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Article

Aligning Strategy with Sustainable Development Goals (SDGs): Process Scoping Diagram for Entrepreneurial Higher Education Institutions (HEIs)

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Abstract: The sustainable development of our world has gain particular attention of a wide range of decisional factors, civil society, business sector, and scientific community, seeing that the prosperity of people and society is possible with the aid of sustained and inclusive economic growth of all countries and regions. Educational environment has a decisive impact on changes in the way that societies are coping with national, regional, and global challenges and opportunities brought by sustainable development. Looking at the implications of HE on the progress of society, the paper addressed the lack of HE institutional capacity to integrate the principles and practices of sustainable development into all aspects of education and learning. The scope of research problem was bounded on the capability of HEI as organization and school to act as entrepreneurial university by combining the scope of its responsibility within the value chain through a practical and effective mechanism needed to align the strategy with sustainable development goals (SDGs). Embarking on the path of SDGs requires HEI to design, launch, implement, and customize specific processes architectures to govern the advance of sustainability approach. The authors applied the process scoping diagram to capture and conceptualize the educational model needed to guide the HEI through the process of change to embrace sustainability into organizational culture and daily operations. It has been used the SIPOC method (Supplier, Input, Process, Output, Customer) with Visio software tool to articulate processes relationships embedded in the educational model of HEI. The benefits relied on the organized view of the work processes needed to be performed to incorporate SDGs into the strategy of any entrepreneurial HEI. Finally, the authors shared their views on the scalability of the model which may be customized and harmonized in accordance with different HE circumstances and priorities. Implementing the proposed educational model requires long-term institutional commitment, transparency, continuous performance improvement, and communicating the strategy for SDGs and its achievements to wider stakeholders.

Keywords: entrepreneurial sustainability strategy; entrepreneurship and management; business process management and improvements; innovation in higher education; sustainable organizational performance; sustainable business models.

1. Introduction

Over the last decades, the sustainable development of our world has gain particular attention of a wide range of decisional factors, international institutions, civil society, business sector, and the academic and scientific community, seeing that the prosperity of people and society is possible with the aid of sustained, inclusive and sustainable economic growth of all countries and regions.

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In this light, the high-level stakeholders' commitment to sustainable development was exhaustively defined in the 2030 Agenda for Sustainable Development issued by the United Nations. The fundamental changes were clearly captured and defined within seventeen universal sustainable development goals (SDGs) and related targets, balancing all facets of sustainable development such as economic, environmental, and social concerns [1].

Worthy to mention, the role of education system to sustainable development of world was revealed by the universal goal of providing inclusive and equitable education, and lifelong learning opportunities for all people (SDG 4), with assigned 2030 targets and indicators such as: participation rate in different education levels and forms, extent to which citizenship education and sustainable education are mainstreamed at all levels in curricula, teachers educations, students assessment, and also proportion of youth and adults with relevant skills as ITC and entrepreneurship, etc. [2]. Based on national circumstances and priorities, each country is responsible for committed approaches and educational models needed to achieve sustainable development. These acknowledged the decisive impact of educational environment to the fundamental changes in the way that societies are coping with national, regional, and global challenges and opportunities brought by sustainable development in a globalized world.

The regional commitment to sustainable development was also acknowledged by European Union (EU)with a straightforward focus on three priorities for higher education systems seen as the foundation of fair, open and democratic societies and of sustained growth and employment: i) quality and relevance of skills formation; ii) more visible and comparable skills and qualifications, and advancement of skills intelligence; and iii) informed career choices [3]. In addition, to better underpin the higher education into society, the EU renewed its agenda for education and refined further priorities in terms of promoting excellence in skills development, building inclusive and connected higher education systems, ensuring HEIs contribution to innovation, and supporting effective and efficient HE systems [4].

One of the key means to achieve sustainability is linked to entrepreneurship being firmly embedded and spread out in the majority of sustainable developments goals (SDGs) among which ensuring inclusive and equitable quality education and promoting lifelong learning opportunities for all (SDG 4) and inclusive and sustainable economic growth, full and productive employment and decent work for all (SDG 8). Social entrepreneurship is also emphasized as a key concept to engage business and civil society in addressing emerging social challenges and reducing inequalities and enhancing social cohesion [5].

As far as economic growth, environmental and social challenges, the European Commission stated its view by defining the concept of corporate sustainability responsibility as the responsibility of enterprises on their impacts on society, regardless of size, type, and operating industry. This requires a process approach to integrate social, environmental, human rights and consumer concerns into business operations to create shared value, connecting social and economic progress. Thereby, the multidimensional facets of sustainability responsibility enable the underpinning of the targets of Europe 2020 strategy for smart, sustainable and inclusive growth, including the 75% employment rate, 3% of the EU's Gross Domestic Products investment in research and development, reduced greenhouse emissions, diminished early school leavers below 10%, a min share of 40% of people with higher education attainment, and poverty and social exclusion reduction by 25% [6, 7].

Understanding the role of a principled approach in doing business and entrepreneurship are of utmost importance for achieving Europe 2020 targets and for the impact of businesses, governments and other organizations on critical sustainability issues such as economic growth, climate change, human rights, corruption, innovation and productive employment. In this regard, at the EU level, the main harmful issues in doing business are seen as tax rates by 63% of companies, fast-changing legislation and policies (61%), the complexity of administrative procedures (60%), access to financing (39%) and corruption which were mentioned by 38% of companies. The study also revealed that 67% of companies from EU seen corruption as being widespread in their country, being a real problem mainly for smaller companies (38% of companies with 1-9 employees versus 15% of companies with 250 or more employees) [8].

