

Business Sustainability Maturity Model

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This conceptual paper in sustainable business research introduces a business sustainability maturity model as an innovative solution to support companies move towards sustainable development. Such model offers the possibility for each firm to individually assess its position regarding five sustainability maturity levels and, as a consequence, build a tailored as well as a common strategy along its network of relationships and influence to progress towards higher levels of sustainable development. The maturity model suggested is based on the belief that business sustainability is a continuous process of evolution in which a company will be continuously seeking to achieve its vision of sustainable development in uninterrupted cycles of improvement, where at each new cycle the firm starts the process at a higher level of business sustainability performance. The referred model is therefore dynamic to incorporate changes along the way and enable its own evolution following the firm's and its network partners' progress towards the sustainability vision.

The research on which this paper is based combines expertise in science and technology policy, R&D and innovation management, team performance and organisational learning, strategy alignment and integrated business performance, knowledge management and technology foresighting.

1. Basis for Designing the Model

The methodology behind the development of the business sustainability maturity model here proposed is the capability maturity level (CMM), which is a method used to deploy an evolutionary path to help organisations increase the capability of their processes through five consecutive stages or maturity levels [Paulk et al., 1993; Olson et al., 1994; Saiedian & Kuzara, 1995]. The mentioned technique is currently a widely accepted set of guidelines for developing high performance organisations [Curtis, 2001]. The underlying idea is that an application – product and/or service – is directly related to the quality of the process used to develop it. Moreover, enhanced development practices can only survive if an organisational behavioural change takes place to support such practices [Epner, 2001]. The CMM is an application of TQM¹ principles to software engineering: the emphasis is on customers' satisfaction aiming at higher quality products produced by more competitive firms [CMM, 1993].

As an organization progresses from one level of maturity to the next, according to the

following description of the CMM, its culture is transformed through the evolutionary improvement of its processes and, as a result, its behaviours should evolve to denote its responsibility towards nature and overall society. It is important to highlight that each advanced level incorporates the attributes of the previous maturity level [Fraser & Vaishnavi, 1997]. The main characteristics of each level in the CMM are:

- Level 1 – Initial: inconsistent management approach with no required processes, which are unpredictable and poorly controlled, as well as roughly predictable schedules and costs. Success depends on an exceptional manager and an experienced development team. However, processes cannot be repeatable without the same human resources involved. Hence, capability is a characteristic of individuals rather than of the firm;
- Level 2 – Repeatable: project management approach where previously mastered tasks can be repeated. Usual areas of improvement are: assistance and assurance of policy compliance; measurement projects; management of product configurations; management of suppliers; planning and

¹ Total Quality Management.

tracking projects; and managing requirements. Here the organisation has achieved a stable process with repeatable management control level and project management of commitments, costs, schedules and changes. Thus, new projects are planned and managed based on experience with similar projects and, therefore, policies support managers to establish suitable management processes;

- Level 3 – Defined: process management approach where processes are characterized and fairly well understood. Usual areas of improvement are: coordination between organisational groups; provision of organisation-wide training; collection of process-level data; deployment and management processes; definition of common processes; identification of required processes; and establishment of improvement infrastructure. Here the organisation defined the process as a basis for consistent implementation and better understanding and, therefore, the risk of introducing advanced technology is reduced. The process includes readiness criteria, inputs, standards and procedures, verification, outputs and completion criteria. Moreover, process capability is based on an organisation-wide understanding of the activities, roles and responsibilities in a defined process;
- Level 4 – Managed: capability management approach where processes are measured and controlled. Usual areas of improvement are: establishment of capability baselines; and quantitative management of processes. Here the organisation initiated comprehensive process measurements and analysis. There might be an organisation-wide database in use to collect and analyse data from projects' defined process. Furthermore, the process is measured and operates within measurable limits, as well as it can predict trends in process and product quality;
- Level 5 – Optimised: change management approach with a focus on processes improvement. Usual areas of improvement are: elimination of causes of defects; evaluation and deployment of improvements; and development of change infrastructure. Here the organisation has in place a foundation for continuously improving and optimising processes. Best practices and innovations are identified and transferred throughout the organisation. Project teams are capable to analyse defects and determine their causes, to evaluate the process to prevent known types of defects from recurring, and to disseminate lessons learned to other projects. In addition, efforts to remove waste along the process result in changing the common causes of inefficiency.

2. Business Sustainability Definition

Two are the key models which have emerged to give more business sense to the concept of sustainability. Firstly, the triple bottom line affirms that a company needs to reach a balance among its economic, environmental and social bottom lines to be sustainable [Elkington, 1998]. Secondly, the five capitals model views sustainability through the economic concepts of capital and income where the five main capitals are natural, human/intellectual, manufactured, social and financial [SIGMA, 2001]. The latter suggests that sustainability depends on maintaining or possibly increasing the stock of these capital assets. At this point in time, according to Paramanathan et al. [2004], the five capitals model appears to be the most comprehensive model available to organisations. The relationship between both models can be briefly summarised as follows:

- Environmental bottom line: environmental capital;
- Social bottom line: social capital and human/intellectual capital;
- Economic bottom line: manufactured capital and financial capital.

However, it is believed that the present sustainability definition ingrained within contemporary business tools does not translate firms' full responsibility and ability to transform the world we live in by responsibly creating new values and cultures, influencing governments, politics and the population's behaviour, and building a country's competitiveness through translating the concept of sustainability into responsible actions [Secretan, 1997; Roddick, 2001; Holliday et al., 2002; Morsing & Thyssen, 2003].

