

THE ROLE OF SCIENTIFIC RESEARCH ON SUSTAINABLE DEVELOPMENT INTO ORGANIZATIONS

الباحث/
(1) هيثم جودة
الباحثة/
(2) ميسرة أبو دان

ABSTRACT:

Nowadays, the world lives in a rapid development circumstance in all of our life aspects, especially in scientific and research development, which formed the basis for the development of societies. In addition, developed countries began to appear through the results of their efforts and Scientifics and research achievements. On the other hand, the concept of sustainability appeared not so long ago and became one of the most important topics that researchers focused on, as well as major institutions and international companies, and the concept of sustainability became a target of the general and private institutions at the same time. Moreover, with the development of science as well as the development of scientific research methods, there are an abundance of resources and researches that contribute to the development of modern systems, economy, industry, education, etc. Not only do researches contribute to overcome difficulties, but also, they support innovation and direct decision makers' attention for sustainability problems inside organizations as well society. Therefore, everyone, without exception, is striving to get the benefit from this scientific development and to achieve the concept of sustainability, which brings many benefits to those who succeed in this. In addition, this research is identifying the main variables and challenges related to scientific research and their relationship with sustainability, as well as we develop and present a conceptual framework to support the implementation of sustainability in Palestinian institutions, and offer a proposed sustainability model. To accomplish this research, researchers used modern scientific research methods, including the exploratory research method and a meta-review of previous literature in depth to reach the best results that serve the objective of the research and to build on these results.

Key words: Scientific Research, sustainability, development, organizations, Model.

INTRODUCTION:

Most institutions aim to achieve sustainability and sustainable development. Sustainability depends on sustainable development, which means achieving the present needs without affecting the ability to achieve the future needs (Brundtland & Mansour, 2010). Sustainable development also includes organizational (Corporate) sustainability (Engert & Baumgartner, 2016b). (OS) or (CS) is considered the basis of overall sustainable development (SD) in the world, where organizational and institutional growth has achieved great success in the last 200 years (Shrivastava, 1995), and many policy and decision makers in the world depend on (OS) for its great importance (IPCC., 2014).

McKinsey & Company confirmed in a global survey that most organizations do not participate in sustainability management despite knowing its importance (S. Bonini, Görner, & Jones, 2010). This is due to the indefinite duration of investments return and misunderstanding of sustainability fundamentals (Naudé, 2011). According to Klettner, Clarke, & Boersma, 2014, said that There are many reasons for companies to adopt a responsible approach to business, but there are few ways to achieve it. In addition, there are many techniques companies use to integrate different aspects of sustainability, not a single way to manage it as some believe (Nawaz & Koç, 2018). The first step in managing sustainability is the alignment of multidisciplinary goals (Epstein & Roy, 2001; Esquer-Peralta, Velazquez, & Munguia, 2008). The industrialized society depends on science and technology to achieve sustainable economic development (Bradley, 2005; Ware, 2001). The world faces failing of institutional and socio-economic systems problem and other social

THE ROLE OF SCIENTIFIC RESEARCH ON SUSTAINABLE DEVELOPMENT INTO ORGANIZATIONS

problems (Tom Waas, Verbruggen, & Wright, 2010). To solve these problems, we need inventions and modern scientific methods such as university research and other researches, and this is the basis of sustainable development (Tom Waas et al., 2010). Most of the implementation results in scientific practices focus on the process of knowledge production, not its impact, and this is the biggest problem of evaluating the use of knowledge (Lemos et al., 2018; Mach et al., 2020). To achieve the goals of sustainability, there must be a feasible scientific basis. Therefore, knowledge and its uses must be well understood and how they help in achieving sustainability (Arnott & Lemos, 2021).

It has been proven that cooperation between users and producers of knowledge is the basis for the use of knowledge (Clark, Van Kerkhoff, Lebel, & Gallopin, 2016). For this reason, "knowledge systems" were relied on to find out the best ways to strengthen the relationship between users and producers of knowledge, such as increasing the legitimacy, relevance and credibility of the knowledge produced (Cash et al., 2003a). One of the most important global and local organizations that adopt the responsibility of sustainable development are universities with their research. Because of the greater importance of sustainability, universities must make it a top priority and treat it as a "vital response" to this crisis and not just an "academic exercise" (McMichael, Butler, & Folke, 2003). Since the role of sustainability in the development of countries and organizations has been clarified, the discussion about their business-case is not currently relevant (Dyllick & Hockerts, 2002; Kapoor & Sandhu, 2010). Therefore, it is necessary to know 'how' to manage SD for continuous improvement, monitoring and efficient evaluation to ensure effective and efficient implementation and achieve good benefits for stakeholders.

SCIENCE RESEARCH:

For the growth and development of any country today, it needs intellectual and scientific potential (Ibrahimov, 2019). One of the most important advantages that science offers to the country is to reduce the acts of primitive thinking and other negative tendencies that destroy social institutions since antiquity, in addition to providing well-being and improving living conditions (Humbatova & Hajiyev, 2019). Therefore, the most important factors for the progress of regional sustainable development and the solution of its problems are science, technology and other educational potential (Shaw & Allison, 1999). One of the most important features of sustainable development is education, in addition to the potential of technology and science, which is one of the main factors (Bradley, 2005). Universities are the center of sustainable development among the various entities (Cortese, 2003). Globally, higher education is of great importance in sustainable development (Girdzijauskaitė, Radzevičienė, & Jakubavičius, 2019; Hien & Cho, 2018). In the past 20 years, the world has been interested in higher education (especially students and academic scholars) to achieve sustainable development (Hallinger & Chatpinyakoo, 2019). Therefore, providing specialists for sustainable development is the greatest contribution of the education in society, the state and all businesses (Wals, 2014). The American sociologist Earl Robert Babbie emphasized that research is the best way to interpret, analyze and predict the observed event based on a systematic investigation. The research method describes the observed phenomenon, while the deductive methods confirm this event. Qualitative research depends on inductive methods when doing research, while quantitative analysis depends on deductive

methods. New research methods must be discovered when contributing to sustainable development and we should not rely on the same usual methods (Tom Waas et al., 2010).

SUSTAINABLE DEVELOPMENT:

The Brundtland Report in 1987 elaborated the concept of sustainability in several of the most popular definitions by several authors (Tourais & Videira, 2019). Sustainability was first known in Europe in forestry in the 16th century (Burmeister, Rauch, & Eilks, 2012). Despite the ambiguity of sustainability, organizations usually derive their vision from that concept (Tourais & Videira, 2019). Sustainability has two assumptions: first, needs, especially the poor sector; Hence the ability of the planet to meet those needs as well as future needs, given the requirements of society and technology (Schuler, Rasche, Etzion, & Newton, 2017). 195 countries united with the United Nations in the idea of changing the world for a better place since 2015. This can be achieved by integrating and collaborating with governments, NGOs, institutions of higher education and the media to change the world for a better place by 2030. This plan includes: eradicating hunger, poverty and inequality, improving education, health, water and sanitation, industries, innovation and infrastructure, providing welfare, energy affordable and clean, and gender equality, mobilizing sustainable cities and communities, developing and enhancing life and climate, influencing responsible consumption and production, ensuring strong institutions, justice, peace and corporate building (global-movement, 2021). Many universities around the world have adopted this movement since the 1990s (Tom Waas et al., 2010). More than 1,000 academic institutions around the world have agreed to implement sustainability and signed international treaties to do so. This initiative includes research and curriculum development processes, literacy, the "greening" of the physical operation, and collaboration between NGOs, government and industry (Wals, 2014). One of the most important foundations of sustainable development is science (Humbatova & Hajiyev, 2019). Despite the imperative of sustainable development to which all society must contribute, universities are the primary catalyst for its progress (Tom Waas et al., 2010). Despite the fame of sustainable development and the large number of institutions and parties involved in it, it is still questionable about its effectiveness due to the lack of social and environmental consequences and the persistence of its problems (Lankoski, 2016). But contemporary societies consider sustainability as the best solution to solve current and future problems for a better life (Tom Waas et al., 2010). The science of sustainability depends on the interaction between society and the surrounding environment, where scientists believe that knowledge must be mutual between society and science to solve problems (Cash et al., 2003a). Despite this, the foundations of science and sustainability problems are constantly changing around the world (Humbatova & Hajiyev, 2019).

