Maud H. Schmiedeknecht and Josef Wieland (2015) contribute an entire chapter on ISO 26000. An overview on the development process of this standard, engaging hundreds of contributing experts and observers from 99 countries, leads the authors to the conclusion that the legitimacy of this guideline is based on the "participation of relevant stakeholders, on the balance between the interests of these stakeholders, on the balance of the interests of developing, emerging, and industrial countries, and on the consensus-oriented and democratic process." The authors emphasize that "the core aim of the guideline is to define globally accepted standards of good organizational behavior". Considering the broad approval by quite different stakeholders and most of the ISO member countries, the standard may serve as a basis for a common understanding of CSR, shared all over the world by not just companies, but organizations in general: "SR is

not a task exclusive to companies, but the result of the efforts of all actors in society and their interconnections."

3.2 ISO 14001

The roots of ISO 14001, the ISO standard on environmental management systems, lie in the early 1990s. It was the British Standard 7750, published in 1994, that served as basis for the launch of the first ISO 14001 version in 1996 (Campos et al. 2015). In parallel, the European Eco-Management and Audit Scheme System (EMAS) was developed and adopted by the European Union Council (EC) in 1993. Companies in the European Union are invited to participate in this program, which is also open for non-EU organizations. Compliance with both management systems may be approved by certifications from accredited bodies.

As of 2015, by far most ISO 14001 certifications are assigned to organizations in Europe (119,754 or 37.5%) and in East Asia and Pacific (165,616 or 51.9%) (International Standards Organization 2017), while e.g. in North America ISO 14001 certificates are seldom found (8712 or 2.7%). The influence of an ISO 14001 compliant management system on environmental performance is much disputed in literature (e.g. Dahlström et al. 2003; Potoski and Prakash 2005; Arimura et al. 2016). Research results vary; some studies show no dependence between a certified environmental management system and environmental performance, while others do. In fact, at least in countries that are members of the European Union (EU), common as well as country specific legislation covers environmental issues quite extensively. This may also explain why the implementation of an ISO 14001 complying management system does not improve environmental performance dramatically. A partly similar approach to explain divergent findings on the dependency between ISO 14001 certifications and environmental performance is also found in the paper of Arimura et al. (2016) on "resolving equivocal findings".

The revision of the ISO 14001 standard, resulting in the current ISO 14001: 2015 version, requires a more comprehensive management of environmental issues: Particularly the strongly emphasized lifecycle perspective on the environmental impact of products and services extends the area of corporate responsibility. The "cradle to cradle" principle (Braungart and McDonough 2009) is also reflected by the "Manifesto for a resource-efficient Europe" released by the European Commission in 2012 (European Commission 2012).

3.3 BS OHSAS 18001/ISO 45001

The British Standard OHSAS (Occupational Health and Safety Assessment Series) 18001 was developed on the basis of the British Standard BS 8800:1996, following the structures of the ISO 9001 and the ISO 14001. Even though it is not an

international (ISO), but a British standard, it has gained de facto validity on a global scale. This also reflects the importance of globally harmonized standards on the CSR aspect of occupational health and safety: Since no official standard has been released by a supranational standardization body such as the International Standards Institute (ISO), companies have adopted the British standard as a blueprint for the design and implementation of an appropriate management system—and ask their suppliers for evidence that they act accordingly down the supply chain.

It is remarkable that literature on CSR hardly deals with occupational health and safety management systems, in spite of the importance that related certifications play in business. The relevance of this standard is also reflected by the challenges encountered in defining the successor to OHSAS 18001, the ISO standard 45001. Since mid-2013, the working group ISO/PC 283 is defining the content of this standard. The first "draft international standard (DIS)" version was presented in February 2016, but rejected. "71% of members voted in favor of the DIS, with 28% against and 1% abstaining. In order for the DIS to be passed, two-thirds had to be in favor with less than a quarter against, taking into account abstentions." (SGS, press release, 3.6.2016). More than 3000 comments were submitted. In past years, planned publication dates were postponed several times. Finally, the standard ISO 45001 was published in March 2018.

3.4 ISO 27001

In times of global availability of data, big data analysis and a still increasing business value of data, information security in general and data privacy in particular are under discussion on different levels. For companies, it is clear that the protection of business critical data is a key concern. Security systems aim at ensuring appropriate confidentiality, integrity and availability of data ("CIA" principle). Cyberattacks which may be initiated by individual criminals, but also by companies or authorities and intelligence services may result in considerable damages. On the other hand, the availability of data e.g. on consumer behavior forms the basis of business models of many, mainly US based, companies. As an example, search engine services are offered free of (financial) charge and "paid" for by provisioning of personal data. The growing business of big data analytics (e.g. Mayer-Schönberger and Cukier 2013) that allows, among others, to predict consumer behavior or characteristics of complex systems in general depends of course on the availability of huge amounts of data. While the artificial intelligence system "Deep Blue" defeated the world chess champion Gary Kasparow in 1999, the growing "competence" of artificial intelligence systems such as IBM's "Watson" led to its victory against human experts on the quiz show "Jeopardy!" in 2011. The rise of machine learning (e.g. Flach 2012; Goodfellow et al. 2016) starts to change not just industries, but societies in general (Brynjolfsson and McAffee 2016; Davenport and Kirby 2016).