Therefore, the concept of business sustainability proposed in this paper [Bursztyn et al., 1999; SIGMA, 2001; BSI, 2003; EU, 2004; UN, 2004] differs from the commonly accepted and widespread triple bottom line approach by adding three new dimensions into the business context: spatial; institutional-political; and cultural. Thus, business sustainability now depends on the integration of six dimensions of sustainability into mainstream decision making and core operational processes as articulated systems:

- Social sustainability: includes principles of equal rights of human dignity and social solidarity into both the social and human/intellectual capitals;
- Ecological sustainability: includes the principle of solidarity with the Planet and its richness, as well as with the biosphere into the environmental capital;
- Economic sustainability: includes intangibles into both the manufactured and financial capitals. It is measured by the ability to build

economic wealth and equally deliver both social and ecological sustainability;

- Spatial sustainability: measured by the ability to achieve an equality among the sustainability (economic, environmental and social) embedded in the business activities and those entrenched in a firm's network processes² – across products and services life cycle – taking into consideration all countries and regions in which the organisation and its partners operate, and being transparent and responsive to all stakeholders;
- Institutional-political sustainability: represents a pre-requirement for the continuity of any course of action in the long term. It comprises the organisation's set of values and beliefs; culture; strategies, paying attention to long term issues and the inter-linkages or alignment between different policy areas; and ability to learn and innovate; all of which based on core ethical values and universal principles³ so they can serve as reference to maintain and drive the organisation's actions/ behaviours in the long run;
- Cultural sustainability: shaped by respect of local, regional and national affirmations in all countries and regions in which the organisation and its partners operate, which goes beyond complying with laws, due to the context of the standardization imposed by globalization.

In this context, business sustainability or sustainable development can be defined as the actions needed to manage a firm and its relationships seeking for economic, social and environmental aligned performance improvement along the an firm's network of relationships and influence. The objective is to transform the inherent environmental and social constraints underlying a firm's activities across products and services life cycles into business opportunities and, thus, to build economic wealth in ways that are consistent with the tenets of sustainable development.

Hence, business sustainability depends not only on a reaching a balance among the environmental, social and economic dimensions of sustainability and being accountable to all stakeholders, but also on shaping any course of action to achieve this ultimate goal taking into account the intrinsic demands of the other three pillars of sustainability: spatial, institutional-

political and cultural. As a result, business sustainability relies on aligning the improvement of triple bottom line performance with long-lasting core values and behaviours – based on universal principles –, which drives the structure and actions of the organisation and its network partners, and are evenly applied throughout such network of relationships in all countries and regions in which the organisation and its partners operates; respecting and supporting the differences and affirmations within these regions.

3. Business Sustainability Activities Model

Taking into consideration an evolution of the concept of value chain introduced by Porter [1985] until the current paradigm of supply chain management, or value nets [Bovet & Martha, 2000], one can see that from the analysis of value within a firm [Porter, 1985], through the integration of customers in the chain [MacStravic, 1999] and later the incorporation of suppliers/ delivers (as well as customers) [Bovet & Martha, 2000] into a network of value creation; value is still translated by an 'economic' bottom line. Value, in this context, is decoded in financial returns to shareholders based on the efficient delivery of products and services which are partially customised with the ultimate goal of satisfying customers' needs.

However, in order to be able to deliver wealth aligned with social and environmental benefits to shareholders and also to stakeholders within society, value has to be redefined. Thus, a new concept of **sustainability net** is introduced as an evolution of the value net. The sustainability net is a network where different stakeholders interrelate with one another seeking the delivery of economic, environmental and social value to and by all nodes of the network, which are shaped by the spatial, institutional-political and cultural dimensions of sustainability across a firm's network of relationships and influence.

It is important to highlight that strategic relationships with partners only work over the long term when they lead to mutually beneficial situations (win-win relationships), based on close collaboration and trust between partners.

In this scenario, information and its transformation into knowledge becomes the key source of business sustainable competitive advantage, rather than a proposition of differentiation based on cost leadership. Here IT plays a critical role in the generation and dissemination of relevant and agreed information and knowledge across the sustainability net. Therefore, from the analysis of IT and strategy alignment rises a new challenge, which consists of integrating all policy areas within a corporation through a management system across the

² See definition of sustainability net on item 3.

³ Universal principles can be simply understood as the laws and principles ruled by Nature. These are the basic universal principles that should be relevant to all human relationships and in all organisations, such as justice, impartiality, honesty, integrity and trust; all of which are obvious and prove their validity by themselves [Covey, 1997].

sustainability net. As a consequence, a business integrated strategy must also be aligned with a common strategy along the net if partners are to achieve a shared vision for sustainability. The development of such common strategy depends on an interactive dialog and active participation and understanding among involved actors in order to enable the whole network to pursue the same vision of sustainability.

Moreover, the role of core competences⁴ and other intangible assets in sustaining a firm's competitive advantage, such as brand and motivation, have also to be taken into account.

It is important to make clear that the concept of value chain recognises that value (economic) is created taking into account suppliers and customers. However, it is a linear model which focuses on a single firm; the focus of financial value creation happens within a single firm.

On the other hand, the concept of value net recognises that a firm is embedded in a network of customers and suppliers, which are also in other networks with specific suppliers and customers. Here, the overall network – firms, suppliers and customers – is taken into account and value (economic) has to be created to all nodes within the bigger system or, in other words, to all actors within the network.

However, the sustainability net goes one step beyond the value net and incorporates in one network not only the firm, its suppliers and customers. Instead, the network represented by the sustainability net takes into consideration the global system within which a firm is embedded. The latter includes not only the firm, suppliers and customers, but also all stakeholders – including nature and different stakeholders within society – in one interconnected system. In this way, value has also to be created to and by all nodes of such network, which has to operate as a cyclical system. Here value is redefined and is represented by a triple bottom line balance or the creation of economic, environmental and social value to and by all actors within the network, which is based on universal principles and shaped by the other three pillars of sustainability: spatial, institutional-political and cultural.

The mentioned closed loop is based on the natural organic cycle, which uses natural raw materials to make compostable products (from dust to dust). Thus, analogous technical cycles⁵

⁴ Core competences can be understood as the group of (small) things that a company makes very well [Nóbrega, 1996]. This concept represents the collective learning that happens within an organisation, especially the ones related to coordination of different production competences and to integration of diverse technologies flows [Hamel & Prahalad, 1994].

⁵ Jacobs [2001] defends that business economic sustainability goes through the mimicry of common biotic phenomena. The uncertainty and constant need

can be established to give human-made materials life through efficient use of materials, its reuse/recycling and returning back to the biosphere only compostable products, all of which driven by renewable energy. It is in this direction that products, processes and services design and development, across the sustainability net, should take place.