RESEARCH OBJEVTIVES:

The main objective of this research is to identify the main variables and challenges related to scientific research and their relationship with sustainability, as well as attempt to develop and present a conceptual framework to support the implementation of sustainability in Palestinian institutions, and offer a proposed sustainability model. In addition, researchers will seek to provide insights into the main challenges and enabling factors for long-term innovative solutions.

THE ROLE OF SCIENTIFIC RESEARCH ON SUSTAINABLE DEVELOPMENT
INTO ORGANIZATIONS

RESEARCH SIGNIFICANCE:

The importance of the research stems from the fact that it examines the role of scientific research on sustainable development in universities, as well as the importance and criteria of sustainability, as well as the importance of developing scientific research. Moreover, this research seeks to pave the way for researchers to dig in depth to reach an ideal model for achieving sustainability in Palestinian institutions in general and universities in particular.

METHODOLOGY:

Although sustainability concepts are diverse and present in each study such as Corporate Sustainability (CS), Corporate Social Responsibility (CSR), and Organizational Sustainability (OS), it is a controversial issue and these concepts may be interchangeable (Chang et al., 2017; Montiel, 2008). The main objective of this research is the general idea of sustainability in companies, institutions and organizations. Although CSR and CS are different, they have similar concepts. Chang et al. (2017) presented the concept of CS as an evolving concept of CSR. Researchers use OS as equivalent to CS although it is more recent concept as applied in (Batista & Francisco, 2018). Therefore to achieve the objective of the research, the researchers rely to the meta-review method. The meta-reviews of the literature presented the most important challenges in OS research. Studies and research on scientific articles have been developed from a methodological or thematic perspective, and require a comprehensive perspective on OS. These studies were limited to a literature review.

The search for scientific articles in the Scopus database included the following keywords: (1) “sustainability”. (2) “higher education sustainability”. (3) “organizational sustainability”. (4) "corporate sustainability". This search includes article title, keywords, abstract, and to articles classified as reviews. The date of publication of published literature reviews was considered a limitation criterion, with considering only those published since the appearance of the CS concept in the Brundtland Report between 1987 and February 2018.

Table (1) shows the results of the Scopus search. To identify the parts that focus on conducting an effective systematic literature review and OS, a screening exercise was conducted on both the title and abstract of the articles resulting from the research. After examining 27 articles, which are the final set that identified the main challenges of OS research presented below and developed a conceptual framework for them.

Table 1 list of research results

No	Authors	Title	Research interest
1.	(Vandana, Antony, & Alva, 2020)	Information and Communication Technology for Sustainable Development	Sustainable Development Communication Technology
2.	(GarduñoG arcía & Gaziulusoy, 2021)	Designing future experiences of the everyday: Pointers for methodical expansion of sustainability transitions research	Experiential futures Sustainability transitions Everyday experience Immersion Design for

			sustainability
3.	(Lemos et al., 2019)	The Closer, the Better? Untangling Scientist–Practitioner Engagement, Interaction, and Knowledge Use	
4.	(Nawaz & Koç, 2018)	Development of a systematic framework for sustainability management of organizations	Sustainability management system Integrated management systems Management system standards ISO guidelines for sustainable management system Sustainability assessment
5.	(S. Ali, Uppal, & Gulliver, 2018)	Sustainability as a dynamic organizational capability: a systematic review and a future agenda toward a sustainable transition Corresponding	sustainability, dynamic capacities, literature review, eco-capability, management for sustainable development
6.	(Humbatova & Hajiyevev, 2019)	The role of spending on education and science in sustainable development	education; science; spending; sustainable development
7.	(Dhanda & Shrotryia, 2021)	Corporate sustainability: the new organizational reality	Business models; Corporate sustainability; Sustainable business models; Sustainable management
8.	(Nielsen & Thomsen, 2011)	Sustainable Development: The Role of Network Communication	Corporate social responsibility; Network communication; Resource dependence theory; Social network theory; Sustainable development
9.	(A. Ali, 2014)	Social responsibility and sustainability	Organisational sustainability · Corporate sustainability · Meta-review Conceptual framework Stakeholder theory · Value creation · Sustainability · Research review
10.	(Roome &	Journeying Toward Business Models	business models for

THE ROLE OF SCIENTIFIC RESEARCH ON SUSTAINABLE DEVELOPMENT
INTO ORGANIZATIONS

	Louche, 2016b)	for Sustainability: A Conceptual Model Found Inside the Black Box of Organisational Transformation	sustainability; multiple case studies; transformation processes
11.	(Naudé, 2011)	Sustainable development in companies: Theoretical dream or implementable reality?	Future leaders; Keywords sustainable development; Practical implementation
12.	(Chomová, 2021)	Education for Sustainability in Higher Education	education; higher education institutions; sustainable development
13.	(T. Waas, Verbruggen, & Wright, 2010)	University research for sustainable development: definition and characteristics explored	Higher education; Research; Science; Sustainable development; University
14.	(Green, Toms, & Clark, 2014)	Impact of market orientation on environmental sustainability strategy	Environmental sustainability; Market orientation
15.	(Clark et al., 2016)	Crafting usable knowledge for sustainable development	Capacity; Coproduction; Knowledge systems; Science-policy interface; Sustainable development
16.	(Development & Communication, 2013)	Sustainable Development and Green Communication	Sustainable development
17.	(Engert & Baumgartner, 2016b)	Corporate sustainability strategy - Bridging the gap between formulation and implementation	Automotive industry; Corporate sustainability; Corporate sustainability strategy; Corporate sustainability strategy implementation
18.	(Leal Filho et al., 2020)	Universities as Living Labs for Sustainable Development: Supporting the Implementation of the Sustainable Development Goals	Education for sustainable development · Competencies for sustainable development · Higher education · non-elite university
19.	(Engert, Rauter, & Baumgartner, 2016)	Exploring the integration of corporate sustainability into strategic management: A literature review	Corporate sustainability; Corporate sustainability integration; Literature review; Strategic management
20.	(Kourula, Pisani, & Kolk, 2017)	Corporate sustainability and inclusive development: highlights	Sustainability corporate sustainability

		from international business and management research	
21.	(Klettner et al., 2014)	The Governance of Corporate Sustainability: Empirical Insights into the Development, Leadership and Implementation of Responsible Business Strategy	Corporate governance; Corporate responsibility; Corporate social responsibility implementation; Corporate sustainability; Stakeholder theory
22.	(Garduño García & Gaziulusoy, 2021)	Designing future experiences of the everyday: Pointers for methodical expansion of sustainability transitions research	Design for sustainability; Everyday experience; Experiential futures; Immersion; Sustainability transitions
23.	(Cash et al., 2003a)	Knowledge systems for sustainable development	Knowledge sustainable
24.	(C. H. Kuei & Lu, 2013)	Integrating quality management principles into sustainability management	quality management principles; quality-driven sustainability management; sustainability management
25.	(A. Ali, 2014)	Social responsibility and sustainability	Organisational sustainability · Corporate sustainability · Conceptual framework
26.	(Arnott & Lemos, 2021)	Understanding knowledge use for sustainability James	Co-production; Coastal management; Environmental management; Research utilization; Science funding; Science of actionable knowledge; Science policy; Science-practice interaction; Societal impact of science
27.	(Oriade, Osinaike, Aduhene, & Wang, 2021a)	Sustainability awareness, management practices and organisational culture in hotels: Evidence from developing countries	CSR; Developing countries; Hotel industry; Management practices; Organisational culture; Sustainability

Source: This research

PREFACE TO LITERATURE REVIEW.