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Moreover, from the EU citizens' viewpoint, the overall patterns of tolerance to corruption vary significantly between countries (e.g. Hungary with 35% of respondents thinking corruption as being unacceptable, followed by Croatia with 45%, and Finland and Portugal both with 84%). As regard to respondents' perception about the spread of corruption, 68% of EU respondents perceived corruption as being widespread within their own country, and just over a quarter (26%) said that it is 'very widespread'. The same source reveled that almost a quarter of EU citizens (25%) mentioned that they were personally affected by corruption in their daily lives, with significant differences between countries e.g. in Romania 68% of respondents mentioned to be affected by corruption, in Cyprus almost a half (50%), and Denmark with only 4% of respondents [9]. These figures acknowledge the negative impact of different forms of corruptions on economic growth, creating business uncertainty, undermining the trust in governments and public institutions, damaging democracy and slowing the entire process of SDGs accomplishment, as defined in the 2030 Agenda for Sustainable Development.

To guide the progress in achieving the SDGs goals, in 2011 year, the United Nations Human Rights Council adopted the United Nations Guiding Principles on Business and Human Rights (UNGPs), being the most comprehensive global framework to address the business impacts on human rights. Based on a set of 10 guiding principles laying out the main idea of the state duty to protect, the framework addressed corporate social responsibility by supporting and encouraging responsible business practices, and consequently, the sustainable development of the wider society. In addition, the European Union acknowledged the positive impact businesses may have on the social and economic development, and also on civil and political rights, economic, social and cultural rights, and labor rights. In this regard, it provided support by encouraging each member state to develop national action plans in relations to UNGPs, being reported the EU actions and policies relevant to the implementation of the UNGPs on business and human rights [10].

To further tackle the challenge of sustainable development by creating cultural, social or economic value, the EntreComp Framework launched a common conceptual approach on entrepreneurship, seen as sense of initiative, which generates value for individuals and society as a whole. Based on a bird's eye view, the framework proposed the bridge between world of education and work through three competence areas – ideas and opportunities, resources, and action - and 15 interconnected competences which support the entrepreneurship competence at European level. Amongst others, the sustainable thinking based on assessing the effect of action on the targeted community, the market, environment, and the society is seen as one of the key competence which contributes to the value creation process regardless of the financial, cultural, or social domain [11].

In addition, the list of indicators of entrepreneurial determinants mentioned the creation and diffusion of knowledge, entrepreneurial capabilities in particular of entrepreneurship education (i.e. rate of population with tertiary education, quality of management schools, training in starting a business), and entrepreneurial culture built on opinion about entrepreneurs, fear of failure, risk for business failure, and entrepreneurial intention, as critical factors affecting business creation and entrepreneurship at all levels [12, 13].

Looking at the implications of education, especially higher education, on the progress of society through its mission of fostering the development of sustainability competences (i.e. system thinking, strategic approach, and critical thinking), the paper aimed to address the lack of HE institutional capacity to integrate the principles and practices of sustainable development into all aspects of education and learning. Thereby, the scope of research problem was bounded on the capability of HEI as organization and school to act as entrepreneurial university by combining the scope of its responsibility (i.e. social, environmental, and economic) within the value chain (research and development, teaching and learning, knowledge exchange and technological transfer) through a practical and effective mechanism needed to align the strategy with envisaged sustainable development goals (SDGs).

Embarking on the path of sustainable development requires decisional stakeholders from each HEI not only to assume the SDGs but also to design, launch, implement, and customize specific processes architectures to govern the advance of sustainability approach. In this regard, the

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objectives of the research consisted of: i) secondary research on international literature to analyze relevant advancements and trends in the area of sustainable development coupled with business and educational process models; and ii) applying the process scoping diagram to capture and conceptualize the educational model needed to guide the HEI through the process of change to embrace sustainability into organizational culture and daily operations. For the purpose of modeling endeavor, the authors applied the SIPOC method (Supplier, Input, Process, Output, Customer) with Visio software tool to articulate processes relationships embedded in the educational model of HEI. The benefits relied on the organized view of the work processes and set the boundaries of the work needed to be performed to incorporate SDGs into the strategy of any HEI struggling to become an entrepreneurial university.

Finally, to overcome the weak institutional capacity, the authors shared their views on the scalability of the model which may be customized and harmonized in accordance with different higher education circumstances and priorities to achieve sustainable developments goals within the whole scope of responsibility (i.e. social, environmental, and social). Also, implementing the proposed educational model requires long-term institutional commitment, transparency, continuous performance improvement, and communicating the strategy for SDGs and its achievements to wider stakeholders community (e.g. students, faculties staff, media, employers, business community and civil society, students, government).

2. Methods

2.1. Internationally advancements on sustainable development concepts

In the attempt to guide organizations throughout the social responsibility performance, the internationally recognized standard ISO 26000:2010 foreseen key subjects needed for integrating economic, environmental and economic considerations into existing organizational systems, practices and processes. Based on a common understanding in the field of social responsibility, the standard supports and guides the organization endeavor in its pursuit of implementing accountability principles, transparency, ethical behavior, respect for stakeholders' interests and respect for the rule of law, with the aid of organizational governance [14].

In the area of organizational performance and sustainable development, the Global Reporting Initiative (GRI) championed a common language for organizations and stakeholders by supporting the process of identifying the impacts of organizations on economy, environment, and society and disclosing them in accordance with a set of principles globally accepted as standards. The GRI standards enable organizations to communicate the progress on achieving the committed SDGs, helping them to incorporate SDGs reporting into their existing processes. Information on organizational performance are articulated with respect to economic, environmental, and social conditions at the local, regional, or global level, depending on the size, type, sector, or geographic location [15].

As good-practices acknowledged, the sustainably report (i.e. corporate non-financial reporting) is seen as an overarching framework for shaping, steering, communicating and reporting the progress toward SDGs, bringing valuable benefits for all stakeholders in terms of: increased value creation through future business opportunities, enhanced economic value based on an improved use of resources, strengthened stakeholders' relations through empowered trust, fair and opened business sector with rule-based market, financial transparency, and well-governed and non-corrupt institutions [16, 17].