In this scenario, Figure 1 summarises and makes explicit the common and complementary elements between the needs outlined to enable the creation of value in the sustainability net and the intangible assets underlying business sustainability. The mentioned common elements are the value activities of the sustainability net, which are the building blocks by which a firm creates products and services valuable to its stakeholders.

The visual model represented by Figure 1 introduces the important connections among the value activities of the sustainability net, which are used to develop a maturity model to enable companies to individually assess its position regarding five sustainability maturity levels and, as a consequence, build a strategy along the sustainability net to progress towards higher levels of sustainable development.

4. Business Sustainability Maturity Model

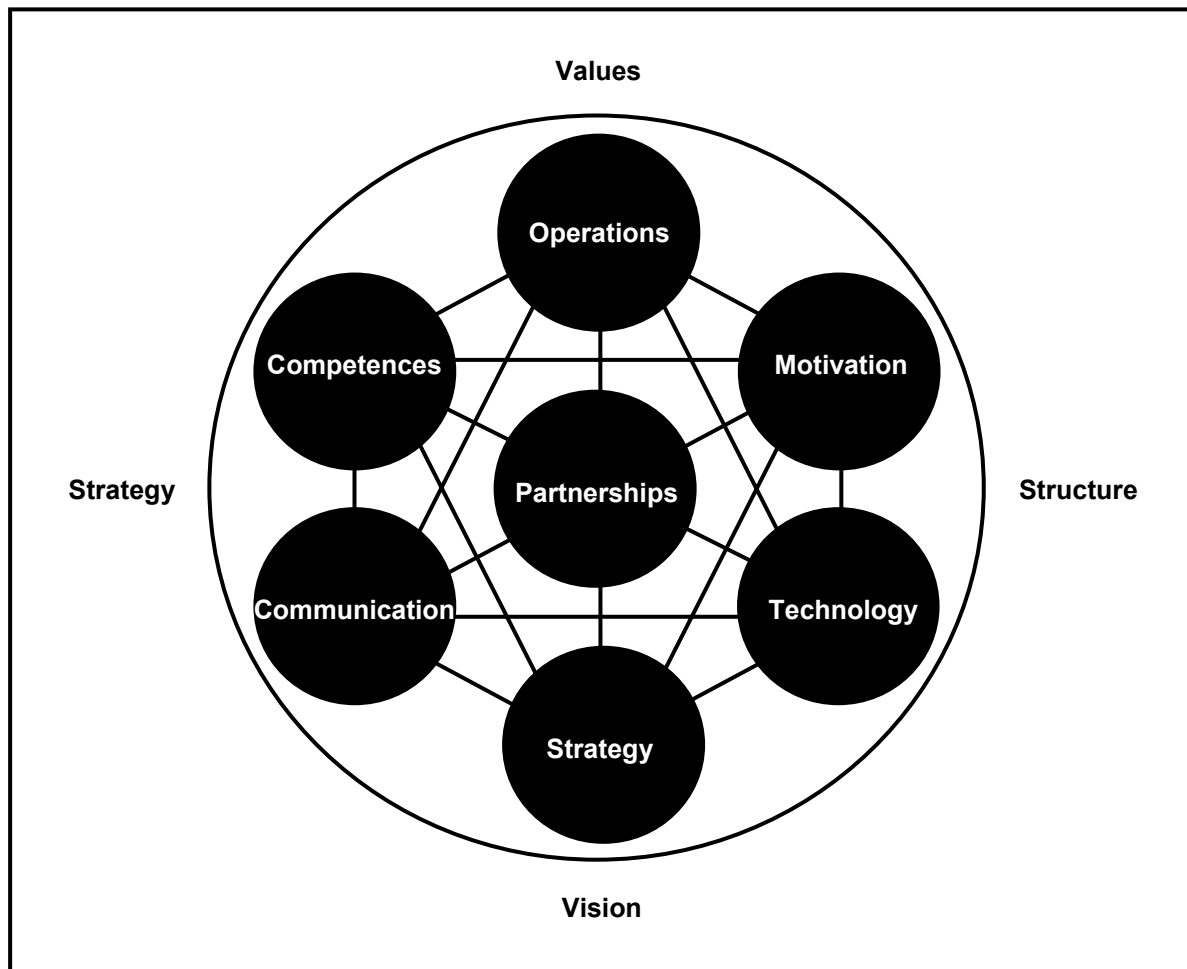
Table 1, at the end of the paper, summarises the elements comprising the proposed model, which are here opened into deeper levels of detail.

The following levels of the designed sustainability maturity model⁶, which is founded on the evolution of values rooted in universal principles as well as the maturity of behaviours which can lead to business maturity development along the sustainability net, seeks to enable the following accomplishments:

to adapt are common characteristics of natural systems and of everlasting businesses in the global economy. This is an approach called “bio-mimicry” where scientists try to develop products and productive processes through the observation of nature. In this way, companies should learn with the processes of nature to adapt and translate them into business processes.

⁶ Cf. Perlman & Takacs [1990]; Katzenbach & Smith [1993]; Eckenfelder [1997]; Elrod II & Tippett [1999]; Losada [1999; 2001]; Berg et al. [2002]; Kwak & Ibbs [2002]; von Zedtwitz [2002]; Rosenberg [2003]; Verweire & Berghe [2003]; Entovation International [2004]; Fredrickson & Losada [2004]; Losada & Heaphy [2004]; Cagnin [2005]; among others.

Figure 1 – Business Sustainability Activities Model



Source: Cagnin [2005].