Many organizations, in the past decade, have made a great effort to include sustainability in their management systems. But it could only include a small part of it in some of its operations to comply with the regulations. Hence, management systems did not include a holistic consideration of sustainability (Nawaz & Koç, 2018). Now, companies have incorporated sustainability into corporate strategies, moving beyond the traditional idea of capitalism and stop focusing only on profitability (Dhanda & Shrotryia, 2021). The application of sustainability in corporate vision has led to many conceptualizations such as sustainable entrepreneurship, sustainability management, corporate sustainability at the organizational level, sustainable innovation and others (Schaltegger & Wagner, 2011). The accumulation of crises has led to shifting the focus of companies to apply sustainable development in their systems (United Nations Industrial Development Organization, 2013; World Business Council for Sustainable Development, 2012 etc.).

This research paper explains everything related to sustainable development, and will focus on clarifying the imperative features of sustainability management. In it, we will rely on synthesizing the extant literature in an organizational way and presenting a conceptual perspective to clarify the role of scientific research in implementing an institute sustainable business model and in the institute sustainability itself.

LITERATURE REVIEW:

Education should be given attention in all companies and include it in their programs, activities and agendas to promote sustainable development. To meet the many environmental challenges facing the planet, the concept of education for sustainable development was established. So, education must keep pace with the knowledge, values, skills and attitudes necessary to contribute to sustainable development (Chomová, 2021). Universities have a great role in sustainable development and the its role in preventing global collapse (Howlett, Ferreira, & Blomfield, 2016; Leal Filho et al., 2018). There are many integrated activities; for example: research, teaching, operations and relationships with local communities that demonstrate sustainability principles. And here are 600 universities in the world that have incorporated the modern concept of education for sustainability (Leal Filho et al., 2018).

To achieve core competencies and good educational outcomes such as: collaborative decision-making, systemic and critical thinking, and taking responsibility for future and present generations, the concept of education for sustainable development was applied (Chomová, 2021). One of the most important definitions of education for sustainability is “a multidisciplinary educational methodology that includes the integrated environment of all curricula "formal and informal", as well as the economic and social aspect of them” (United Nations Educational & (UNESCO), 2014). The researchers propose several solutions to reduce the gap between newly sustained perspective universities and traditional universities. Some of those solutions include: total quality management, research and development budget, institute strategies, and management of powerful and flexible pedagogies. In addition to the verification, correction and transformation steps towards change through the pillars of our proposed SBM.

SCIENTIFIC RESEARCH AND ITS EFFECT ON SUSTAINABLE DEVELOPMENT:

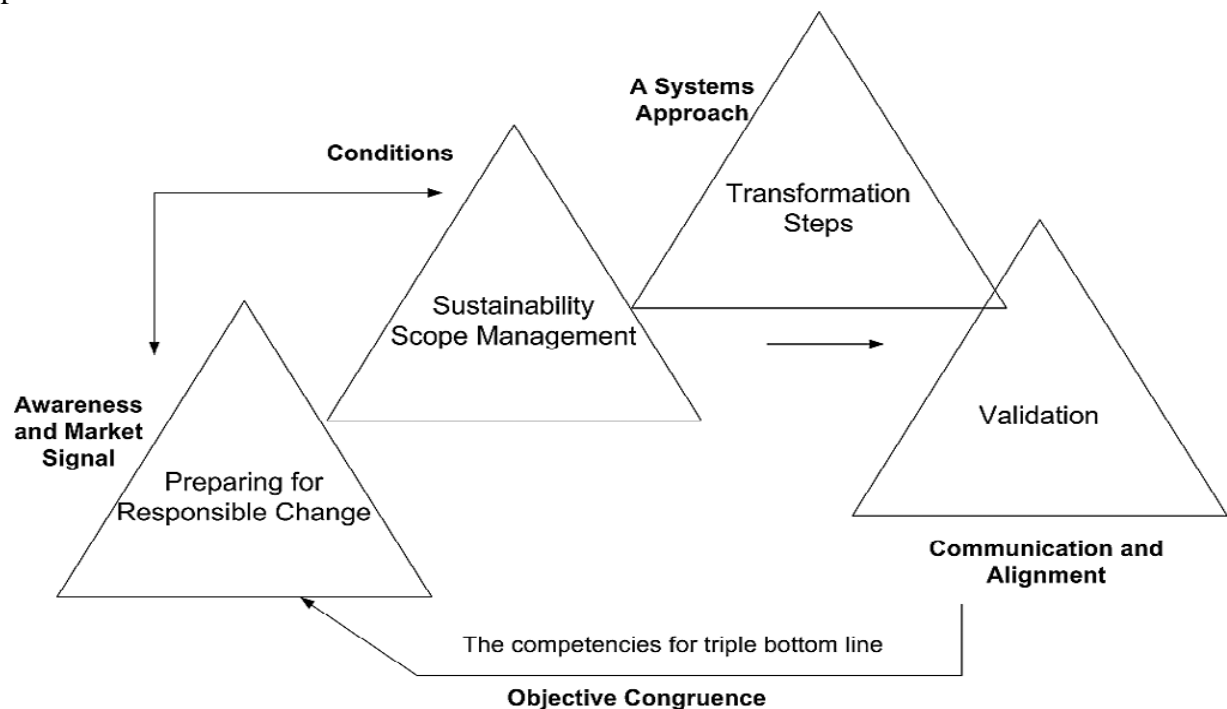
Sustainable development is pervasive in the era of the knowledge economy, information society and information technology development, where platforms are created for creators of commercial and environmental values by means of skilled knowledge management and sub-areas of relationships with stakeholders (Sztangret & others, 2016). Higher education is of great importance in establishing a learning community and in facing education for sustainability. It is concerned with scientific research and scholarships necessary to form the scientific basis for training the future teachers and leaders, in addition to transferring that knowledge to decision-makers and people in general everywhere (T.Wass and others, 2010). That is why scientific research is frequently used to create knowledge to organize sustainability actions and decisions. The production of actionable scientific knowledge can lead to the use of society and knowledge to achieve visions of sustainability. But it may need a deep understanding to use these possibilities to harness science and its contribution to achieve sustainability. In order to know how to use and measure knowledge and its impact, it is necessary to ask a longstanding research question that has essential practical implications for financing and creation of knowledge (Arnott & Lemos, 2021). The growing literature has highlighted that meaningful cooperation in the science of sustainability between knowledge users and producers, in addition to the co-production of knowledge are the basis for the use of knowledge (Clark et al., 2016). It is assumed that, the sustainable development model based on knowledge management in organizations is multifunctional, multi-subject and multi-tool.

SUSTAINABLE BUSINESS MODELS (SBM):

In the long term, the corporate sustainability perception of business plans has shifted from “stories that show how organizations work”(Magretta, 2002) to “a system of related activities that go beyond the focal firm and ranges its boundaries”(Zott & Amit, 2010) to “a business plan that explains data, logic, and other evidence that helps in presenting value to the beneficiaries, and an executable basis for the costs and revenues of the institution that displays that value” (D. J. Teece, 2010). Sustainable business model unifies the triple bottom approach, taking into account many stakeholders' interests such as the environment and society, and do not have a narrow perspective centering around profit only as some believe (Bocken, Short, Rana, & Evans, 2014).

The business model has been considered as a good impression of the organization's strategies (Casadesus-Masanell & Ricart, 2010) because it provides a comprehensive understanding of how the organization work (Tecee, 2010) and value creation (Afuah, 2004). It explains how to integrate and adapt each element of the system to each other taking into account human motives (Magretta, 2002). Based on Roome & Louche, 2016a , the main characteristics of the business model are: value network, which means relationships with the organization's network; value proposition, which means the value provided by the service or product; value delivery and creation, which means the basic resources and activities, technology, channels and patterns that Produce value and how it is distributed; and finally obtaining value and which means the flow of revenues and costs. The business model is used as a basis for initiating enterprise sustainability projects (Schaltegger, Hansen, & Lüdeke-Freund, 2016) where it can strengthen the basis for comprehensive solutions for organizations seeking sustainable achievement (Stubbs & Cocklin, 2008). Achieving a sustainable economy

requires a significant change in business causes, and a change to SBM is the most important path to determine the purpose of value creation and organization (Bocken et al., 2014; Roome and Louche, 2016). By means of quality management standards, sustainability has been managed with great effort (C. H. Kuei & Lu, 2013). Where a close relationship has been developed between the basics of quality management to create quality-driven conceptual SMS. The proposed model in (Figure 1) can be applied to functional business units in addition to operations at the enterprise-wide operations. Kuei and Lu said that the most important step in the readiness for change model of organizational transformation is the first step.