The ethical dimension of data usage, especially of personal data is very intensively disputed worldwide, with considerable differences seen on global scale. While

European Union regulations are comparatively strict—with a tendency to become even stricter, as indicated by the General Data Protection Regulation which applies from May 25, 2018 without having to be explicitly translated into local legislation—the handling of data seems to be less restricted and regulated e.g. in the US. This certainly roots in differing cultural traditions, but economic considerations on country levels may also have a certain influence.

Looking at CSR related aspects of data handling, it is clear that treating the data of customers as agreed in contracts or as (possibly just implicitly) expected by clients is a facet of acting in a responsible way. This can of course be generalized from customers to any stakeholders, including own employees, suppliers, research partners etc. Since the economic dimension forms part of the triple bottom line, treating the own company's data in a way that prevents damages is a prerequisite for responsible behavior. Against this background it is no surprise that the importance of the "information security management standard" ISO 27001 is rapidly growing, as is also reflected by the increasing number of certifications worldwide (more than doubled between 2009 and 2015, according to ISO). As of 2015, by far the most certifications are assigned to organizations in Europe (10,446 or 37.9%) and in East Asia and Pacific (11,994 or 43.6%) (ISO 2018), while North American organizations hold 1445 or 5.2% of the globally issued ISO 27001 certificates.

This being said, it is quite surprising that the ISO 27001 standard and data protection and privacy in general are very rarely treated in connection with CSR on academic level. This may lead to the assumption that the relevance of data handling in the context of social responsibility is not yet fully recognized in academia. Considering the rapidly growing importance of data as a key resource for many businesses and its impact on society (just to mention industry 4.0, artificial intelligence systems, substantial changes to the world of work) it is to be expected that CSR research will investigate the realm of data in more detail soon.

3.5 ISO 9001

The standard on quality management systems is so-to-speak the mother of all system management standards. The first version (subdivided into three standards) was published in 1987 and offered three models for quality management systems, depending on the organization's area of activity. Four revisions later, ISO 9001 has come a long way and extended considerably in its scope. Since "quality" is defined as the "degree to which a set of inherent characteristics of an object fulfils requirements" (ISO 9000: 2015), the requirements of ISO 9001: 2015 to a "quality management system" in fact include most of the aspects of managing an organization in general (apart from business administration topics), covering leadership as well as competence management, understanding the organization's context and stakeholder expectations as well as risk and opportunity management, communication topics as well as continual improvement, process management as well as R&D, etc.

Inherently, also ISO 9001 addresses an important aspect of CSR: Mapping the three standards discussed to Elkington's "triple bottom line", OHSAS 18001 covers the "people" aspect, ISO 14001 deals with safeguarding our "planet" and ISO 9001 intends to support organizations in achieving their goals, which in company environments usually include financial goals and "profit".

3.6 Do CSR Related Management System Standards Support Innovation?

On a very generic level, it can be stated that the requirement to continually improve the performance of the company's management system or—more specifically—e.g. the environmental performance of course implies innovation activities. Yet, these activities may result in just incremental changes, and since the requirement addresses the performance of the organization, innovation will mostly be about processes improvements.

However, some more specific requirements aim at the innovation of products and services offered to customers. The lifecycle perspective of ISO 14001: 2015 requires that the environmental impact of a product is analyzed and managed from design to the end of life. Following the spirit of the circular economy approach, end of usage of a product should not result in disposal, but in recycling of as much components as possible. The facilitation of an easy, resource saving recycling of products has already to be considered in product design. Management system standards very much address the question of how things are done, how activities are defined, steered and performed. In other words: The process approach is a key element of management system standards. By requiring that ecological aspects be considered in processes (e.g. via process definitions or checklists), these standards at least highlight challenges in product design and development, which again may spark innovative creativity.

This brings us to the development and production requirements defined in ISO 9001. The subchapters to Chapter 8 of this standard define e.g. that product and service requirements shall be determined in close cooperation with the customer. The standard gives guidelines to ensure that these requirements are designed, developed, produced and delivered according to the customer's needs and expectations (ISO 9001: 2015, Chap. 8). If products and services are ordered by a customer based on detailed technical descriptions, sometimes even defining not just what shall be produced, but even how it shall be produced, there will not be much room for own creativity and innovative approaches. If, on the other hand, customer requirements are identified, analyzed and translated into features and offerings by the company, ISO 9001 may serve as a guideline to develop product and service innovations in a structured, reproducible and sustainable way.

Another important prerequisite for innovation has been introduced in the 2015 revisions of ISO 9001 and ISO 14001: Unlike the previous versions of these

standards the new ones explicitly ask for understanding "the organization and its context" (ISO 9001: 2015 and ISO 14001: 2015, Sect. 4.1) and the "needs and expectations of interested parties" (ISO 9001: 2015 and ISO 14001: 2015, Sect. 4.2). Even though strategic management is not addressed as explicit topic, it is clear that the standards' requirements suggest the use of strategy development tools such as a PESTEL analysis, stakeholder analysis, possibly a core competence and a SWOT analysis etc. This again may serve as basis for the definition of a strategic innovation framework. The consideration of stakeholders is crucial to innovation as well as to CSR. The combination of these topics even increases the importance of thorough stakeholder analysis and management (Altenburger 2013)—which again is required and supported by the new revision ISO 9001: 2015.