As far as educational concerns and related implications on sustainability, the UNESCO strategy for education established three strategic objectives in terms of: i) developing educational systems to foster quality and inclusive lifelong learning for all; ii) empowering learners to be creative and responsible global citizens; and iii) advancing education for all. Also, through explicitly recognizing the major role of education to attainment of SDGs, it has been proposed a cross-cutting framework to guide the educational organizations in establishing learning objectives relevant to SDGs and in

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implementing learning for SDGs through policies, strategies, and programs, curricula and textbooks, teacher educations, and assessing learning outcomes [18, 19].

2.2. International debates on critical sustainability issues

The research flow goes on with analyzing other useful facets of sustainable development revealed by the scientific literature. To further investigate the institutionalization of sustainability approach in the organizational context, the scholars emphasized the main role of management board in ensuring the convergence between insider and outsider facets of organizational system, having a key role in embedding the sustainable development into the business culture [20].

In the light of increasing importance of sustainability in the regional context, other researches focused on the internal side of social responsibility of organization and set indicators to increase responsible human resources practices toward effective implementation of sustainability strategy: responsible human resources practices; organizational culture of responsibility; social projects promotion; significant compensation policies and employee quality of life [21].

Other attempts proposed different conceptual frameworks to integrate corporate social responsibility, human resource development, and lifelong learning activities as educational engagement for mutual benefit of company and employees. These offered guidelines for integrating and designing specific measures and functions of human resources development and corporate social responsibility into the company environment [22].

To further question the challenge of implementing sustainable strategy, the researches diagnosed key factors as company leadership, strategy, employees, corporate values, resources, tools, and processes to support the implementation of strategy. As implementation is a very complex endeavor, the success consists of holistic comprehension of these factors and their reciprocal influences within the specific circumstance of the company [23].

Also, there are interesting researches taking advantages of decision-making methods by analyzing and quantifying the magnitude of the changes needed to increase the performance of the organization, based on financial perspectives. By knowing the importance rank of different perspectives (e.g. financial, customer, internal business processes, learning and growth) and related key performance indicators (e.g. cost structure, reduction of cost, useful developments, user satisfaction, cost per use, performance, productivity, delays, quality, budgeting, etc.), the strategic line of the company may establish priorities and may design the process-based model to improve productivity and cost performance [24, 25].

2.3. Sustainability issues and process thinking approach

The studies raised the question of taking advantage of engineering thinking and treating a business and/or organization as a system by which internal and external components are connected and interrelated. The system thinking stressed the concept of business process models by which the organization performance is ultimately determined by the synergetic effect of three levels of performance such as job level, process level, and organizational level. By this way, the perspectives of goals and measurements, designing and implementation organizational issues are successful integrated by the management system [26].

The scientific literature is enriched with plenty of studies attempting to capture, analyze and develop different models which stress the business dimension and the relation between organization performance, business processes and management approach. In this regard, some scholars proposed aligning daily work practices with business process descriptions and improvements by involving stakeholders' through agile business process management methodology through three phases: business process discovery; business process supervision; business process assessment and improvement. The phases are in conformance with the management cycle of plan-do-check-act and consider the organization's dimension and business processes complexity. Also, it was envisaged a meta-model supporting the agile version of business process and practice alignment methodology for business process improvement which captures process information from actual work practices [27, 28].

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Looking at the current state of implementation and application of business process management, the scholars underlined the negative attitude in adopting organizational change to improve the work, the lack of managerial support in adopting the business process improvement, and also the shortage of specialists in process analysis, design, and implementation. Although, process based methodology is well-known and studied, the business sector is still struggling with a high resilience toward changes needed to improve the benefits for customers while reducing the costs of work [29]. Other studies, tackling the social dimension of process thinking, designed meta-models for modeling and executing business process in a collaborative way, including organizational, behavioral, and social perspectives within business process management methodology by knowledge sharing and collective decisions [30]. To further ascertain the efficiency of business process management in a particular manufacturing company, the scholars envisaged key process parameters to map the real value stream in complex business processes such as the economic value added and business process value added calculated on the basis of several production value added index [31].

The adoption of business process management approaches and methodologies in the world of education, especially in HEIs, are slightly studied and analyzed. There are some useful researches in the field of vocational education and training stressing the key role of sustainability assessment framework toward improving the impact on economic, environmental, and social dimensions. The sustainability areas in terms of institutional capacity and management, environmental responsibility, economic performance, social responsibility, training provision with related performance indicators have been appreciated to improve sustainable culture inside the organization, offering valuable information for the adoption of sustainable development strategy [32]. Other emphases were focused on applying the business process modeling methodology in HEI and providing a framework for higher education processes. With a narrow boundary on teaching and learning process evaluation, the model promoted the benefits for competitive universities to manage internal processes similar with enterprises business processes [33].

Likewise, the studies on critical sustainability issues in education emphasized that sustainability concerns and reporting in higher education institutions are still in their early stages. The HEIs need to consider sustainability reporting as a dynamic tool to plan sustainability changes, and not just as a communication activity, requiring thus a systematic and continuous evaluation of economic, environmental, and social concerns. Notably, the absence of an external stakeholder engagement process, the lack of inclusion of material impacts in reports, and the lack of institutionalization are mentioned as main factors hindering the adoption of a systematic reporting process on HEI's sustainability [34].

In order to address the toughest sustainability issues in HEIs are required a thoroughly organizational change to coherently incorporate sustainable development strategy into daily operations. Entrepreneurial universities conceptualize and use innovative educational models to embed international strategy within educational process from value chain and also articulate those processes for effectively managing stakeholders' relationship [35, 36].

With other words, entrepreneurial HEIs create value for all stakeholders ensuring long term competitive advantage by capturing all facets of sustainable development in terms of social, environmental, and economic concerns. This implies each university to design, implement, monitor and further develop coherent and comprehensive mechanisms based on process management approach and actions to stimulate responsible business conduct for innovation and entrepreneurial development of people and wider society.

To integrate the principles and practices of sustainable development into all aspects of education, the paper takes a process thinking view and modeled the process of aligning the sustainability strategy with sustainable development goals (SDGs) in the case of HEI. The methodology applied was based on the well-known SIPOC (Supplier, Input, Process, Output, and Customer) method from Six Sigma approach which helps scope the work to understand the process for aligning HEI's strategy with SDGs [37].