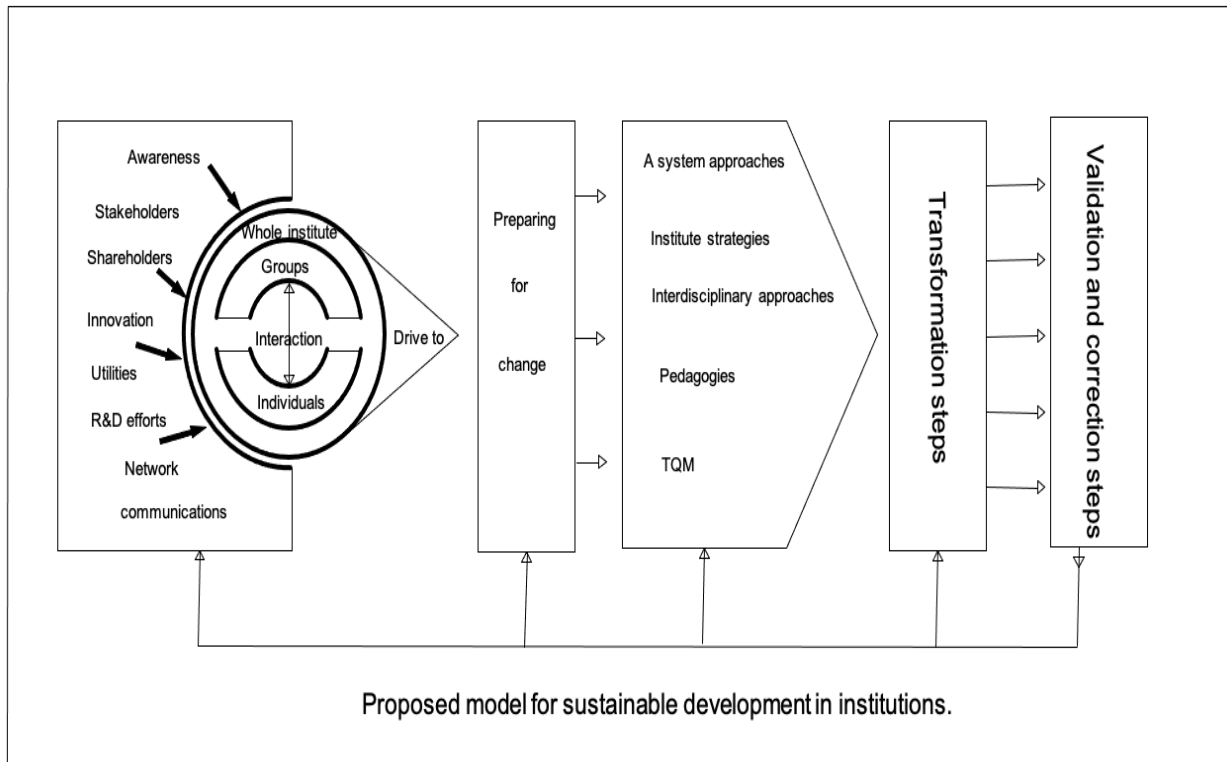
31. Figure 1: Quality driven sustainability management - Based on (Kuei and Lu, 2013).

Roome and Louche (2016) developed another action plan for sustainability through interactions between groups and people in and outside organizations, which relies on 3 components: (1) sharing advanced ideas from outside the organization, (2) implementing and developing the structure within a reconfigured network, (3) Establish collaborative practices and networks to work and learn other insights. This model includes external and internal stakeholders, and the organizational system for sustainability is well illustrated.

THE PROPOSED SUSTAINABLE MODELS

The main objective of this research is to present a comprehensive model for achieving sustainability in higher education institutions. For this reason, in the previous section, previous studies were reviewed and the most important variables that could achieve comprehensive sustainability were reviewed. After the review, it became possible to achieve the goal of this research and present a proposed model to achieve sustainability in Higher education institutions in Palestine according to the most important variables. Figure 2 shows

the variables that were used to build the proposed model, and they are described in detail in the following section:



32. Figure 2: the research proposed model for sustainability

1) Groups and people interactions in and outside organizations.

Interaction within or between organizations varies from making decisions, transmitting information, and changing processes that are not related to partner conditions (Tanner, Bamberg, Baur, & Schumann, 2019). The interactive learning system combines project work, teamwork, study and advice within the organization, in addition to collecting information in global databases. Learning takes place through collaboration between “learning outside the organization”, teamwork and separate “the project within the organization”. The primary internal communication methods for sustainability topics are meetings, the corporate newspaper and the intranet. Honorable (1999, p. 13, in light of Workman, 1993) explains in his strategy implementation research paper that: “One of the most important informal processes within institutions is the communication and interaction between heads and the coalitions of supervisors. It must be looked at the self-interpretation of individuals, the way they work and the understanding of the interrelationships of research institutions, such as the interaction between a decentralized research institution and management, and not just looking at individuals in isolation” (Tapaninaho & Kujala, 2019). However, the interaction of groups and people outside and inside the institution can be affected in the whole institute due to some factors that may make the institute ready for change. Those factors are (awareness, stakeholders, shareholders, innovation, utilities, research and development efforts and network communications). they brought together synergistically to drive change for the Institute to provide support for sustainable development as follow:

- **Awareness.**

Knowledge of the sustainability management literature needs to explain how the activities of organizations and companies affect the environment, which includes the economic and social dynamics of their workplace, and how to mitigate those impacts (Garbie, 2015; Shamir & Howell, 2018). This position proves that increased awareness of sustainability motivates employees to achieve sustainability standards and practices in their work activities. This shows the importance of awareness. Kollmuss & Agyeman, 2002) imagine sustainability (environmental awareness) as information and insights of sustainability and its related issues. Despite this, the concept of sustainability awareness has been clarified and dealt with in different ways in the research. It may be conceptually based on academic and sector orientation such as IT (e.g., Chou & Chou, 2012); manufacturing (e.g., Garbie, 2015) and tourism (Horng, Hu, Teng, Hsiao, & Liu, 2013). There are some terms that are used as a concept of sustainability awareness, such as: environmental knowledge, environmental awareness, and green awareness.

- **Utilities**

Most of the time, the concept of sustainable development is linked to the standards of the social good concept and eco-development in a strategic perspective, highlighting the environmental and economic effectiveness of the ventures (Cash et al., 2003b; Kristjanson et al., 2009). Care must be taken when institutions from the public utilities sector implement these standards. Whereas, institutions that provide utility services promote relationships based on 3 standards of sustainable development (3R) in relationships with representatives of entities supplying commercial use and waste streams to get a long-term sustainable value balancing between economic impact and environmental and social well-being. Accurate information management in an ecosystem that has established a strong basis for satisfaction with consumers' participation and attitudes as well as awareness building and the participation of competent information technology is the reason for the prosperity and progress of this system. The best result in the ecosystem can be obtained by quickly implementing renewable energy use programs, reducing unlisted landfill waste, establishing selective and smart waste collection programs, recycling resources and developing its designated areas, which include organizations that use municipal waste in fuel production, in addition to formally establish a biodegradable waste program. Public utility organizations are interested in developing awareness, spreading knowledge and increasing the interaction of stakeholders in sustainable values creation process (Sztangret & others, 2016).