In summary, we may state that the growing demand of customers towards their suppliers to let their management systems be certified according to the "people, planet, profit" standards OHSAS 18001 (and ISO 45001 as successor), ISO 14001, and ISO 9001 forces companies to innovate at least incrementally—which may be called "improvement". Requirements related to occupational health and safety as well as environmental product and service features are usually in line with e.g. European laws. The standards do not explicitly require substantial or breakthrough innovation. Whenever substantial innovation is required by other than market and competition forces, this will most probably be triggered simply by legal requirements.

Yet, the new standards' requirements to analyze the organization's context and stakeholder needs and expectations may support a strategic framework for innovation. Considering that successful innovations have to meet market needs, the strong emphasis on identifying and meeting customer expectations as defined in ISO 9001 is of course a prerequisite for successful product and service innovations.

In the era of digitalization and big data it shall again be emphasized that ISO 27001, defining information security requirements, should be considered as important standard addressing CSR topics (such as data privacy). Looking at the battlefield of cyberattacks, defense and counterattacks it is clear that innovation is at the same time exposing more and more system vulnerabilities and remediation.

4 Sustainability and Innovation at Siemens

Siemens is a technology company with core business in the fields of electrification, automation and digitalization, and activities in nearly all countries of the world. The company is incorporated in Germany, with the corporate headquarters situated in Munich. Siemens consists of the divisions Power and Gas, Wind Power and Renewables, Energy Management, Building Technologies, Mobility, Digital Factory, and Process Industries and Drives as well as the separately managed business Healthineers (formerly called Healthcare), which together form the Industrial Business (Siemens Annual Report 2016). With more than 351,000 employees in more than 200 countries worldwide and a revenue of 79,644 million € in fiscal year 2016, Siemens positions

itself as "global powerhouse positioned along the electrification value chain—from power generation, transmission and distribution to smart grid solutions and the efficient application of electrical energy—as well as in the areas of medical imaging and laboratory diagnostics". On June 17th, 2016, Siemens and Spanish company Gamesa announced to merge their wind power businesses to create a leading wind power player with the legal domicile and global headquarters in Spain and Siemens holding a 59% stake.

Siemens is acting as a truly global company; just 13% of the revenue is earned in Germany, 39% in European countries other than Germany, CIS, Africa and Middle East, 29% in the Americas, and 19% in Asia and Australia. Accordingly, Siemens assumes responsibility for CSR on a global scale.

An analysis of Siemens' business activities shows that the company has contributed—directly and indirectly—around 250 billion € to the global gross domestic product (GDP), laying the foundation for around 4.3 million jobs worldwide (Siemens 2017).

4.1 Corporate Level

Since its foundation in 1847, Siemens always has followed the conviction of Werner von Siemens that the company shall apply science and engineering for the common good. The first invention already supported bringing the people closer together: It was a substantial improvement of the telegraph that laid the foundation of a more than 170-year success story. A couple of years later, Siemens introduced the first dynamo without permanent magnets and subsequently broadened the portfolio, offering a variety of products in the electric domain, from light bulbs to tramways and trains, power plants and electricity networks. Siemens pioneered in electronics and telecommunication networks and entered many other business areas that bring value to people. Healthcare innovations include the heart pacemaker in 1958, the computer tomograph in 1974, full body MR tomography in 2003, and a new generation of MR-PET systems in 2010.

Siemens' R&D activities aim at developing innovative, sustainable solutions for its customers and simultaneously safeguarding competitiveness. Current focus topics include:

- Economically sustainable energy supplies and innovative solutions solutions for smart grids and for the storage of energy from renewable sources.
- Supporting energy efficiency especially in building technology, industry and transportation, e.g. through highly efficient drives for production facilities or for local and long-distance trains.
- Highly flexible, connected factories using advanced automation and digitalization technologies (context of "Industry 4.0").
- Use of intelligent analytical systems to turn unstructured data into valuable information e.g. for predictive maintenance (context of "big data analysis").

- Making medical imaging technology, in vitro diagnostics and IT for medical engineering an integral part of results-oriented treatment plans.

To promote promising ideas in Siemens' growth business areas of electrification, automation, and digitalization, the company has set up the innovation ecosystem "next 47", which shall identify new trends, invest in promising initiatives and develop future-oriented business together with innovative partners (Siemens Press Release 2016). "next 47" receives a 1 billion € funding over 5 years to foster new ideas (Siemens Sustainability Report 2016). For the fiscal year 2016 (ending on 30.9.2016), Siemens reported R&D expenses on 4.7 billion €, as compared to 4.5 billion € one year before. In relation to the revenue, this results in an R&D intensity of 5.9%. Around 33,000 employees were active in R&D worldwide (Siemens Annual Report 2016). Innovation and R&D activities in all of Siemens' businesses consider sustainability aspects, be it by directly providing products that support protecting the environment (e.g. wind turbines), be it by improving the environmental performance of the products (e.g. improving energy efficiency).