- Achievement of a common strategy and/or strategies alignment across the sustainability net, founded on values which are rooted on universal principles and on specific behaviours which can lead to the development of a shared vision for sustainability along the network to be pursued by all involved actors, with interdependent and agreed roles;
 - Achievement of a cooperative interactive network rooted on communication channels which allow relevant and agreed information to flow freely and a common base of knowledge to be created and shared among partners, based on a continuous process of ensuring trust is never lost and always enhanced, where all involved actors leverage each other's performance, which is built upon an active participation, an inclusive dialogue and an ongoing learning process of all individuals; and where technology has an important role functioning as an infrastructure that allows the accomplishment of the necessary flexibility to build the network's self-organisation capability;
 - Achievement of high performance partnerships where all parties feel motivated both as individuals as well as members of interdependent groups, finding meaning and satisfaction in everything they do, and where intuition/creativity/emotions and rational analysis reconcile and become two complementary parts of the decision making processes and of the necessary means to ensure an alignment of economic, environmental and social performance along the sustainability net.
- 4.1. Maturity Level 1 – Ad Hoc**
- Strategy:
 - ✓ Sustainability is seen as an overhead. It is said to be a part of the management process, but is driven differently – by regulation, complaints, management directives and cost of accidents/impacts. The only way to get action on sustainability is to get emotional;

- ✓ Concern for sustainability is occasionally mentioned but not backed up with actions – employees don't believe it;
- ✓ There is no sustainability supporting processes or controls in place. No leadership or senior management support/emphasis is placed on sustainability or on the qualifications necessary for all employees. Sometimes small efforts concerning staff are evident, but they have not been effective;
- ✓ Sustainability success depends on individual efforts. Change factors are characterised by an unpredictable serendipity;
- ✓ Sustainability is functionally isolated and the firm main objective seems to be to gain overall capital efficiency;
- ✓ Sustainability direction and goal setting (objectives) are only partly known;
- ✓ Sustainability usually is last when it comes to allocating funds and first to be cut during times of austerity. At times sustainability achieves parity with other considerations but it is the exception, not the rule.
- Partnerships:
 - ✓ Driver for selecting and building partnerships is price and overall cost reduction is the main objective of the firm;
 - ✓ The partnership structure is hierarchical and functionally driven and the approach is of competition among partners.
- Competences:
 - ✓ Information is usually seen as an evil necessary and bureaucratic need;
 - ✓ Main objective with information management is paper processing and fast accountability;
 - ✓ No emphasis is placed on individual, team or organisational learning.
- Motivation:
 - ✓ Behaviour processes and structures are ad hoc;
 - ✓ Sustainability is often keynoted by inspection and compliance. Employees sometimes have some feeling of involvement in sustainability but don't exhibit any sense of ownership;
 - ✓ If specific individuals do not do all the effort towards improving sustainability, it is not done at all. These individuals might play a dominant role and delegates reluctantly;
 - ✓ The environment is of we/they competition between individuals.
- Communication:
 - ✓ Sustainability is mentioned as a burden. Benefits are rarely discussed or appreciated. Seldom virtues are pointed out, but it is the exception, not the rule;
 - ✓ Minimal communication processes and channels in place.
- Technology:
 - ✓ Embryonic;
 - ✓ Companies begin using IT; few technological options (software and equipments);
 - ✓ Processes to develop applications are difficult and with little support of tools; need of methods to meet growing demand;
 - ✓ Focus on manual routines automation;
 - ✓ Shortage of technicians; and craft development character;
 - ✓ IT used to automate organisational functions individually.
- Operations:
 - ✓ Sustainability is handled independently of the rest of the management process. Occasionally it is considered at staff meetings and during appraisals;
 - ✓ Sustainability performance measurement is often not understood and is rarely discussed with seriousness. When measures are mentioned it is with little conviction and without substantive responses;
 - ✓ Sustainability is managed by reaction and quick fixes. The identification of root causes of impacts and prevention efforts occur but are the exception. Thus, there is an inconsistent management approach with no required, ad hoc or reaction-driven sustainability processes, which are unpredictable and poorly controlled, as well as with roughly predicted schedules and costs;
 - ✓ Social-environmental impacts are mainly managed through end-of-pipe solutions;
 - ✓ Capability is a characteristic of individuals rather than of the organisation;
 - ✓ No sustainability data are constantly collected or analysed;
 - ✓ No sustainability practices or processes are consistently available. Operational processes and business strategies are not linked;
 - ✓ Focus is on understanding and establishing basic sustainability processes.

4.2. Maturity Level 2 – Planned in Isolation

- Strategy:
 - ✓ Management is transitioning to act instead of react and look for root causes, but old habit persists. Thus, sustainability management is based on the systematisation of existing practices;
 - ✓ Flashes of real concern for sustainability occur, but cynicism is ever present;
 - ✓ Sustainability direction and goal setting (objectives) are identified but not aligned with the business main target, which

- seems to be to gain overall operations efficiency;
- ✓ Sustainability parity is a goal but is clearly not yet a reality. Everyone knows sustainability is often the first thing to be cut;
- ✓ Sustainability is often not supported. When there are supporting mechanisms, they are informal and according to needs. Thus, evaluation and control processes are primarily aiming at informing about past;
- ✓ At this level, the firm establishes sustainability policies and possess strengths in doing similar work. The focus is on processes and activities planning;
- ✓ Sustainability starts to be linked to business processes and activities. Sustainability costs begin to be internalised and shared among processes and activities. Thus, change factors are characterised by interdependence among processes and activities.
- Partnerships:
 - ✓ Driver for selecting and building partnerships is delivery and the main objective of the firm is process efficiency;
 - ✓ The partnership structure seems a matrix, where all partners in the relationship interacts with each other, and proactive collaboration starts to be felt.
- Competences:
 - ✓ Information is used for general support;
 - ✓ Main objective with information management is to comply with requirements of speed in general reports;
 - ✓ Individual learning is fostered to comply with functional roles.
- Motivation:
 - ✓ Behaviour processes and structures are based on individual teams. Reward/punishment systems in use
 - ✓ Employees are beginning to have a sense of ownership for the sustainability process that goes beyond participation;
 - ✓ Empowerment is starting, but the absence of a leadership or a team that advocates for sustainability, the process loses momentum quickly;
 - ✓ Teams at this level, when they exist, are not focused on collective performance and are not really trying to achieve it. Members can interact to share information, practices or perspectives in order to help individuals perform within his/hers own area. No common goal or shared responsibility;
 - ✓ However, an environment of cooperation between individuals starts to be perceived.
- Communication:
 - ✓ Sustainability is sold inside the company and at some meetings, but is not integrated and response is casual;
 - ✓ Communication processes and channels are project to project basis.
- Technology:
 - ✓ Data-based;
 - ✓ Increase of systems impact and analysts begin to consider decision process, organisational development, innovation adoption, learning, IT and user relationships, and user interface concepts;
 - ✓ Stimulus to building decision support systems;
 - ✓ IT used to build systems which cross functions and allow data sharing.
- Operations:
 - ✓ Efforts have been made to integrate sustainability, but they have been token and often failed;
 - ✓ Sustainability management approach is based on experience with projects where previously mastered tasks and processes can be repeated;
 - ✓ Policies support managers to establish suitable management processes and the introduction of sound practices;
 - ✓ Awareness that sustainability and related negative impacts prevention is hard and ongoing is occasionally seen. But sustainability measurement is growing and at times elicits responses;
 - ✓ Social-environmental impacts are mainly managed focusing to reduce social-environmental impacts through better use of materials and natural resources;
 - ✓ Informal sustainability problems are identified and informal sustainability data collected. In the same direction, informal sustainability processes are defined;
 - ✓ Operational processes and sustainability activities are structured.