- **Stakeholders**

Nowadays, organizations in the world are shifting from “increasing shareholder wealth” to “creating value for stakeholders” to take advantage of sustainability, as increasing the longevity of the company amid the challenges that exist around the world depends on the participation of high-level stakeholders. Now, there are many new environmental and social challenges brought about by global supply chains and globalization that are causing organizations to change the way they respond to stakeholder expectations (Shrotyria and Dahana, 2021). This study focused on the holistic form of organizational culture, in addition to its focus on both external and internal stakeholders, not just internal stakeholders

(employees and managers) such as (Jaakson, Vadi, & Tamm, 2009). Sustainability management consists of a set of factors (ranging from sustainability benefits to its risks and various degrees of avoidance) that affect many stakeholders, such as its impact on the willingness of employees to implement and their awareness (Oriade, Osinaike, Aduhene, & Wang, 2021b). Partnerships between organizations, stakeholders, and customers determine business sustainability models and their profitability. To create sustainable value, stakeholders must collaborate in building a participatory process based on the aspirations and needs that most stakeholders agree on (Shrotyria and Dahana, 2021). It has been proven that the institution's relationship with stakeholders such as customers (Bhattacharya & Sen, 2004) and (Luo & Bhattacharya, 2006), its employees (Bode, Singh, & Rogan, 2015; Burbano, 2016) and investors (Cheng, Ioannou, & Serafeim, 2014; Ioannou & Serafeim, 2015) is significantly affected by sustainability.

- **Shareholders**

institutions greatly affect the ecosystem, positively or negatively, as they are an indispensable part of the society. Before that, it was believed that institutions only contribute to providing jobs and increasing society's profits due to their commitment to their social responsibility in society. This belief came from the saying that the purpose of institutions is to create wealth for shareholders only (Shrotyria and Dahana, 2021). As for value, it has been defined as not only limited to shareholders, but also involved in the well-being of stakeholders affected by the institutions' activities in society (Parmar et al., 2010). To create new growth opportunities, greater societal impact, and sustainable returns for shareholders, "sustainable competitive advantage" must be combined with "sustainability" and this is what visionary leaders think (Shrotyria and Dahana, 2021).

- **Innovations**

In the past, through many innovations and initiatives in many fields such as technology, science, business administration and policy making, great efforts were made to solve the problem of sustainable development (L. Bonini et al., 2010; Gladwin, Kennelly, & Krause, 1995; Lee, Kumagai, & Dunphy, 2007). To stimulate the creation of innovation in integrated sustainability management, (Rebelo, Santos, & Silva, 2016) "connect" four MSSs (ISO9001, ISO14001, OHSAS18001, and NP44578) by process-based integration. The importance of this contribution is due to the fact that one of the factors involved in the integration process is the management of innovation and research. Innovation may be attracted to traditional management methods by this integration. The authors mentioned above have relied on independent or complementary systems to present the components of sustainability management after working collectively on it. From the above discussion it can be inferred that the key elements of SMS contain sustainable values commitment, organization and leadership, stakeholder participation, implementation of sustainable development issues, interdisciplinary integration, tight strategy reset for short- and long-term goals, innovation, contextualization, adaptive management, monitoring, Continuous assessment, reporting, improvement and learning. Systematically assessing sustainability risks is responsible for establishing sustainability goals. The goals should expand as much as possible and not be limited to the available resources only, because this will lead to positive investments and innovation (Nawaz and Koç, 2018).

- **Build network Communication**

Opinion leaders disseminate information indirectly to the public through a two-step flow process from network communications. This process combines interpersonal and mass communication (Windahl, Signitzer, & Olson, 2008). Despite this, “personal communication has a greater capacity than mass communication to effect and influence change” (Windahl et al., 2008). Structured information is disseminated as a network that connects members of the network to each other personally, by this the network is created in network communications (Nielsen & Thomsen, 2011). (Morsing & Schultz, 2006) said that sense-making is the basis for communication with stakeholder and their proposal for CSR efforts. Where network members help each other and share information to solve complex issues when they interact with each other on the network. One of the most important components of network communication is the mutual understanding inspired by the Roger and Kincaid (1981) model of convergence communication, and (Grunig, Grunig, Sriramesh, Huang, & Lyra, 1995) dialogical approach to deal with public relations, where communication is not seen as a simple transmission act but as a dynamic process. The corporate newspaper, intranet and meetings are the main internal communication channels for sustainability. Noble's (1999, p. 13, based on Workman, 1993) research on strategy implementation states that: "The basic informal process is communication and interaction between managers and the coalitions of managers in an organization". Sustainability themes require constantly realized meetings and interactions, as they are cross-departmental themes (Engert & Baumgartner, 2016a). Organizations can manage the crises of their external environment and obtain and maintain the external resources they need by making use of networks (Nielsen, E. and Thomsen, 2011).

- **Reputation**

To study the company's reputation, a variety of approaches are used, such as: information theory (Milgrom & Roberts, 1986), game theory, (Kreps & Wilson, 1982), the theory of organizational effectiveness (C J Fombrun & Shanley, 1990), transaction cost theory (Charles J Fombrun, 2005), agency theory (Jensen, 1994), and the resource-based view (Hall, 1992), (Barney, 1991). Since the 1990s, the resource-based view has been heavily relied upon to reinforce the corporate reputation hypothesis, which is a multidisciplinary concept that can be used as a resource to obtain a sustainable competitive advantage for companies. Hall (Hall, 1992) admitted that the principal intangible asset for managers is reputation. (D. Teece & Pisano, 2003) said that the most important source of information for an organization's suppliers, customers, and competitors is reputation. The strategic implementation of sustainability is of great importance to institutions, as it is the intangible basis directly related to the creation of wealth in the long and medium term, and to building a better image and good reputation for the company, in addition to the satisfaction of stakeholders. Accordingly, the company's core business is incorporated into the CSR criteria (Cochran, 2007), (Soriano & Dobon, 2009). Each member of the network participates in building the prestige and reputation of the company through interdependent relationships. To improve the reputation of the company in stakeholder's eyes such as customers, employees, investors, owners, citizens, etc., in addition to obtaining better financial results, the policy of transparency and open door was relied on (Nielsen, E. and Thomsen., 2011).

- **Research and development efforts**

To achieve sustainability, it is necessary to rely on development and research to demonstrate and develop cleaner technologies (Environment Fact Sheet, EUROPEAN COMMISSION) by providing the required tools to analyze the effectiveness of various policy options to help assess and understand unsustainable patterns. Some say that all the resources of the planet are being consumed excessively at the present time, and the only way to increase the resources of enterprises is to take them through competition in the market from other enterprises. Thus, there are two alternative ways of development: first, the good use of available environmental resources by using resources effectively in the least amount possible, and second: replacing them with other resources of financing and employment. But both methods need technical development to use them, so technological development, or what is called sometimes "development and research", are the basic requirements for sustainable development so that enterprises can continue to exist (Aras & Crowther, 2009).

2) Preparing for Change

Sterling (2011) emphasized that to achieve change in sustainability education, we rely on 3 levels of strong to weak perspectives of sustainability. organizational change processes in higher education institutions are as important in integrating sustainability as competencies for sustainable development (Stough, Ceulemans, Lambrechts, & Cappuyns, 2018). According to (Ramos et al., 2015), the changes consequent to integrating sustainability into university curricula have been slow and very few despite the many efforts in integrating them (Watson et al., 2013). (Chomová, 2021), said that change depends on two steps: first, change within a special area and trust in the beliefs and assumptions of learners to improve current systems as their goal to "improve the way things work", secondly, "do the best things". Thus, the first thing that learners should do is to critically review or even change their values. Where the students review all the information they previously learned from a critical perspective, and this is a great challenge for them. Sterling (2011) described the third level of change as "different vision of ordinary things" and it is more difficult than before as it requires a paradigm change. This guiding principle proves that the cycle of change is constantly revolving without end (Chu-hua Kuei & Min H. Lu, 2021). Being well prepared for change is the biggest challenge for organizations when shifting to a sustainable development model (Shrotyria and Dahana, 2021). When organizations are considering effective change for long-term success, they must know that "in-unit support" is far more important than "cross-unit support" (Winkler, 2010). To prepare for the change, one must work within the institute's system curriculum through: (institute strategies, pedagogies, total quality management, budget for research, and interdisciplinary methodology) as follows:

- **Institute strategies**

Present managers must respond to 7 critical areas in managing the scope of sustainability, including: change agents, external and internal pressures, vision, required functions, risks, enablers of strategy, and validation/reflections, to enhance competitive positioning and value, in addition to achieving expected corporate outcomes (C. H. Kuei & Lu, 2013). We can take advantage of the characteristics and complexities of the use and knowledge production intersection, and become more manageable if they are adopted rather than ignored or reduced, despite the strategies promise to reduce the implementation time of sustainability science such as knowledge co-production (Arnott & Lemos, 2021).