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Regardless of detail level, a process describes a flow of activities that transform inputs elements to outputs elements, and SIPOC enables the graphical representations of the processes, interrelationships, and sequence of steps [38, 39]. In this way, the scope of work is integrated, enabling the analysis of process variations and related metrics for improvements, cycle time, and improvements outputs metric performance, to create well process governance. Table 1 designates the core components of SIPOC method and main descriptors.

Table 1. SIPOC components

Name of component	Descriptors
Supplier	The process and/or other entity providing what is necessary for the process working flow
Input	Different demands (information and/or materials) triggering the process execution
Process	High-level transformation flow performed in response to the inputs
Output	The result (product and/or service and/or information) of the transformation flow
Customer	The process and/or other entity using the results for next steps in the process

The process scoping diagram with SIPOC components usually takes place during improvements projects to provide an outside-in approach on organizational flow, aiming to streamline the processes from the customers' views, in terms of added value. Thereby, this methodology represents a useful means to design and articulate the high-level view of the process of integrating the principles and practice of sustainable development into the educational model of HEIs, clarifying the scope of work for further improvements.

3. Results

The first step aimed to analyze and articulate the high level process groups considering the whole scope of HEI's responsibility as organization and educational institution [40]. In this regard, table 2 depicts the cross-functional structure of HEI processes needed to ensure a clear line of sight between the mission, overall objectives and related governance. The cross-functional structure of HEI covers three process categories which stand for:

1. **Core/value chain Processes Group (CP)** enabling the advancement toward sustainable development of wider society, grounded on three groups of processes: CP 1.1. Research, development and innovation (R&D&I) - responsible for knowledge creation as response to wider challenges of sustained growth; CP 1.2. Academic and teaching operations – in charge with development of relevant and high-quality skills and key competences to foster employability and personal life; CP 1.3. Dissemination of scientific results and technological transfer to market – with a view to maximize the transfer of innovative results to the wider society.
2. **Support and administrative Processes Group (SP)** ensuring effective and sustainable implementation of value chain processes of HEI, with six groups of processes: SP 2.1. Facility management – manage the campus infrastructure, facility housekeeping, and maintenance activities; SP 2.2. Public relations – responsible for communication network with HEI's stakeholders and the wider community; SP 2.3. Financial and accounting –manage financial resources with procedures for general accounting and reporting, payroll system, expense reimbursements, treasury operations, etc.; SP 2.4. Information technology – in charge with ITC network, maintaining and developing virtual educational platform for innovative teaching activities; SP 2.5. Students services and operations – guide students relationships with the university as enrollment, fees, exams records, grants, and other activities; SP 2.6. Human capital development – legal provisions and different procedures for hiring, appraising, rewarding and promoting teaching and administrative staff.

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Table 2. The cross-functional structure of HEI processes.

Process category	Process group sub-category
1. Core/value chain Processes Group (CP)	CP 1.1. Research, development and innovation (R&D&I)
	CP 1.2. Academic and teaching operations
	CP 1.3. Dissemination of scientific results and technological transfer to market
2. Support and administrative Processes Group (SP)	SP 2.1. Facility management
	SP 2.2. Public relations
	SP 2.3. Financial and accounting
	SP 2.4. Information technology
	SP 2.5. Students services and operations
	SP 2.6. Human capital development
3.Management Processes Group (MP)	MP 3.1. Planning value chain and operations
	MP 3.2. Monitor and control value chain operations
	MP 3.3. Monitor and control support operations
	MP 3.4. Quality assurance and improvement

3. **Management Processes Group (MP)** enabling functioning of HEI as an integrated system of social, environmental and economic responsibilities grounded on four groups of processes: MP 3.1. Planning value chain and operations – in charge with yearly planning of academic activities and related support operations; MP 3.2. Monitor and control value chain operations – collect performance information and adopt corrective decisions on value chain activities; MP 3.3. Monitor and control support operations – collect performance information and adopt corrective decisions on administrative sides; MP 3.4. Quality assurance and improvement – ensure the control improvement loops in HEI based on procedures for internal performance evaluation and measurements, being ultimately accountable for engaging HEI on the road of sustainable development.

The second step aimed to create SIPOC diagram, a high-level map of processes, to align the HEI strategy with SDGs, to document high-level steps that bound the process, the information being used, internal and external stakeholders' interrelationships, inputs used in the process steps and outputs produced. The process scope diagram was developed taking into consideration the United Nation Global Compact Management model comprising a high-level guide for organizations committed to SDGs, being articulated and customized in the complex case of HEI, as follows [16]:

- Phase 1. Design alignment strategy of HEI with SDGs, figure 1.
- Phase 2. Direct and manage alignment strategy of HEI with SDGs, figure 2.
- Phase 3. Monitor and control the implementation of strategy, figure 3.
- Phase 4. Report and communicate the progress of HEI against SDGs, figure 4.

Moreover, to ensure coherence and synergies among different process categories as value chain, administrative, and management, the authors designated the interactions with the cross-functional structure of HEI.