Siemens' reference for societal value creation is the United Nations' 2030 Agenda for Sustainable Development, defining 17 Sustainable Development Goals (SDGs). The "Business to Society" approach identifies issues that are relevant to the development of a country and describes the company's contribution. The 17 SDGs are mapped to Siemens' "Business to Society" impact areas:

- "Strengthening the economy", addressing the SDGs "affordable and clean energy", "decent work and economic growth", and "industry, innovation and infrastructure".
- "Developing local jobs and skills", addressing the SDGs "quality education" and "decent work and economic growth".
- "Driving innovations", addressing the SDG "industry, innovation and infrastructure".
- "Sustaining the environment", addressing the SDGs "clean water and sanitation", "affordable and clean energy", "responsible production and consumption", "climate action", "life below water", "life on land".
- "Improving quality of life", addressing the SDGs "no poverty", "zero hunger", "good health and well-being", "industry, innovation and infrastructure", "sustainable cities and communities".
- "Shaping societal transformation", addressing the SDGs "gender equality", "reduced inequalities", peace, justice and strong institutions".
- The SDG "partnership for the goals" is seen as an overarching activity.

"Business to Society" results include:

- Siemens' global operations contribute to about 250 billion € in GDP creation and more than 4.3 million jobs (12 times more than own employees).
- 40% of the purchasing volume in Germany is attributable to small and medium enterprises.
- 1270 million patients worldwide have access to Siemens imaging systems.
- More than 400,000 UK students were reached by education projects in 2015.

Siemens' "Business to Society" program complements the wide range of the company's sustainability activities. Naturally, environmental protection, including the reduction of CO_2 emissions is addressed by Siemens' sustainability activities. Siemens is the first major industrial company to commit to cutting its CO_2 emissions by half by 2020 and to being carbon neutral by 2030. In this context, Siemens will invest a total of 100 million €. Considering climate change as a major trend, Siemens not just sets goals to reduce CO_2 emissions from own operations, but also supports customers in doing so. In fiscal year 2016, Siemens helped to save more than 521 Mt. CO_2 with products installed in previous years and still in use (Siemens Sustainability Report 2016). Since fiscal year 2015, Siemens discloses sustainability information with reference to the guidelines (G4) of the Global Reporting Initiative (GRI).

The company's aim to combine engineering excellence, innovation, and corporate responsibility is also reflected by the Siemens brand claim "Ingenuity for Life", which was presented in late 2015. It describes Siemens' "unrelenting drive and promise to create value for customers, employees and societies", as explained in the 2016 sustainability report: "'For life' relates to our role in society: to make real what matters. We deliver on this promise by combining our innovation with our knowhow—in the areas of electrification and automation, enhanced by digitalization—aiming at improving the lives of people today and creating lasting value for future generations."

Siemens efforts and successes in the area of sustainability are clearly acknowledged: For the 17th consecutive year, Siemens is a member of the DJSI World Index of RobecoSAM/Dow Jones Sustainability Indices, receiving top scores in seven of nineteen categories. The "Carbon Disclosure Project" (CDP) rates Siemens with "A-", the Financial Times Stock Exchange (FTSE) included Siemens in its FTSE4Good series. EcoVadis rated Siemens with the "Silver recognition level", underlining the performance as a sustainable supplier (Siemens Sustainability Report 2016).

4.2 Siemens Convergence Creators Level

Siemens Convergence Creators is a Siemens subsidiary headquartered in Vienna, Austria. The first predecessor organization was founded in 1961 as part of Siemens AG Austria, providing mainly internal services to other Siemens units. Thus, the company's expertise is based on more than half a century of experience and expertise. Answering the emerging challenges of globalization quite early, the predecessor organization Siemens Program and Systems Engineering (PSE) established R&D centers in Eastern Europe. Subsidiaries in Budapest and Bratislava were founded as early as in 1991, Prague followed 1 year later. In 1995, the first Croatian location was opened in Zagreb, a Romanian site in Braşov followed in 2001. Thus, Siemens PSE contributed to the development of highly-skilled personnel and a sustainable information technology industry. In 2010, the organization's business mandate and consequently its strategy were substantially redefined, now focusing on own products and solutions, including related services. The success of

this transformation program strongly roots in innovation, resulting in products and solutions that meet the most demanding requirements. The company provides its customers with turnkey solutions and services in the fields of communication networks, service and customer management, public safety and security, multimedia infotainment, as well as space technology. At the end of fiscal year 2016, Siemens Convergence Creators had about 850 employees at 16 locations in 11 countries: Austria, China, Croatia, Czech Republic, Germany, India, Romania, Saudi Arabia, Slovakia, United Arab Emirates and USA. The company supplies more than 300 customers in 70 countries with communication and media products and solutions. Among the most important customers are the top players in their respective industrial sectors, i.e. telecommunications, media (TV, publishing houses), transportation (railways, aircraft manufacturers, airlines and airports), space, public safety (action forces) and energy (wind power, oil and gas).