4.3. Maturity Level 3 – Managed with No Integration

- Strategy:
 - ✓ Concern for sustainability is balanced with compliance and costs but is seen as a separate subject. Decisions for sustainability are based on a balance risk/reward;
 - ✓ Sustainability starts to be integrated into the business. It normally has parity with other considerations, but at times it is clear that there are higher priorities;
 - ✓ Sustainability management is based on enhancing the firm's image. Thus, the direction for sustainability and goal setting (objectives) are unequivocally known. There are the establishment of sound and

- consistent sustainability criteria. But, the firm's target is to gain overall product/service quality;
- ✓ Sustainability negative impacts prevention is driven by process. A balance between emotions and rationality in decision making is still not achieved;
 - ✓ Sustainability responsibility is assigned to a unit or team. Internal relationships among teams exist and staff in general is well qualified to internalise sustainability and have the adequate resources available;
 - ✓ Sustainability supporting processes are conventional. Evaluation and control processes focus on coordinated continuous measuring;
 - ✓ Sustainability process is standardized. Focus on structured processes planning and control for individual activities. Thus, change factors are characterised by a systematic sustainability management, but with no alignment with other processes.
- Partnerships:
 - ✓ Driver for selecting and building partnerships is quality and the main objective of the firm is product/service quality;
 - ✓ The partnership structure is based on distributed coordination and a structured collaboration starts to be felt.
 - Competences:
 - ✓ Information is used to customise management control;
 - ✓ Main objective with information management is to improve and customise decision making;
 - ✓ Team learning is promoted to improve decision making and business efficiency.
 - Motivation:
 - ✓ Behaviour processes and structures are based on cooperation between interdependent teams;
 - ✓ Focus is on employee involvement. Culture and attitudes are more important than physical defects;
 - ✓ The organisation starts understanding the correct role of the team(s) fighting for sustainability, but frequently reverts to dependent behaviour;
 - ✓ Here the team is a group that is really trying to improve its effectiveness and performance. It has built relationships and work processes to take place of the original ones, but these are not yet honed and fully developed;
 - ✓ The firm's environment focus on teams work based on internal cooperation, which is beginning to appear also between teams;
 - ✓ Informal training of sustainability and necessary skills and practices are yield.
- Communication:
 - ✓ Benefits of sustainability negative impacts prevention are not fully integrated and comes in waves;
 - ✓ Communication is based on the firm's core competences portfolio and sustainability objectives.
 - Technology
 - ✓ Information-based;
 - ✓ Focus on inter-functional/organisational systems;
 - ✓ Systems architecture and systems development considering economic, political, legal and cultural aspects;
 - ✓ Business development depends each time more of IT application as strategic organisational resource;
 - ✓ IT used innovatively to build applications centred on processes, rather than in functions, which are synchronised with the business strategy.
 - Operations:
 - ✓ Sustainability has parity with other business activities and management has an idea of how it should be integrated;
 - ✓ Sustainability management approach is based on processes that are characterized and fairly well understood;
 - ✓ Management is initiating efforts that are self-perpetuating. Evidence of a long term commitment to sustainability appears at times;
 - ✓ Sustainability capability is based on an organisation-wide understanding of the related activities, roles and responsibilities;
 - ✓ Social-environmental impacts are mainly managed focusing to reduce social-environmental impacts through processes control and management;
 - ✓ Formal sustainability data are managed and formal activities planning and control systems are in place;
 - ✓ Sustainability measurement is good but largely retrospective. There are responses but rarely targeted with predictable results;
 - ✓ Operational processes and sustainability activities are streamlined.
- 4.4. Maturity Level 4 – Excellence at Corporate Level**
- Strategy:
 - ✓ Concern for sustainability is major business driver but not in total harmony with other goals. The business driver is its customers, thus productivity and efficiency are still more valued than sustainability. Management is focused on costs reduction seeking to gain competitive advantages;