- **Total quality Management**

For some, quality lies in beholder eyes, but for most institutions, it is considered as conforming to specifications. (C.-H. Kuei, Madu, & Lin, 2008) see it as the result of quality management. Therefore, one of the most important input factors is the QM. The most widespread and well-known quality management initiative around the world is Total Quality Management (TQM). Total quality management is concerned with developing capabilities, reducing variance and achieving better performance, in addition to cultural transformation and employment fulfillment (Foster Jr & Ogden, 2008; Miguel & Santiago, 2010; Psychogios & Priporas, 2007).

- **Flexible and strong pedagogies.**

The goal of most pedagogies transformative learning in higher education institutions for Sterling (2011) is to disseminate science, not to challenge learners' beliefs and models (Chomova, 2021). pedagogies for SD require more work in linking them to the competencies of sustainable development according to the following principles;

- Widespread: The use of pedagogical methods that can be used in many contexts and disciplines (lectures, interdisciplinary group teaching, case studies, problem or/and project-based challenges, and concept and mind maps) as well as being broadly applicable;
- Social justice and community: developing specialized educational methods for building community and addressing social justice (participatory action research, jigsaw/interlinked groups, community service learning);
- Environmental Education: Teaching methods emerging from environmental education practices and other environmental sciences (place-related environmental education, local area and eco-equity, traditional biological information, and life-cycle/ store network analysis) (Rodrigo Lozano and others, 2017). Scott (2002) places a variety of responsibilities on teachers: (1) helping students expand their thinking on issues of different cultural situations; (2) help them understand the importance of sustainable development; (3) prompting them to think about what they should do, separately or as a group, to increase their range of choices; (4) Using appropriate teaching methods from their different interests to understand the importance of what they are studying, and thus their awareness of different issues increases and expands. The substance, teaching methods, and learning outcomes of higher education institutions are all influenced by the individual values of academics. According to (Thomas, 2016), the way academics respond to recommendations to instruct for manageable turn of events and develop their disciplines is greatly influenced by their individual values.

- **Interdisciplinary Approach.**

17 goals were adopted in September 2015 for sustainable development by the United Nations General Assembly (leaders of 193 countries around the world) as an action plan that can change the world by 2030 (prosperity, planet and people): accessible on the Internet as the Sustainable Development Goals (<http://www.un.org/sustainabledevelopment/sustainabledevelopment-goals>). The Sustainable Development Goals (SDGs) are a plan for achieving a more sustainable and better future for the world. It also faces the problems that the world suffers, such as the quality of education.

The studies of the seventeen sustainable development goals are systematically interconnected with each other and appear in many academic disciplines (Chen, Ng, Corriveau, Yang, & Harris, 2020), (Russell, Lee, & Clift, 2018). To advance sustainable development and achieve a better life for people, A multidisciplinary approach is required in education for sustainable development [UNESCO. Global Guide for Implementation of the Education for Sustainability Program; United Nations Educational, Educational, Scientific and Cultural Organization: Paris, France, 2014]. The world must think about student education, especially methodologies for sustainability skills development, despite the good progress in integrating higher education studies with sustainable development (Lozano, Barreiro-Gen, Lozano, & Sammalisto, 2019). In addition to the need of the world to develop other skills such as problem solving, interdisciplinary thinking, holistic thinking and teamwork (Klaassen, 2018), (Spelt, Biemans, Tobi, Luning, & Mulder, 2009). In higher education, interdisciplinary thinking has been very limited until recently [Spelt, E.J.H and others, 2009]. Despite this, numerous papers have emerged over the last twenty years outlining the experiences of interdisciplinary approaches and university teaching projects [Klaassen, R.G., 2018], (Power, E.J; Handley, J, 2017).

Because we cannot meet global challenges without it, and according to (Ledford, 2015) it is necessary that “people of diverse experience and skills come together, as no one has all what is required. Therefore, a multidisciplinary approach must be integrated into all phases of the curriculum. To achieve this approach, student and faculty teams must be formed by linking different disciplines together to enrich the overall educational experience [Jones, C., 2019]. However, progress in implementing this approach is still very slow and more effort is required, despite the significant progress in the development of innovation, interdisciplinary research and interdisciplinary teamwork (Klaassen, R.G., 2018), (Stentoft, 2017).

3) TRANSFORMATION STEPS TO CHANGE:

Dependence on sustainability in higher education should encourage inter and transdisciplinary approaches (Remington-Doucette, Connell, Armstrong, & Musgrove, 2013; Segalàs, Ferrer-Balas, & Mulder, 2009; Sterling, 2013), reflections and ethical debates (Howlett et al., 2016), practice and theory integration (Moore, 2005), and the adoption of critical thinking (Ferrer Balas et al., 2009; Howlett et al., 2016). Academics and faculty must commit to transforming education for sustainability. The change in methods and content can be implemented thanks to their motivation, efforts and innovative ideas. Most of the time, higher education institutions do not support academics wishing to include sustainable development standards in their academic activities, in addition to not providing them with appropriate incentives (Hoover & Harder, 2015), as most efforts and support come from committed academics (Krizek, Newport, White, & Townsend, 2012). To integrate sustainability into higher education organizations, it is necessary to take advantage of all university curricula, integrating multiple functions such as research, campus operation, teaching, and strategies aimed at knowledge holders and communities, and their participation (Ramos et al., 2015; Sterling, 2013).

4) Validation and correction steps.

The most important focus of the fourth QM standard is harmonization and effective communication in planning and implementation. Companies should constantly review

activities and tasks to ensure that: (1) activities and tasks are well coordinated and planned to achieve operational goals, and (2) stakeholders understand what the organization doing. Performance reports are relied upon to do that (Holcomb, Upchurch, & Okumus, 2007; Madu & Kuei, 2012). Administrators can ensure the success of the new organization over the old one by monitoring sustainability and corporate responsibility reports. The systematic use of performance reports will provide organizations with quick reactions to the dynamic and complex difficulties in the global environment (Lin, Kuei, Madu, & Winch, 2010). Lo & Sheu, (2007) indicates that to implement this, it is necessary to rely on the Dow Jones Sustainability Indicators to measure the validity of the procedures, models and processes used, and this practice can be benefited from after, during and before the change. Therefore, the boundaries, work contents and scope will be challenged to spread sustainability at multiple levels. SM's quality-driven focus on the triple main concern would be incomplete without such a challenge (C. Kuei & Lu, 2013).

Conclusion

This research focused on clarifying the most important factors for transition of institutions to sustainability. Therefore, a comprehensive literature review was conducted focusing on CS and OS which provided the basis for building a conceptual framework. This basis defines the most important research paths to be followed, and thus develops future research and contributes to the literature. The first of these paths is the definition of sustainability and the default basis that organizations use in implementing their strategies. Institutions must define the concept of sustainability in their organizational reality because of its high value. The path that the organization will then depend on will be influenced by that definition of the transition towards sustainability through stakeholder involvement, conditioning awareness, utilities, stakeholder, innovation, development endeavors, research, organization strategies, network communications, and interaction between the organization's group and individuals. Another emerging topic in this research is the creation of new tools that organizations rely on to build a shared vision of sustainability, in addition to the following change in operations.