4.2.1 Framework

Being a 100% subsidiary of Siemens AG, all regulations of Siemens (except for very few) also apply to Siemens Convergence Creators, thus setting the frame and ensuring company-wide standards also in terms of social responsibility. Related regulations are defined in so-called "circulars" which also contain clearly defined requirements for checks to be performed on different levels of governance and detail. Within this framework, Siemens' organizational units shall implement appropriate systems to comply with the global rules. The concrete realization may depend on the size of the organizational unit or legal entity, on the business area etc.

4.2.2 Innovation

Innovation is at the core of Siemens Convergence Creators—the further development and new creation of products and services that quickly proof successful on the market was and is the key for the company's transformation from an organization primarily providing internal R&D services to other Siemens entities to a stand-alone company positioning itself as an important market player providing innovative solutions in clearly defined market and technological areas. The successful transformation is based on the combination of innovative strength and a supporting corporate culture, fostering and organizing collaboration on a global scale (August 2017).

The success of the innovation efforts is reflected by the business transformation achieved in the past 6 years, but also by the patent portfolio: The company doubled the number of patent families (filed or granted) as compared to that of the predecessor organization (which was founded in 1961) in just 5 years. Currently, Siemens Convergence Creators holds around 40 patent families.

Siemens Convergence Creators' innovative solutions include SIECAMS ILS, the first working single-satellite system to geo-locate sources of interference in satellite communication, the Smart Video Engine including artificial intelligence to enhance

the consumers' experience watching content over the web, communication systems in offshore windfarms to manage operations and assets with the highest level of security, reliability, and effectiveness.

4.2.3 Integrated Management System and CSR

The substantial revision of the organization's business mandate and strategy in 2010 was also accompanied by a profound re-organization and new structural setup. Until then all local companies acted according to locally defined and maintained management systems. To improve effectiveness and to ensure that customers all over the world obtain the same high level quality deliveries, the opportunity of the organization's re-organization was seized also to establish a global Integrated Management System (IMS).

Starting in fall 2010 the complete system was newly set up as "in vivo" operation, since the operational business of course had to be maintained. It soon turned out that designing and implementing an Integrated Management System that balances the different stakeholders' interests and the organization's requirements is like walking the tightrope. "All entities move and nothing remains still", said Heraclitus about two and a half millennia ago: Maintaining the balance on the tightrope was (and still is) only possible by continuously identifying and making the right moves. In a period of just around 8 months the new, globally valid Integrated Management System was set up—at least covering all main processes and those required by the respective standards—and certified in summer 2011 as compliant with ISO 9001 and ISO 14001. At this point in time, all European countries were incorporated into the global system, while the Indian organization was integrated about 1 year later. The system consists of a centrally governed "Handbook"—in fact a web-based, mainly graphical description of processes and procedures—also allowing for local amendments that may be required e.g. due to local laws (August 2014, 2015).

The main enablers for the success of the transformation were the close alignment with strategy and operations and the co-operation with all stakeholders, including the consideration of cultural topics, the balancing of global and local concerns. Undoubtedly, the team spirit within the global quality and process managers' community and the clearly communicated support by the top management were crucial for fast and effective implementation of this project (August 2014, 2015).

Following Siemens regulations, the Integrated Management System of Siemens Convergence Creators fully complies with the standards OHSAS 18001, ISO 14001, and ISO 9001. As discussed above, this results in covering the "people, planet, profit" aspects of Elkington's triple bottom line. Additionally, the requirements of ISO 27001 are fully implemented to meet the needs of data privacy and information security, which Siemens Convergence Creators judges to be an integral part of the CSR management system.

Siemens Convergence Creators decides on certifications depending on the current business need. Nonetheless, all local companies—adhering to the globally valid Integrated Management System regulations—operate in full compliance with the

standards mentioned above. The global harmonization of the management system is of course a main lever for efficient and effective coverage of these topics. Thus, the term "integrated" in "Integrated Management System" can be understood in at least two respects: Siemens Convergence Creators' management system integrates at least four management system standards, and it integrates regulations for all country entities of the company.

In line with the company's strategy, five key processes have been defined: The Sales Process, the Innovation Process, the Product Management Process, the Competence Management Process and the main value generating process, the so-called Deliver Process, which defines how product development, solutions, service and maintenance projects shall be managed. The detailed consideration of CSR topics in these processes is discussed below.

4.2.4 Organization

Siemens Convergence Creators integrates quality, CSR and innovation management perspectives to achieve a comprehensive holistic framework and approach. This is also reflected by the organizational setup: The central function unit "Innovation Management & Quality Management" in fact covers not only the named areas of responsibility, but also environmental protection as well as health and safety topics on global level. If we assume that the standards ISO 9001, OHSAS 18001 and ISO 14001 reflect the triple bottom line, the responsibility for CSR on management level in fact is assumed by this central unit. This includes ensuring compliance with standard and legal requirements, guidance, and of course continual improvement. Close collaboration within the network of operational business, other central functions and country representatives is a key to success and to effective as well as efficient operation of the management system (August 2017).