- ✓ However, sustainability is integrated with customers needs and the firm's sustainability target is to improve social-environmental positive aspects and impacts. Sustainability goals are quantified and measurable. Focus on planning and controlling multiple activities. Sustainability direction and goal setting (objectives) are broadly revised;
- ✓ Leadership or a top executive supervises sustainability. There is sufficient individual awareness towards sustainability and they are almost all highly qualified to integrate sustainability into mainstream decision making and core operations;
- ✓ All teams and individuals are considered equals among staff. A shared vision for sustainability is defined in agreement among employees;
- ✓ Occasionally pressure prevail over decision making processes, but usually positive emotions lead to creativity and intuition being positively considered in decision making;
- ✓ Sustainability negative impacts prevention is considered essential to business success. Supporting processes are formal and powerful. Evaluation and control processes aims at correcting in a continuous basis. Thus, sustainability is characterised by an accelerated discontinuous change.
- Partnerships:
 - ✓ Driver for selecting and building partnerships is social-environmental existing impacts and the main objective of the firm is to improve product/service responsibility;
 - ✓ Business understands that consultation and collaboration with each stakeholder is critical to reconcile environmental, social and economic priorities across the sustainability net and stakeholders engagement takes place only after the firm defines its mission and values;
 - ✓ Trust is leveraged through dialogue processes where partners share beliefs and values, opportunities and constraints, aim to identify common objectives, and together select among agreed actions;
 - ✓ Investments in stakeholders education is undertaken in the quest of achieving political/critical consumers. However, at this level, the firm is able only to raise stakeholders awareness of socially and environmentally responsible business attitudes;
 - ✓ The partnership structure is similar to 'multi dimensional' communities of practice and partners are focused on values and capabilities.
- Competences:
 - ✓ Information is seen as a strategic resource used as strategic weapon to build competitive advantage and to promote business prosperity;
 - ✓ New business opportunities and the firm's ability to learn and innovate are developed based on a balance between protecting core competences and sharing competences;
 - ✓ Capabilities are enhanced by designing the business objectives matching the skill profile with continuous investment in training and education;
 - ✓ The quality of transferable knowledge is predictable.
- Motivation:
 - ✓ Behaviour processes and structures are based on disciplined teamwork, and motivation is based on reward systems and compensation plans that meet individual needs. Alternative motivational processes are starting to be used but emphasis is still placed on traditional methods;
 - ✓ A well developed process for measuring and monitoring behaviour exists. The organisation is moving toward deeper understanding and creating processes of conversations and dialogue that lead to individual discovery, seeking to improve organisational learning and to enable individuals to change their ideas, by themselves, about the way things work;
 - ✓ Teams starts the process of learning with each other, sharing experiences, and individuals are empowered to creatively solve business problems related to their personal objectives. Here, small incremental gains can result in significance performance improvements as well as mutual accountability and shared goals to emerge as dominant motivational factors for the team;
 - ✓ The environment is of proactive cooperation within teams and structured collaboration between teams, with focus on values and capacity;
 - ✓ Formal training of sustainability and necessary skills and practices are developed focusing on individuals and teams needs.
- Communication:
 - ✓ The selling of sustainability is consistent and integrated. Employee involvement is 'built-in'. Taking sustainability is encouraged;
 - ✓ Communication processes and channels are based on feedback loops and 'information persistence';
 - ✓ Interpersonal communication channels are as important as the technological ones in place for innovations adoption

and diffusion as well as organisational changes across the sustainability net.

- Technology:
 - ✓ IT is used as competitive weapon;
 - ✓ The firm masters the technologies that affect the way it creates value for its clients and possibly has in place an organisation-wide database and/or a knowledge portal to collect and analyse relevant information;
 - ✓ Technology is the infrastructure to coordinate activities in the value chain in a cheaper, smarter, more efficient and more sustainable way;
 - ✓ A technological flexible infrastructure is the basis to enable communication and information flow through the organisation and, therefore, build the firm's self-organisation capability;
 - ✓ IT in the centre of business strategy and knowledge as source of value generation;
 - ✓ IT assumes a more strategic role and leadership involvement provides businesses transformation;
 - ✓ IT used as basis for the business restructure and to integrate entrepreneurial processes with suppliers and clients as a continuous system;
 - ✓ The organisation advantage orients the selection and use of the more opportunistic technologies to leverage advantages to business processes.
- Operations:
 - ✓ A plan to totally integrate sustainability exists and independent sustainability discussions are becoming less frequent;
 - ✓ Management periodically plan/review existing actions, consult stakeholders and is proactive whenever possible to anticipate change and put measures in place to support social-environmental responsibility;
 - ✓ Management disseminate essential information making clear desired performance patterns and desired tools to support decision making in order to improve customer service levels and expected costs of operations;
 - ✓ Social-environmental impacts are mainly managed based on product/service and processes social-eco-design;
 - ✓ Sustainability management approach is based on processes that are measured and controlled, since the organisation initiated comprehensive process measurements and analysis;
 - ✓ Critical behaviours and conditions are being defined and measured. A long term commitment is evident;
 - ✓ Measurement of sustainability is clear and generally understood. It is moving toward being more predictive than reactive. Thus, the process is measured and operates

within measurable limits, as well as it can predict trends in process and product quality;

- ✓ Sustainability and data processes are integrated. Sustainability data are quantitatively analysed, measured and stored. Moreover, multiple activities are integrated into sustainability;
- ✓ Operational processes and activities are autonomous and flexible, and the firm makes use of renewable sources of energy and fewer natural resources.

4.5. Maturity Level 5 – High Performance Sustainability Net

- Strategy:
 - ✓ Sustainability is viewed as a profit centre, not as an overhead. It is implemented strategically, based on a continuous improvement of processes and practices. All members of staff are viewed as valuable organisation assets;
 - ✓ A sincere concern for sustainability drives the business in perfect harmony among all activities (sustainability-driven organisation). Its management is based on continuous performance improvement and learning. Focus on innovative ideas to improve sustainability processes and practices;
 - ✓ Management is able to react quickly according to sudden environmental changes and positive emotions (aligned with Losada's Line or with a ratio positivity/negativity at or above 2.90) is appreciated as bringing valuable insights and levels of creativity into decision making processes across the sustainability net;
 - ✓ Objective is to identify and define stakeholders needs through a participative process, and all strategies and activities are aligned and integrated along the network;
 - ✓ Culture based on common principles and values, information sharing, participation in the decision making processes, a learning environment and creative, flexible thinking;
 - ✓ Values, shaped on universal principles, are embedded on every process. All individuals are working towards sustainability and leadership bats for it, mobilizing stakeholders' commitment. Consistent inter-group learning based on an organisation-wide pursue for sustainability, which is similarly reflected in the network;
 - ✓ Sustainability supporting processes are integrated and optimised, based on proactive processes and actions.

Evaluation and control processes aims at fostering learning across the network. It is characterised by a collaborative innovation and sustainability performance improvement system, where the change factors are characterised by a kaleidoscopic dynamics (a dynamic, energetic and fluid network).