Researchers and institutions face a challenge in knowing the required procedures to be followed to implement this transition from an integrated perspective, taking into account the concept of broad organization and the dimensions of sustainability, where stakeholders take priority. Thus, we conclude that institutions adopt and integrate a comprehensive concept of sustainability in the change process while simplifying methods. One of the most important challenges facing organizations is the long-term perspective of sustainability due to the difficulty of anticipating a specific dynamic approach on many levels. Continuous change is determined externally and internally by the evolution of the organization and consideration of the dynamics of the concept of sustainability. In addition to studying the interaction and participation of stakeholders from a fixed perspective. To make organizations consider this characteristic and take it into account, they must rely on innovative and improved innovative processes, as the demand of stakeholders is very dynamic. From a more internal viewpoint, innovation is one of the most important factors in enhancing learning, developing the organization and allowing it to explore its capacity according to a dynamic perspective. The biggest challenge in institutions is to take into account all the issues mentioned above when

transiting institutions to sustainability and support them. Organizations should assist in the transition to the desired sustainability and enhance innovative adaptive capabilities, rather than relying on a single solution when deciding transition ways so that it can be a dynamic and flexible transition that suits all institutions.

References:

1. Ibrahimova, K. (2019). Influence of innovations on economic development in Azerbaijan.
2. Afuah, A. (2004). *Business models: A strategic management approach*. McGraw-Hill/Irwin.
3. Ali, A. (2014). *Social responsibility and sustainability. Business Ethics in Islam*. <https://doi.org/10.4337/9781781006733.00016>
4. Ali, S., Uppal, M. A., & Gulliver, S. R. (2018). A conceptual framework highlighting e-learning implementation barriers. *Information Technology and People*. <https://doi.org/10.1108/ITP-10-2016-0246>
5. Aras, G., & Crowther, D. (2009). Making sustainable development sustainable. *Management Decision*.
6. Arnott, J. C., & Lemos, M. C. (2021). Understanding knowledge use for sustainability. *Environmental Science and Policy*, 120, 222–230. <https://doi.org/10.1016/j.envsci.2021.02.016>
7. Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, 17(1), 99–120.
8. Batista, A. A. da S., & Francisco, A. C. de. (2018). Organizational sustainability practices: A study of the firms listed by the corporate sustainability index. *Sustainability*, 10(1), 226.
9. Bhattacharya, C. B., & Sen, S. (2004). Doing better at doing good: When, why, and how consumers respond to corporate social initiatives. *California Management Review*, 47(1), 9–24.
10. Bocken, N. M. P., Short, S. W., Rana, P., & Evans, S. (2014). A literature and practice review to develop sustainable business model archetypes. *Journal of Cleaner Production*, 65, 42–56.
11. Bode, C., Singh, J., & Rogan, M. (2015). Corporate social initiatives and employee retention. *Organization Science*, 26(6), 1702–1720.
12. Bonini, L., Rozzi, S., Serventi, F. U., Simone, L., Ferrari, P. F., & Fogassi, L. (2010). Ventral premotor and inferior parietal cortices make distinct contribution to action organization and intention understanding. *Cerebral Cortex*, 20(6), 1372–1385.
13. Bonini, S., Görner, S., & Jones, A. (2010). How companies manage sustainability: McKinsey Global Survey results. *McKinsey Quarterly (March)*.
14. Bradley, J. D. (2005). Chemistry education for development. *Chemical Education International*, 7, Retrieved from the World Wide Web, July 01, 2011.
15. Brundtland, G. H., & Mansour, K. (2010). World Commission on Environment and Development (WCED). 1987. *Our Common Future*, 2010.
16. Burbano, V. C. (2016). Social responsibility messages and worker wage requirements: Field experimental evidence from online labor marketplaces. *Organization Science*, 27(4), 1010–1028.
17. Burmeister, M., Rauch, F., & Eilks, I. (2012). Education for Sustainable Development (ESD) and chemistry education. *Chemistry Education Research and Practice*, 13(2), 59–68.
18. Casadesus-Masanell, R., & Ricart, J. E. (2010). Competitiveness: business model reconfiguration for innovation and internationalization. *Management Research: Journal of the Iberoamerican Academy of Management*.
19. Cash, D. W., Clark, W. C., Alcock, F., Dickson, N. M., Eckley, N., Guston, D. H., ... Mitchell, R. B. (2003a). Knowledge systems for sustainable development. *Proceedings of the*

THE ROLE OF SCIENTIFIC RESEARCH ON SUSTAINABLE DEVELOPMENT
INTO ORGANIZATIONS

- National Academy of Sciences of the United States of America*, 100(14), 8086–8091. <https://doi.org/10.1073/pnas.1231332100>
20. Cash, D. W., Clark, W. C., Alcock, F., Dickson, N. M., Eckley, N., Guston, D. H., ... Mitchell, R. B. (2003b). Knowledge systems for sustainable development. *Proceedings of the National Academy of Sciences*, 100(14), 8086–8091.
 21. Chang, R.-D., Zuo, J., Zhao, Z.-Y., Zillante, G., Gan, X.-L., & Soebarto, V. (2017). Evolving theories of sustainability and firms: History, future directions and implications for renewable energy research. *Renewable and Sustainable Energy Reviews*, 72, 48–56.
 22. Chen, E. E., Ng, C. T. K., Corriveau, K. H., Yang, B., & Harris, P. L. (2020). Talking about personality: Evidence for attributions to self and others in early childhood. *Journal of Cognition and Development*, 21(2), 191–212.
 23. Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. *Strategic Management Journal*, 35(1), 1–23.
 24. Chomová, K. (2021). Education for Sustainability in Higher Education. In *21st International Joint Conference Central and Eastern Europe in the Changing Business Environment*: <https://doi.org/10.18267/pr.2021.krn.4816.5>
 25. Chou, D. C., & Chou, A. Y. (2012). Awareness of Green IT and its value model. *Computer Standards & Interfaces*, 34(5), 447–451. <https://doi.org/https://doi.org/10.1016/j.csi.2012.03.001>
 26. Clark, W. C., Van Kerkhoff, L., Lebel, L., & Gallopín, G. C. (2016). Crafting usable knowledge for sustainable development. *Proceedings of the National Academy of Sciences of the United States of America*, 113(17), 4570–4578. <https://doi.org/10.1073/pnas.1601266113>
 27. Cochran, P. L. (2007). The evolution of corporate social responsibility. *Business Horizons*, 50(6), 449–454.
 28. Cortese, A. D. (2003). The critical role of higher education in creating a sustainable future. *Planning for Higher Education*, 31(3), 15-22.
 29. Development, S., & Communication, G. (2013). *Sustainable Development and Green Communication*. *Sustainable Development and Green Communication*. <https://doi.org/10.1057/9781137329417>
 30. Dhanda, U., & Shrotryia, V. K. (2021). Corporate sustainability: the new organizational reality. *Qualitative Research in Organizations and Management: An International Journal*, (November 2020). <https://doi.org/10.1108/QROM-01-2020-1886>
 31. Dyllick, T., & Hockerts, K. (2002). Beyond the business case for corporate sustainability. *Business Strategy and the Environment*, 11(2), 130–141.
 32. Engert, S., & Baumgartner, R. J. (2016a). Corporate sustainability strategy--bridging the gap between formulation and implementation. *Journal of Cleaner Production*, 113, 822–834.
 33. Engert, S., & Baumgartner, R. J. (2016b). Corporate sustainability strategy - Bridging the gap between formulation and implementation. *Journal of Cleaner Production*, 113, 822–834. <https://doi.org/10.1016/j.jclepro.2015.11.094>
 34. Engert, S., Rauter, R., & Baumgartner, R. J. (2016). Exploring the integration of corporate sustainability into strategic management: A literature review. *Journal of Cleaner Production*, 112, 2833–2850. <https://doi.org/10.1016/j.jclepro.2015.08.031>
 35. Epstein, M. J., & Roy, M.-J. (2001). Sustainability in action: Identifying and measuring the key performance drivers. *Long Range Planning*, 34(5), 585–604.
 36. Esquer-Peralta, J., Velazquez, L., & Munguia, N. (2008). Perceptions of core elements for sustainability management systems (SMS). *Management Decision*.
 37. Fombrun, C J, & Shanley, M. (1990). Keeping score: institutional assessments of corporate