The global head of "Innovation Management & Quality Management" reports directly to the CEO of the global company, the same principle is translated on country level, where the local innovation and quality managers report directly to their respective country CEOs (and to the global head of innovation and quality, of course). The integration of all standards, including all CSR aspects, is also reflected in a joint Management Review as required by all standards.

This organizational setup and the assignment of both innovation and CSR management responsibilities on personal level weld together these topics regarding management system definition as well as in daily operations.

4.2.5 Organizational Integration of CSR and Innovation

A perspective that may provide additional insight into possible dimensions of CSR in general and of CSR related innovations in particular is to approach the topic from outside, i.e. not to analyze current materializations of CSR and to derive a system or model to classify existing phenomena (inside-out perspective), but to take a

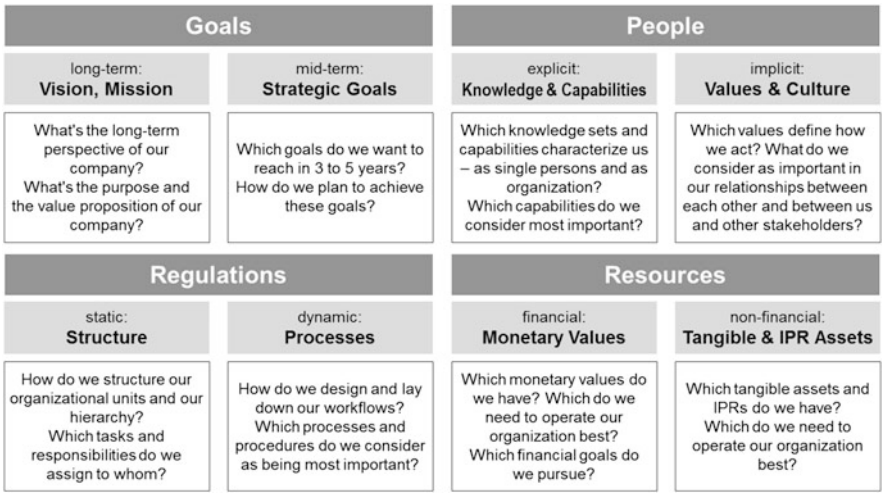

Fig. 3 4 × 2 organizational model (originally for strategy management, Kohlöffel and August 2012)

management model established outside the CSR world and to analyze how this fits CSR aspects (outside-in perspective). The advantage of this approach is that it may help expand the view and perhaps even identify some blind spots. This approach is also (at least partly) used in the models mentioned above, e.g. by taking over classic models on life cycle, innovation type, value drivers etc.

A quite holistic approach to any organizational topic is to use so-called organizational models as basis. These models try to identify the various dimensions of an organization. Well-known concepts include those of Kotter (1978), Peters and Waterman (1982), French and Bell (1994), and Glasl and Lievegoed (2004). Based on a discussion of these models and combining all aspects covered by the single models, Kohlöffel and August (2012) derived a new model. The 4 × 2 sectors cover "goals", "people", "regulations", and "resources". The model can be applied to various management fields in every organization, and is independent of size, industrial sector, profit orientation etc. (Fig. 3).

Even though this model was developed for strategy management, it can be used for any aspect or sub-system of an organization, including innovation as well as CSR management. The use of this concept to perform a comprehensive analysis of an innovation ecosystem is discussed elsewhere (August and Buljubasic 2012; August 2015).

It should be emphasized that this model just depicts internal aspects. It is clear that all of these aspects are interrelated with the external world (Fig. 4):

How are these aspects considered and translated into operations at Siemens Convergence Creators?

Fig. 4 Schematic illustration of external interrelations in the 4 × 2 model

Goals

- As mentioned above, innovation is seen as decisive for Siemens Convergence Creators' business success. Accordingly, innovation is defined as one of the company's six core values and of course is found in mission, vision and strategy statements. The other core values refer to acting in a responsible and sustainable way: "We care", "ONE" (reflecting the spirit of close co-operation across all boundaries), "trust", "speed", and, of course, "customer orientation". In summary, all six core values relate to innovation and CSR aspects.
- On an operational level, the impact of innovation on business is of course tracked by analyzing respective figures. Innovation as well as ecological, health and safety and information security key performance indicators are monitored and part of the company's Balanced Scorecard. Following the spirit of continual improvement and aiming for excellence, usually on a yearly basis the company's top management defines new CSR goals and programs to be implemented. Since consumption of electricity and travelling have been identified as the two main "environmental aspects" following the ISO 14001 terminology, improvement programs mainly aim at the reduction of electricity consumption and the CO_2 footprint caused by travelling. Health and safety activities reflect the "zero-harm" culture and program pursued by Siemens in general.

People

- It is well acknowledged that employees' satisfaction, motivation and commitment as well as CSR activities influence the performance of organizations (Harter et al. 2002; Korschun et al. 2014). This holds true all the more for Siemens Convergence Creators, being active in an area for which Peter Drucker more than half a

century ago coined the term of "knowledge work" (Drucker 1959, 1999). Innovation would simply be impossible without the creativity of employees and other stakeholders. Thus, providing a creative, supporting and conducive environment is a key to success for every innovation ecosystem (Amabile 1988, 1997; Shalley and Gilson 2004; August et al. 2014). Similarly, the CSR performance of an organization depends on the attitudes of all employees, be it top management defining company goals, be it a blue-collar worker contributing an idea to reduce waste.