- Partnerships:
 - ✓ Driver for building partnerships is trust and the main objective is to ensure trust is never lost and to build cooperation across the network, where all partners contribute to overall performance and sustainability mission and values are commonly defined;
 - ✓ Differences are reconciled, through inclusive dialogue and active participation, by partners engaging as equals;
 - ✓ The partnership structure resembles symbiotic networks and partners behave as self-managing knowledge workers;
 - ✓ Educational programmes are fostered across the network and partners internalise the responsibility for leveraging political/critical consumers within society.
 - Competences:
 - ✓ New business opportunities and the firm's capabilities are leveraged by selecting the necessary competences to develop and integrate into core products and services with speed, innovation and cost effectiveness;
 - ✓ Capabilities are enhanced through a creative and flexible approach to individual and group experience-based learning and skilful knowledge management. Knowledge management is integrated into the network strategy and the main drivers are knowledge and sustainability, thus intellectual capacity/impact and sustainability impact/performance become the main focus;
 - ✓ Information flow free and knowledge is created and shared among partners, achieving a common base of knowledge along the sustainability net – the process of acquiring and transforming knowledge into new (core) competences and new (core) products and/or services with speed, innovation and effectiveness is continuously enlarging, as well as motivation is continuously leveraged across the sustainability net –, maximising the organisation's and individual's learning capability, enhancing the firm's competitive advantage, and leading to higher levels of creativity incorporated in decision making processes.
 - Motivation:
 - ✓ Behaviour processes and structures are based on self-managing teamwork/knowledge workers and a balance between traditional-alterative motivational processes;
- ✓ The firm engages with stakeholders, through an inclusive dialogue and active participation, seeking to help individuals to find meaning and satisfaction in everything they do, and to identify common values and objectives, in order to put greater meaning into work and individuals life;
 - ✓ Individuals hold ownership and responsibility for achievements, as well as a global vision and commitment to results;
 - ✓ Motivational processes are in alignment with the firm's strategy and focus on beliefs, values and culture. It drives all other efforts and is correlated with all other measures;
 - ✓ Training of people's habits of interpretation and communication toward sizeable positivity offsets that leverages positive affect, including higher levels of creativity, which enables the achievement of high performance teams across the sustainability net. Here individuals are not only committed to group effectiveness, but are also committed to individual growth and success – balance between inquiry-advocacy and other-self and positivity-negativity ratio at or above 2.90.
- Communication:
 - ✓ Taking sustainability benefits is inherent in the organisation culture and fully integrated across the sustainability net. Everyone is aware of its benefits;
 - ✓ Communication processes and channels are based on cross-boundary learning and knowledge flow;
 - ✓ Agreed communication channels are developed across the sustainability net to meet each stakeholders' needs and ensure trust is never lost among partners so that intuition and rational analysis become complementary components of the decision making process. The approach is participative and based on dialogue, which serve as the basis for guaranteeing the firm and its stakeholders understands each other and that the activities which add value from customers and stakeholders standpoint are leveraged.
 - Technology:
 - ✓ IT allows management to develop original business initiatives. IT has achieved a state of such power and flexibility that it can be used by firms to build disarrangements and their exploitation in the market. However, even more important than using IT as a market disarrangement element, so competitors' mistakes can be explored, would be the role of using IT to catalyse the

- construction of a cooperative network along the sustainability net. In this way, market would be changed towards a social-economic sustainable environment;
- ✓ IT use throughout the sustainability net distribute power and information and promotes auto-supervision; allows discernment and promotes innovation; enhances communication; identify abilities need and promotes learning; and raise individual ability and human motivation importance;
 - ✓ Intelligent knowledge processors in use: knowledge management, supported by IT and IS – such as a mix of Intranet/Internet/Extranet solutions and/or the use of a corporate knowledge portal accessible by all sustainability net actors – is the basis which allow the firm to exceed its performance standards in seeking to keep one step ahead the competition and the network's self-organisation;
 - ✓ Developing or buying new technologies based on the business and end users individual needs in alignment with technology, business, stakeholders and sustainability strategies;
 - ✓ Technology functions as a flexible infrastructure to allow information to flow free and knowledge to be generated and shared among partners. Hence, learning and adaptation is a continuous process rather than taking place only when a firm is about to plan the next loop of improvement. The organisation works in harmony with its environment, both being influenced and influencing changes in a continuous basis. This plasticity allows trust to be assured among partners and, thus, leverages the process of bringing rational analysis and intuition/creativity as complementary parts of decision making processes.
- Operations:
 - ✓ Sustainability and related negative impacts prevention is totally integrated and accepted as essential for business success. Everyone along the sustainability net recognises that sustainability excellence is never ending;
 - ✓ Sustainability management is based on a change management approach with a focus on process improvement. The firm has in place a foundation for continuously improve and optimise processes, as well as best practices and innovations are identified and transferred throughout the network;
 - ✓ Project teams are capable to analyse defects and determine its causes, to evaluate the process to prevent known types of defects from recurring, and to disseminate lessons learned to other projects and actors along the sustainability net;
 - ✓ Social-environmental impacts are mainly managed focusing to reduce social-environmental impacts through stakeholders' participation in the decision making process. Efforts to remove waste and impacts along products/services life cycle result in changing the common causes of inefficiency and enhancing responsibility across the network;
 - ✓ Management link long-term plans and operational daily actions in a way that is designed to support plans, evaluate new developments and reflect on performance with the aim of continuous improvement;
 - ✓ Operational functional silos are removed by breaking down the firm's organisational functions, hierarchical departments and structures; thus allowing information to flow free and to focus operations on systemic processes and systems;
 - ✓ Operations optimise business positive social, environmental and economic impacts by meeting standards, indicators and regulatory requirements by operating according to defined strategies and policies along the sustainability net;
 - ✓ Operations reflect the firm's values and its ability to act responsibly and ethically. Hence, monitoring systems to continuously evaluate built indicators are in place and function in alignment with the firm's information and knowledge management systems;
 - ✓ Sustainability measurement is prospective, positive and credible. It is an effective tool that correlates with all that matters in the organisation;
 - ✓ Sustainability data are optimised and sustained, as well as sustainability activities and processes are fully understood and continuously improved;
 - ✓ Operational processes and activities are autonomous and flexible but also aligned and integrated within the business and along the sustainability net.