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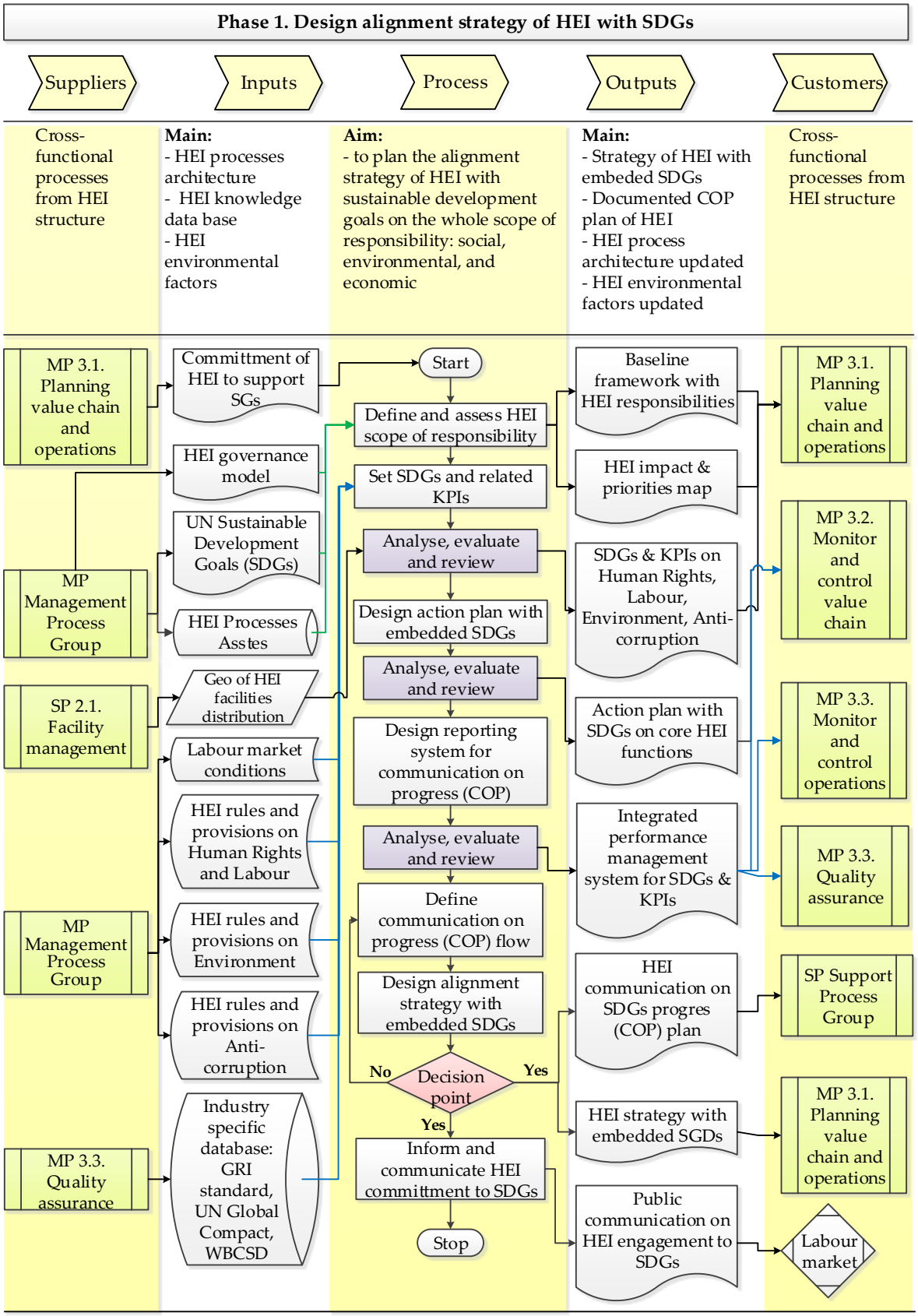

Figure 1. Design alignment strategy of HEI with SDGs (phase 1)

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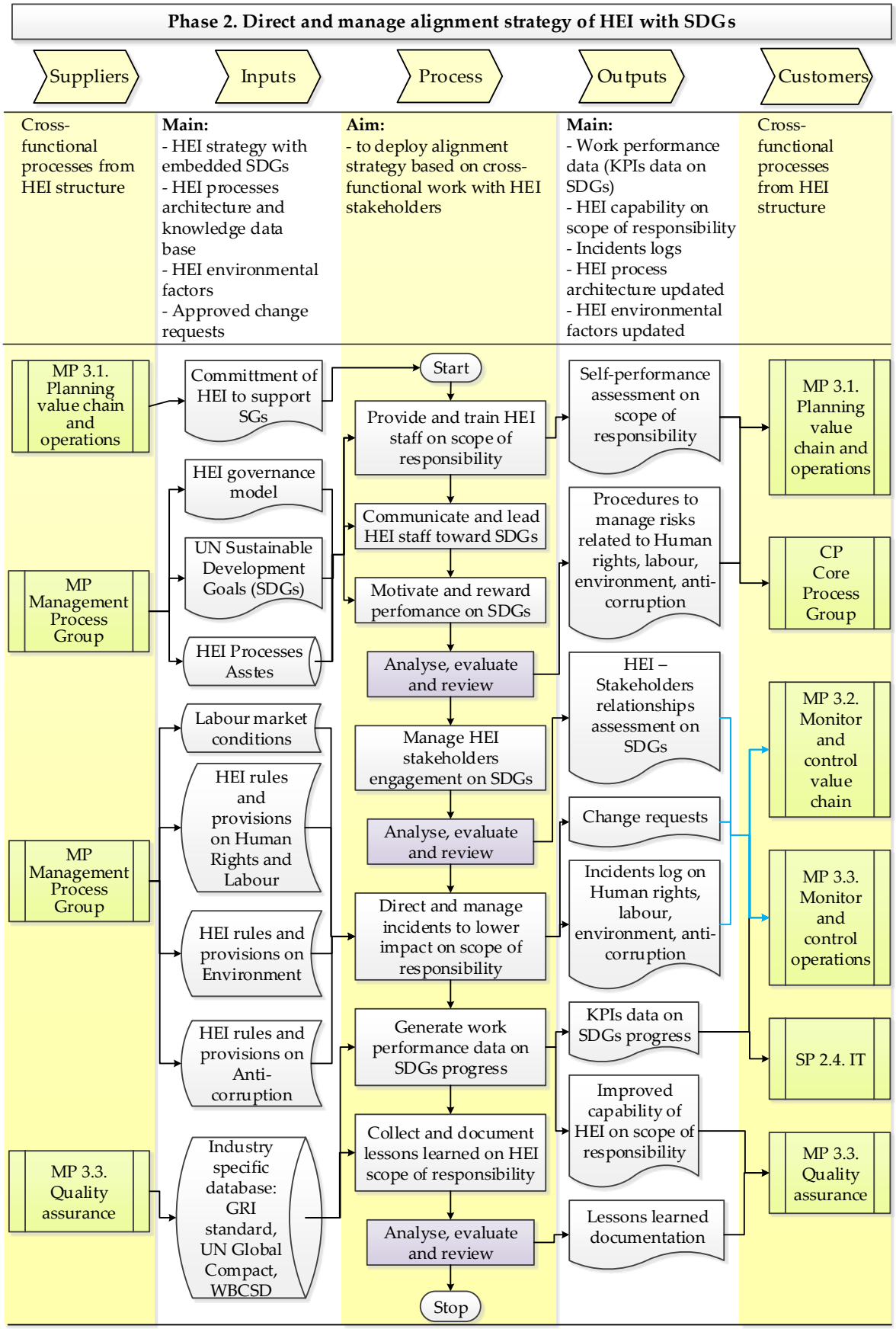