- In a high-tech company, offering training and education is an important prerequisite for the ability to create and deliver cutting-edge products and solutions and to contribute to environmental and societal improvements. Continuous learning on personal as well as organizational level results in multiple advantages: The employee's skills and competences are further developed (ensuring employability also in higher ages and offering new challenges that fit competence levels), and the organization maintains and improves its ability to take up new developments and opportunities quickly.
- Correspondingly, the trainings offered at Siemens Convergence Creators cover a vast field: Technological knowledge and engineering capabilities are of course continuously developed and form the basis for the creation and implementation of innovative products and solutions. Additionally, aspects of innovation management are trained by internal instructors who also teach at universities. Thus, comprehensive and up-to-date knowledge on innovation management is spread throughout the organization. This includes basics on creativity and innovation, customer value orientation, strategic innovation methodologies such as Disruptive Innovations, Business Model Canvas, Lean Startup, etc., sources of innovation, propagation of innovation and cultural aspects. The importance of environmental protection is frequently communicated; regular health and safety training is performed regularly to support the "zero-harm" culture.
- Speaking of culture, of course the tone from the top is decisive. It is only logical that top management supports this culture also by showing its commitment to innovation and CSR. This is also reflected by the top management's decision to let Siemens Convergence Creators be certified according to ISO 9001, ISO 14001, OHSAS 18001, and ISO 27001—of which the CSR dimensions have been discussed above.

Regulations

- As mentioned above, innovation managers are in place to support creative employees also on local basis. These managers, best described as "innovation coaches" also cover other tasks and responsibilities, mainly in quality and EHS management, thus ensuring a close coupling of these topics in each Siemens Convergence Creators entity.
- Even though the role of processes is sometimes disputed in literature on creativity and innovation, Siemens Convergence Creators applies processes to manage

ideas, to implement products and solutions and to harvest from innovative business. Since R&D, focusing on development, is our daily business, the innovation management process at Siemens Convergence Creators just covers the period from the submission of an idea to the final decision of the management board to invest in an innovative project. The process is structured following a milestone logic, here called "decision gates". While decision gate 0 reflects the submitter's decision to file a proposal, decision gate 4 results in the budgeting decision. It is a major concern to keep processing times as short as possible, addressing two quite different challenges: In terms of business, quick, yet well-founded and sound decisions are paramount to stay ahead of competition; in terms of innovation culture prompt, transparent and understandable feedback to an idea proves the organization's and management's seriousness and commitment, which again is a prerequisite to keep a high motivational level.

- The idea handling process also lays the foundation for the Siemens Convergence Creators award system for innovations, inventions, and improvements. While many companies have such programs in place, three specifics shall be mentioned:

  First, not only successfully marketed ideas are acknowledged. In the course of the processing of ideas, passing one milestone after another, award points are assigned to the idea for each gate passed. The amount of points increases as more demanding gates are passed, yet an idea (and its submitter) may collect a considerable amount of points even if the idea is rejected in a final decision. This practice shall convey the message that submitting ideas is acknowledged even if the proposal is not chosen to be implemented.

  Secondly, a team approach in developing ideas is fostered by assigning more points to an idea if this is submitted by more than one person. The amount of points assigned is not simply doubled (which could lead to simply inviting colleagues to benefit for free), but depends on the number of team members, following a clearly defined and transparent mathematical formula.

  Thirdly, the assignment of points is fully transparent and does not depend on an explicit management judgement. Naturally, the top management decision whether to invest in an idea or not implicitly influences the amount of point collected. The calculation mode for award points is freely accessible on the innovation pages of the company, each employee can also see the current amount of points as well as the current ranking compared to other colleagues.
- Innovation and CSR aspects are also interwoven on operational level, i.e. in R&D activities as well as in delivering services and solutions to customers. Operational processes follow internal regulations, which are continually monitored, improved and adapted to business needs. The core value generating process at Siemens Convergence Creators is the already mentioned "Deliver" process, steering the development and delivery of products, solutions and services. This process is a good example to illustrate how innovation and international management standards interact in daily operations. The vast majority of Siemens Convergence Creators' business is project-based, delivering customized solutions meeting the specific needs of each single customer request. Thus, innovation is inherent in virtually all activities of the company, ranging from small improvements and the

design of project-specific architectures to the development of cutting-edge innovations—always following the Deliver process. This process fully complies with the requirements of ISO 9001: 2015, ISO 14001: 2015, OHSAS 18001: 2007, and ISO 27001: 2013, which again means that all "triple bottom line" perspectives are considered. In everyday life, this is reflected e.g. in project milestone checklists that address technological and project management topics as well as environmental, occupational health and safety, and information security aspects. In fact, these issues are already taken into account in the preceding Sales process, since environmental, health and safety, and information security aspects shall be evaluated in the course of preparing an offer and cleared prior to closing of a contract.