5. Conclusions

The continuous feedback enabled with the integrated management of the value activities that compose the sustainability net aligned among all actors within such network allows firms to individually unlock how to attain the next maturity level⁷. This seems critical since such tools should evolve accompanying a firm's and its network progress towards sustainability. Thus, hopefully

⁷ Cf. Fraser & Vaishnavi [1997].

what constitutes the fifth sustainability level of the current devised business sustainability maturity level model (BSMM) will become, in the following years, the first level of an enhanced BSMM, since the path to business sustainability is never ending and is continuously evolving.

6. References

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TABLE 1: Business Sustainability Maturity Model – BSMM

Value Activity	Maturity Levels				
	1- Ad Hoc	2- Planned in Isolation	3- Managed with no Integration	4- Excellence at Corporate Level	5- High Performance Sustainability Net
Strategy	<ul style="list-style-type: none"> - overhead, driven by regulation, complaints, management directives and cost of accidents and impacts - no processes or controls in place and no support from leadership/senior management - success depend on individual efforts; change factors as an unpredictable serendipity - sustainability functionally isolated; firm's main objective is to gain capital efficiency - objectives only partly known 	<ul style="list-style-type: none"> - systematisation of existing practices - objectives identified but not in alignment with business target (to gain operational efficiency) - supporting mechanisms are informal, according to needs (access to past information) - policies defined and the firm has strengths in doing similar work; focus on processes and activities planning - change factors as processes and activities interdependence 	<ul style="list-style-type: none"> - decision based on risk/reward - integration starts; but still seen as separate subject - objectives are known; firm's target is to gain product/service quality and main objective is to enhance the firm's image - negative impacts prevention driven by processes - balance between emotions and rationality not achieved - responsibility assigned to a unit or team - measuring is coordinated 	<ul style="list-style-type: none"> - customers as driver; focus on productivity and efficiency - target is on costs reduction aiming competitive advantages - seek social-environmental improvement; goals quantified and measurable; objectives revised; focus on planning and controlling multiple activities - exists shared vision, individual awareness and leadership - positive emotions leads to creativity and intuition - formal & powerful processes 	<ul style="list-style-type: none"> - sustainability driven firm - positive emotions (ratio at or above 2.90) leads to creativity across the sustainability net, focus on innovative ideas - participative process; strategies and activities aligned and integrated across the net - collaborative innovation and continuous sustainability performance improvement system; inter-group learning - values (universal principles) embedded in every process
Partnerships	<ul style="list-style-type: none"> - selection driver is price - hierarchical structure - functionally driven - competition among partners 	<ul style="list-style-type: none"> - selection driver is delivery - matrix structure where partners interact and proactive collaboration starts to be felt 	<ul style="list-style-type: none"> - selection driver is quality - distributed coordination structure where structured collaboration starts to be felt 	<ul style="list-style-type: none"> - stakeholders engage and trust is leveraged through dialogue - communities of practice structure (focus on values) 	<ul style="list-style-type: none"> - driver is trust; values and mission are jointly defined - symbiotic network structure - education across the net
Motivation	<ul style="list-style-type: none"> - environment of we/they competition between individuals - behavioural structure with no sense of ownership 	<ul style="list-style-type: none"> - structure of individual teams (no focus in collective performance); reward/punishments systems - cooperation starts to be felt 	<ul style="list-style-type: none"> - cooperation between inter-dependent teams - informal training of sustainability and necessary skills and practice 	<ul style="list-style-type: none"> - teamwork; reward systems - dialogue & conversations lead to individual discovery/learning - teams share experiences 	<ul style="list-style-type: none"> - self-managing teamwork; high performance teams in the net - inclusive dialogue and active participation; common vision
Competences	<ul style="list-style-type: none"> - information – paper processing and fast accountability - no individual, team or organisational learning 	<ul style="list-style-type: none"> - information – general support; comply with speed requirements - individual learning to comply with functional roles 	<ul style="list-style-type: none"> - information – improve decisions - team learning promoted to improve decision making and business efficiency 	<ul style="list-style-type: none"> - information – strategic resource - training and education - quality of transferable knowledge is predicted 	<ul style="list-style-type: none"> - information flow free and a common base of knowledge in the net maximise individuals learning and creativity
Communication	<ul style="list-style-type: none"> - minimal processes and channels in place 	<ul style="list-style-type: none"> - processes and channels are project to project basis 	<ul style="list-style-type: none"> - based on the firm's core competences and objectives 	<ul style="list-style-type: none"> - based on feedback loops and information persistence - interpersonal and technological channels in use 	<ul style="list-style-type: none"> - based on cross-boundary learning and knowledge flow - intuition and rational analysis become complementary
Technology	<ul style="list-style-type: none"> - focus on manual individual routines automation; craft development character - embryonic 	<ul style="list-style-type: none"> - data-based; IT used to build systems that crosses functions and allow data sharing; stimulus to support decisions 	<ul style="list-style-type: none"> - Information based; IT used to build applications centred on processes rather than functions; synchronised with the strategy 	<ul style="list-style-type: none"> - flexible infrastructure basis to enable communication and information flow through the firm; firm's self organising capability 	<ul style="list-style-type: none"> - cooperative sustainability net - network's self organisation - continuous learning/adaptation - creativity in decision making
Operations	<ul style="list-style-type: none"> - focus on understanding and establishing basic processes that are not linked to strategy; end-of-pipe solutions; individual abilities 	<ul style="list-style-type: none"> - policies support practices; aim to reduce impacts with better use of materials & natural resources - structured processes/activities 	<ul style="list-style-type: none"> - firm-wide understanding of activities, roles & responsibilities - idea for integration/alignment - streamlined processes/activities 	<ul style="list-style-type: none"> - autonomous, flexible and integrated processes/activities; use of renewable energy sources and fewer natural resources 	<ul style="list-style-type: none"> - processes/activities/values aligned across the net; functional silos removed (information flow) - systemic processes/systems

Source: Cagnin [2005]