Figure 2. Direct and manage alignment strategy of HEI with SDGs (phase 2)

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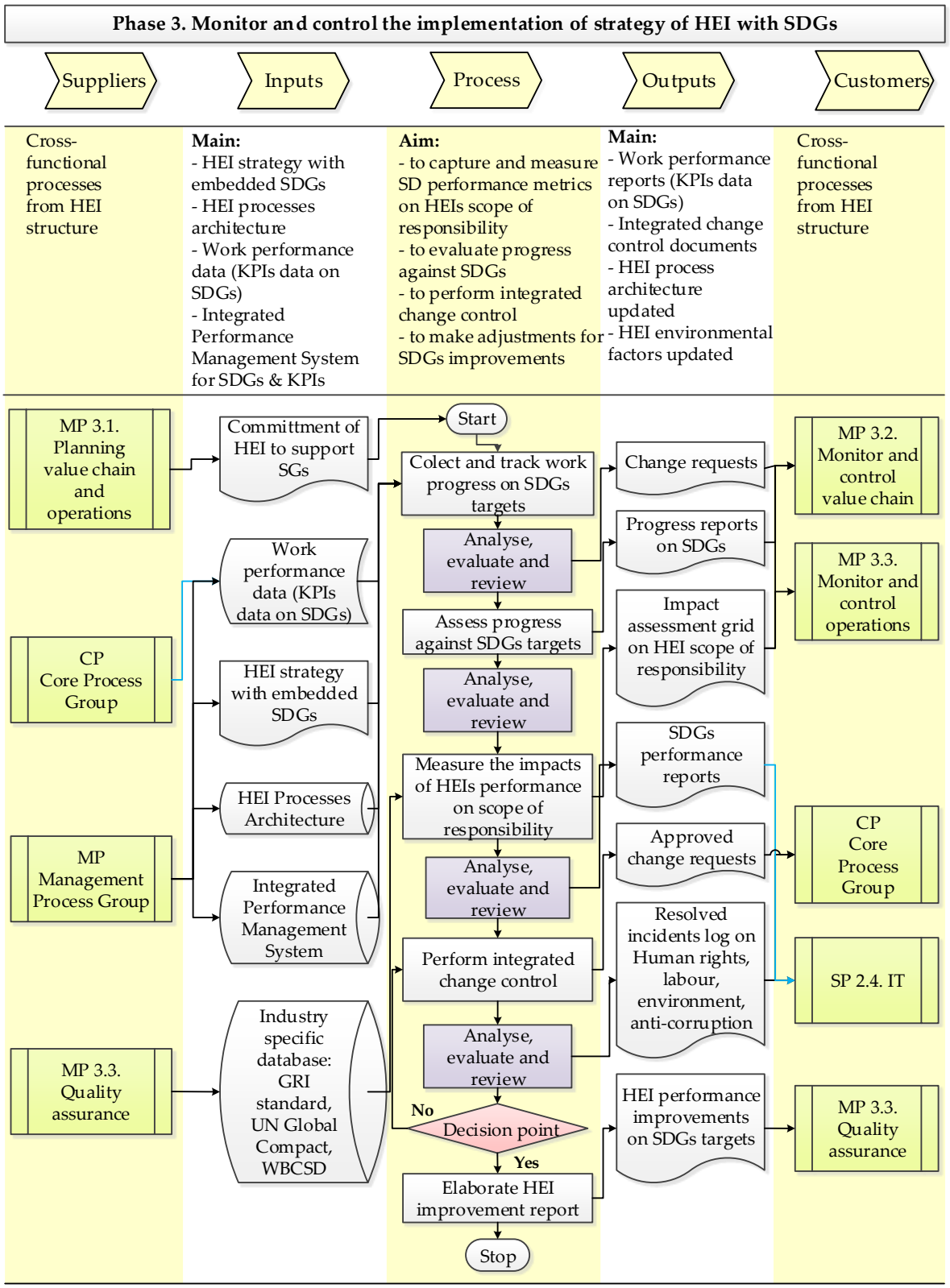

Figure 3. Monitor and control the implementation of strategy (phase 3)