Resources

- As in each and every company, Siemens Convergence Creators investments in innovation follow a business rationale. Budgeting of a product's further development according to a feature roadmap is done in the course of the yearly planning. "Unforeseen" innovation ideas and those not yet assigned to a product of the company's portfolio may be funded based on the innovation process discussed above.
- As already mentioned, Siemens Convergence Creators holds and continuously develops a patent portfolio. Employees are encouraged to submit invention proposals, which will all be processed by a dedicated member of the headquarters' innovation and quality management team. Again, the "coaching" aspect is seen as important, since writing an invention disclosure and even defining the right scope of the invention may be quite a challenge for employees not familiar with patents.
- Funding of CSR relevant activities forms part of the yearly budgeting process. Major improvement steps are planned and steered as projects with dedicated human as well as financial resources. Recent examples include the further development and implementation of a very comprehensive occupational health and safety system in projects and the full consideration of ISO 27001 information security requirements in all activities of the organization.

5 Conclusion and Outlook

In past decades, innovation as well as Corporate Social Responsibility (CSR) have gained more and more importance in business life—meeting the competition driven need to continually offer enhanced or new products and solutions and reflecting the increasing societal and political demand to not just consider the "profit" perspective in Elkington's triple bottom line, but also "people" and "planet". This development is fully acknowledged and supported by Siemens Convergence Creators, fully conforming with the company's values and commitments. As Michael Porter and

Mark Kramer postulated, sustainability of CSR efforts will only be ensured in an integrative win-win-win approach for the three bottom line elements.

Therefore, innovation and CSR are treated from a real life business perspective, based on methodologies that are already well-known in companies. This results in proposing the "Integrated Balanced Sustainability Business Model Canvas" ("IBSBMC") along with the "Innovation Sustainability Balance Sheet" (ISBS) for the evaluation of innovations' impacts on CSR performance. The first methodology is based on the widely-used Business Model Canvas of Osterwalder and Pigneur, thus keeping adoption barriers low. The second tool simply refers to usual balancing methodologies, depicting innovation impacts on CSR in a straightforward way and offering a three-dimensional view on positive and negative effects. It thus helps to design innovations and changes in general in a way that optimizes balanced win-win-win outcomes.

Particularly in Europe and Asia compliance with ISO management standards is a prerequisite for business or at least a competitive advantage gaining more and more importance. Since there is an international management standard in place dealing explicitly with social responsibility (ISO 26000), it is understandable that academic research and publications focus on this standard. From a business perspective, there is one major drawback: Being designed as a guidance rather than a requirements document, ISO 26000 cannot be used for certification purposes. This means that for companies or organizations in general it is not possible to obtain a proof of compliance from an independent, accredited certification body. The good news from a business perspective is that there are other widely acknowledged, certifiable management standards to cover Elkington's triple bottom line: OHSAS 18001 (occupational health and safety, substituted by ISO 45001) for "people", ISO 14001 (environmental management) for "planet", and ISO 9001 (quality management) roughly for "profit". Complementing, ISO 27001 (information security) addresses CSR topics such as proper and responsible handling of data. Any company that complies with these standards implicitly has to also consider CSR topics in all strategic and operational activities—including innovation and product development. The commitment to "continual improvement" as required by all standards also supports at least enhancements of products and solutions.

At Siemens Convergence Creators, the interrelation of innovation and CSR is well established and anchored in the company's values and Integrated Management System (IMS). Innovation is at the core of the company, being active in high-technology business areas, in which continuous innovation is a key to sustainable success. Complying with the management standards named above, the IMS integrates CSR aspects in all relevant processes and regulations, including those describing R&D activities, product and solution development and delivery, sales and innovation. The close coupling is also illustrated on organizational level: In the headquarters as well as on country level the responsibility for innovation management and the overall guidance of the Integrated Management System lies within the same organizational unit.

Closing this article with a brief look at possible future developments, the author again shares the conviction that innovation and CSR will continue gaining importance, also as interrelated forces. From a business perspective, a tighter, more

integrated connection with existing strategy management activities and daily operations is desirable. Two approaches supporting this aim have been discussed in more detail in this article: Firstly, the importance of certifiable international management standards such as ISO 9001, ISO 14001, OHSAS 18001 / ISO 45001, and ISO 27001 as not just guidance, but requirement systems related to CSR topics. Extended research looking at the dependencies and correlations between compliance with these standards and actual CSR and innovation performance could help to further integrate these topics also in business environments. Secondly, the use of a well-known strategic methodology such as the Business Model Canvas of Osterwalder and Pigneur as basis for a system integrating CSR aspects into business model innovations leads to the "Integrated Balanced Sustainability Business Model Canvas" ("IBSBMC"), which is so-to-speak ready to use. The complementing methodology, the proposed "Innovation Sustainability Balance Sheet" (ISBS) for the evaluation of innovations' impacts on CSR performance, is surely just at an early stage and needs further development. In particular, the question of how to convert different "CSR currencies" such as financial units, CO_2 equivalents, working conditions, higher education levels etc. opens a field for further research.

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