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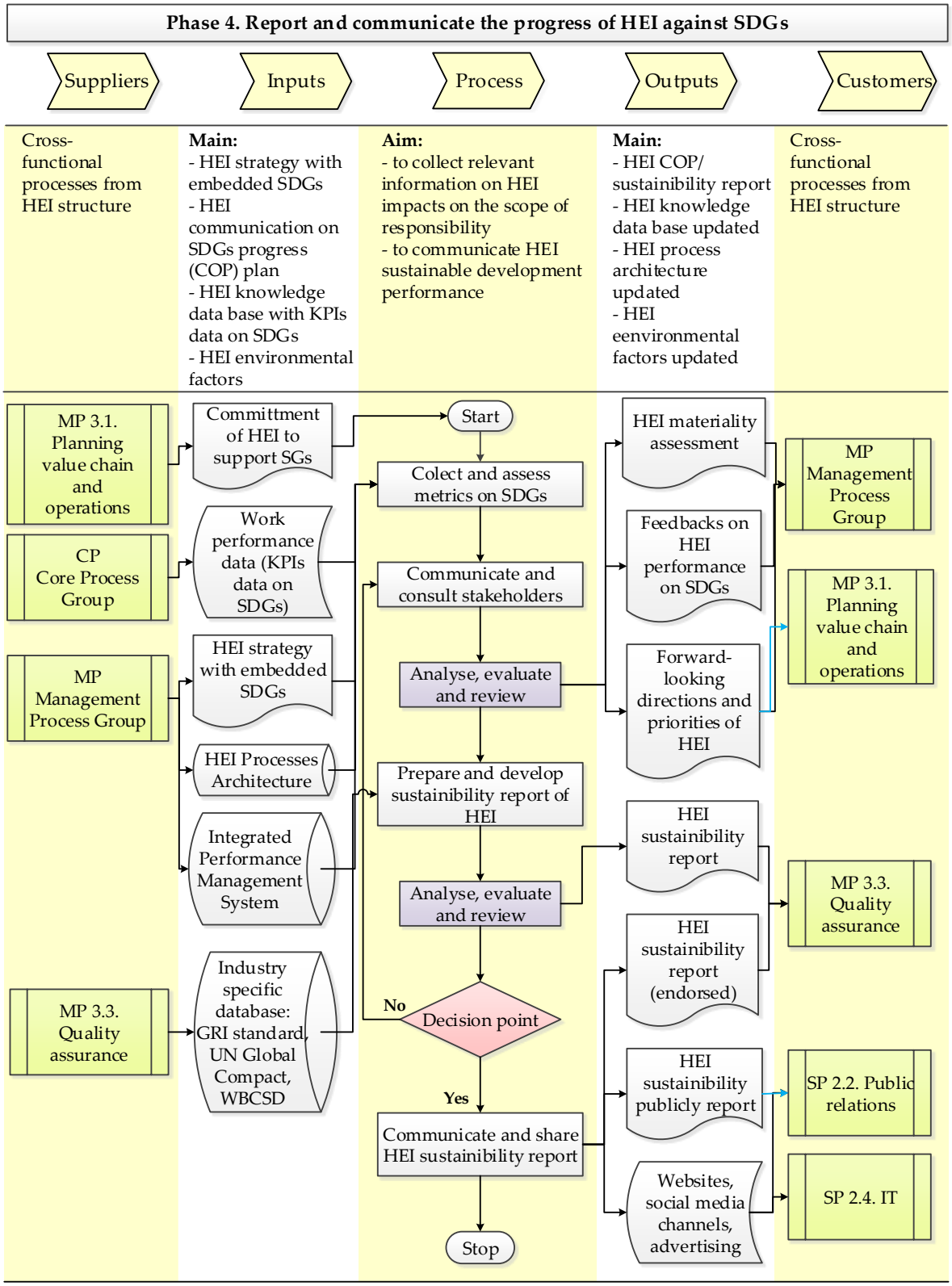

Figure 4. Report and communicate the progress of HEI against SDGs (phase 4)

4. Discussion

The steps embedded in each phase integrate internationally recognized best practices and guidelines in sustainability commitment and reporting, and map the streamlined flow from the inception to the completion point of the planning endeavor required to align the HEI strategy toward SDGs.

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Phase 1. Design alignment strategy of HEI with SDGs aims to provide the workflow to plan the alignment strategy of HEI with SDGs. The starting point of the flow is ensured by the leadership commitment of HEI to support SDGs in a transparently way, being a key output of the planning processes group (MP 3.1.). In order to define the HEI priorities with respect to social, environmental, and economic concerns, the process architect is required to carefully consider the HEI governance model which set the management architecture as organization and school, with its cross-functional structure (tab. 2).

The impact & priorities map would be helpful for understanding the unique operating context of HEI related to its social responsibility (e.g. human rights, labor healthy and safety, personal development and well-being of staff and also of students and graduates, social responsible behavior), environmental responsibility (e.g. energy, climate change, waste and pollution, and other relevant environmental issue), and economic responsibility (e.g. financial transparency and sustainability, anti-corruption, community development, internationalization, and governance).

By assessing the risks and opportunities in financial and non-financial terms, as well as the impact on these critical issues, it will be possible to set the SDGs and related key performance indicators (KPIs). As best practices underlined, in the area of higher education systems four sustainability issues may hinder the adoption of SDGs: human rights, labour, environment, and anti-corruption. Thereby, it would be very beneficial for HEI to establish sets of indicators and metrics for each category (e.g. student admissions, non-discriminations, safe and study conditions, freedom of association for students and staff, hiring and advancement practices, labor policies, environmental programs and policies; green purchasing practices; waste removal and treatment; contracting policies; plagiarism in education and research, and intellectual property issues) [16, 18, 19].

The flow goes on with defining the action plan for achieving related KPIs for each sustainability issue and secondly, with designing the reporting system to be put in place to collect data and information for communication on SDGs progress. The outputs of these designing activities will feed the HEI strategy with embedded SDGs which need to become public after a decision point for endorsement purpose. The scope of work is permanently evaluated through a flow of analysis, evaluation and review activities as preventive actions to reduce the variation of the quality of the outputs envisaged. The customers of the outputs are key processes from the cross-functional map of HEI structure as MP 3.1. Planning value chain and operations, MP 3.2. Monitor and control value chain operations, MP 3.3. Monitor and control support operations, and SP 2.4. Information technology.

Phase 2. Direct and manage alignment strategy of HEI with SDGs provides the scope of work needed to implement the strategy of HEI by integrating the outputs of the phase 1 in the execution flow and by producing main outputs as: work performance data on incidents related to human rights, labor, environment, and anti-corruption; data on SDGs progress; change request, and also lessons learnt documentation.

The phase begins with organizing training of teaching and administrative staff to develop and encourage a right-aware and transparent approach in both educational and operational sides. Also, the process architect is expected to design and implement a mechanism with clear policies and procedures to stimulate and reward the integration of sustainability practices related to human rights, labor, environment, and anti-corruption into daily activities through identifying and managing risks related to these critical issues.

To anchor sustainability across the whole of HEI responsibility (e.g. social, environmental, economic), it would be helpful for HEI to engage in multi-stakeholders partnerships (e.g. *Triple Helix* approach: university-industry-government) in which the university has a predominant role to generate socio-economic development in addition to its traditional role of teaching and research [41]. This implies fully engagement of all partners in setting shared goals with clear governance structure, depoliticizing projects, focusing on impacts, and creating a process for shared knowledge management across the partnership. The importance of this process is fully acknowledged by the goal 17 from the 2030 Agenda for Sustainable Development [1].

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This phase ensures useful data on work performance against SDGs progress and also lessons learnt with critical sustainability issues collected through reporting procedures throughout the phase 3 of monitor and control the implementation of HEI strategy.

Likewise, the implementation flow is permanently evaluated through dedicated activities for analysis and evaluation to diminish the variation of the quality of the outputs which are feeding key processes from the cross-functional map of HEI structure as MP 3.1., MP 3.2., MP 3.3., and SP 2.4.

Phase 3. Monitor and control the implementation of strategy of HEIs with SDGs is mainly intended to collect performance metrics on SDGs and to assess measurements to make improvements based on integrated chance control activities.

The phase is fed by the outputs from directing and managing the alignment strategy (phase 3) such as work performance data on KPIs given by processes from the value chain (CP) and integrated performance management systems, HEI processes architecture and strategy from the management processes group (MP).

The outputs of this phase consist of change requests for improvement purpose on HEI responsibility on social, environmental, and economic dimensions, progress and performance reports on SDGs based on the progress assessment and impact measurement. The approved change requests and the resolved incidents on human rights, labour, environment, and anti-corruption are delivered with the aid of integrated change control activities providing regularly recurring data updates. All these intermediary outputs are finally integrate into the consolidated report on HEI performance on SDGs committed targets and indicators.

This phase is characterized by a high complexity due to the need to coherently concentrate two relevant components for monitoring and controlling: final quality check of the outputs produced during execution (static focus) and ongoing evaluation of work (dynamic focus) related to the way of performing the work, meaning the process itself.

Phase 4. Report and communicate the progress of HEI against SDGs is dedicated to communicate the progress (COP) and to publicly acknowledge the commitment of HEI towards SDGs. Certainly, this phase closes the loop of the sustainability commitment relied in the concepts of public accountability, transparency, and continuous improvement of those HEIs which struggle to become entrepreneurial universities.

The phase is nourished by direct and manages (phase 2), and monitor and control (phase 3), the necessary inputs being extracted from the cross-functional structure of HEIs processes as MP3.1. Planning value chain and operations, CP. Core process group, MP. Management process group with MP 3.3. Quality assurance - having the role of ensuring the reporting and communication processes are in line with widely accepted principles and best practices performance indicators as GRI guidelines [14, 15].

The scope of collecting, preparing and developing sustainability report of HEI is permanently evaluated through a flow of analysis, evaluation and review activities as preventive actions to reduce the variation of the quality of the report. The accent is mainly related to the credibility of sustainability report which requires a thoroughly focus on the completeness and accuracy of information provided, and on the relevance of success and shortcomings for judging the sustainability performance, on the whole scope of HEI responsibility.

Beside this, it would be very helpful for HEI to engage stakeholders in ongoing dialogue to solicit feedback on SDGs performance and to get inputs on future directors by issuing forward-looking directions and priorities of HEI on the scope of sustainability responsibilities.

Followed by a key decision point for endorsement purpose, the endorsement version of HEI sustainability report is sent and used by the support processes SP 2.2. Public relations and SP 2.4. Information technology to become available to the wider public (e.g. students, faculties staff, media, employers, business community and civil society, students, government) through websites, social media channel's, and other advertising modalities.

Through the process scope diagram designed, modeled and analyzed, the authors proposed a process-managed model to address the hottest cross-cutting issue of an entrepreneurial university

striving with internal capacity to adopt and effectively integrate into operations the sustainable developments goals (SDGs).

5. Conclusions

The advancements in the sustainability conceptualization are stressing the comprehensive nature of education for peace and sustainable development, acknowledging thus the growing need of educational agents to empower action to make positive contributions to SDGs.

By taking into consideration the cross-functional structure of HEI processes with core/value chain processes group (CP), support and administrative processes group (SP), and management processes group (MP) which ensure a clear line of sight between the mission, overall objectives and institutional governance, the authors applied the SIPOC method (Supplier, Input, Process, Output, Customer) and used Visio software tool to articulate processes relationships embedded in the educational model leading to the alignment of HEI strategy with SDGs.

Although there is no one-size-fits-all approach, the process scoping diagram embraces all the management loops needed to design, implement, monitor and control, and report the sustainability effort of any HEI, by committing four phases: 1. Design alignment strategy of HEI with SDGs; 2. Direct and manage alignment strategy of HEI with SDGs; 3. Monitor and control the implementation of strategy of HEI with SDGs; and 4. Report and communicate the progress of HEI against SDGs . Also, the process scope diagram represents a flexible mechanism which combines the scope of HEI responsibility (i.e. social, environmental, and economic) with its value chain (research and development, teaching and learning, knowledge exchange and technological transfer).

The limitations of the model rely in answering to the question related to what should be done with respect to sustainability effort. Further steps need to be considered by HEI governance leadership to customize the model according to specific educational circumstances and sustainable developments priorities, to assign human and technical resources needed to implement the process scope diagram through an institutional re-engineering project in that way to identify internal sources of variations related to the metrics assigned to generate improvement opportunities and forward-looking projects.

This improvement approach enables the examination of wider societal developments trends considering the way of information, knowledge and communication are transforming the people understating and expectations, and generate real entrepreneurial universities which take the ownership to address systemic barriers to sustainable development such as unfair practices, inequality and corruption, unsustainable consumption patterns, weak institutional capacity and environmental degradation.

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