- performance. *New York University, Graduate School of Business Working Paper*.
38. Fombrun, Charles J. (2005). The leadership challenge: Building resilient corporate reputations. *Handbook on Responsible Leadership and Governance in Global Business*, 54, 68.
 39. Foster Jr, S. T., & Ogden, J. (2008). On differences in how operations and supply chain managers approach quality management. *International Journal of Production Research*, 46(24), 6945–6961.
 40. Garbie, I. H. (2015). Sustainability awareness in industrial organizations. *Procedia Cirp*, 26, 64–69.
 41. Garduño García, C., & Gaziulusoy, İ. (2021). Designing future experiences of the everyday: Pointers for methodical expansion of sustainability transitions research. *Futures*, 127(December 2019). <https://doi.org/10.1016/j.futures.2021.102702>
 42. Girdzijauskaitė, E., Radzevičienė, A., & Jakubavičius, A. (2019). Impact of international branch campus KPIs on the university competitiveness: FARE method. *Insights into Regional Development*.
 43. Gladwin, T. N., Kennelly, J. J., & Krause, T.-S. (1995). Shifting paradigms for sustainable development: Implications for management theory and research. *Academy of Management Review*, 20(4), 874–907.
 44. global-movement. (2021). global-movement. Retrieved from <https://worldtop20.org/global-movement>
 45. Green, K. W., Toms, L. C., & Clark, J. (2014). Impact of market orientation on environmental sustainability strategy. *Management Research Review*, 38(2), 217–238. <https://doi.org/10.1108/MRR-10-2013-0240>
 46. Grunig, J. E., Grunig, L. A., Sriramesh, K., Huang, Y.-H., & Lyra, A. (1995). Models of public relations in an international setting. *Journal of Public Relations Research*, 7(3), 163–186.
 47. Hall, R. (1992). The strategic analysis of intangible resources. *Strategic Management Journal*, 13(2), 135–144.
 48. Hallinger, P., & Chatpinyakop, C. (2019). A bibliometric review of research on higher education for sustainable development, 1998–2018. *Sustainability*, 11(8), 2401.
 49. Hien, D. T. T., & Cho, S. E. (2018). Relationship between entrepreneurship education and innovative start-up intentions among university students. *International Journal of Entrepreneurship*, 22(3), 1–16.
 50. Holcomb, J. L., Upchurch, R. S., & Okumus, F. (2007). Corporate social responsibility: what are top hotel companies reporting? *International Journal of Contemporary Hospitality Management*.
 51. Hoover, E., & Harder, M. K. (2015). What lies beneath the surface? The hidden complexities of organizational change for sustainability in higher education. *Journal of Cleaner Production*, 106, 175–188.
 52. Horng, J.-S., Hu, M.-L. M., Teng, C.-C. C., Hsiao, H.-L., & Liu, C.-H. S. (2013). Development and validation of the low-carbon literacy scale among practitioners in the Taiwanese tourism industry. *Tourism Management*, 35, 255–262.
 53. Howlett, C., Ferreira, J.-A., & Blomfield, J. (2016). Teaching sustainable development in higher education: Building critical, reflective thinkers through an interdisciplinary approach. *International Journal of Sustainability in Higher Education*.
 54. Humbatova, S. I., & Hajiyev, N. G. O. (2019). The role of spending on education and science in sustainable development. *Entrepreneurship and Sustainability Issues*, 7(2), 1704–1727. [https://doi.org/10.9770/jesi.2019.7.2\(63\)](https://doi.org/10.9770/jesi.2019.7.2(63))

THE ROLE OF SCIENTIFIC RESEARCH ON SUSTAINABLE DEVELOPMENT
INTO ORGANIZATIONS

55. Ioannou, I., & Serafeim, G. (2015). The impact of corporate social responsibility on investment recommendations: Analysts' perceptions and shifting institutional logics. *Strategic Management Journal*, 36(7), 1053–1081.
56. IPCC. (2014). Climate change 2014: Impacts, adaptation, and vulnerability. Contribution of Working Group II to the fifth assessment report of the intergovernmental panel on climate change. Cambridge University Press Cambridge.
57. Jaakson, K., Vadi, M., & Tamm, K. (2009). Organizational culture and CSR: an exploratory study of Estonian service organizations. *Social Responsibility Journal*.
58. Jensen, M. C. (1994). Self-interest, altruism, incentives, and agency theory. *Journal of Applied Corporate Finance*, 7(2), 40–45.
59. Kapoor, S., & Sandhu, H. S. (2010). Does it pay to be socially responsible? An empirical examination of impact of corporate social responsibility on financial performance. *Global Business Review*, 11(2), 185–208.
60. Klaassen, R. G. (2018). Interdisciplinary education: a case study. *European Journal of Engineering Education*, 43(6), 842–859.
61. Klettner, A., Clarke, T., & Boersma, M. (2014). The Governance of Corporate Sustainability: Empirical Insights into the Development, Leadership and Implementation of Responsible Business Strategy. *Journal of Business Ethics*, 122(1), 145–165. <https://doi.org/10.1007/s10551-013-1750-y>
62. Kollmuss, A., & Agyeman, J. (2002). Mind the gap: why do people act environmentally and what are the barriers to pro-environmental behavior? *Environmental Education Research*, 8(3), 239–260.
63. Kourula, A., Pisani, N., & Kolk, A. (2017). Corporate sustainability and inclusive development: highlights from international business and management research. *Current Opinion in Environmental Sustainability*, 24, 14–18. <https://doi.org/10.1016/j.cosust.2017.01.003>
64. Kreps, D. M., & Wilson, R. (1982). Reputation and imperfect information. *Journal of Economic Theory*, 27(2), 253–279.
65. Kristjanson, P., Reid, R. S., Dickson, N., Clark, W. C., Romney, D., Puskur, R., ... Grace, D. (2009). Linking international agricultural research knowledge with action for sustainable development. *Proceedings of the National Academy of Sciences*, 106(13), 5047–5052.
66. Krizek, K. J., Newport, D., White, J., & Townsend, A. R. (2012). Higher education's sustainability imperative: how to practically respond? *International Journal of Sustainability in Higher Education*.
67. Kuei, C.-H., Madu, C. N., & Lin, C. (2008). Implementing supply chain quality management. *Total Quality Management*, 19(11), 1127–1141.
68. Kuei, C. H., & Lu, M. H. (2013). Integrating quality management principles into sustainability management. *Total Quality Management and Business Excellence*, 24(1–2), 62–78. <https://doi.org/10.1080/14783363.2012.669536>
69. Kuei, C., & Lu, M. H. (2013). Integrating quality management principles into sustainability management. *Total Quality Management & Business Excellence*, 24(1–2), 62–78.
70. Lankoski, L. (2016). Alternative conceptions of sustainability in a business context. *Journal of Cleaner Production*, 139, 847–857.
71. Leal Filho, W., Raath, S., Lazzarini, B., Vargas, V. R., de Souza, L., Anholon, R., ... Orlovic, V. L. (2018). The role of transformation in learning and education for sustainability. *Journal of Cleaner Production*, 199, 286–295.
72. Leal Filho, W., Salvia, A. L., Pretorius, R. W., Brandli, L. L., Manolas, E., Alves, F., ... Do

- Paco, A. (2020). *Universities as Living Labs for Sustainable Development: Supporting the Implementation of the Sustainable Development Goals. World Sustainability Series.*
73. Ledford, H. (2015). How to solve the world's biggest problems. *Nature News*, 525(7569), 308.
74. Lee, J., Kumagai, A., & Dunphy, W. G. (2007). The Rad9-Hus1-Rad1 checkpoint clamp regulates interaction of TopBP1 with ATR. *Journal of Biological Chemistry*, 282(38), 28036–28044.
75. Lemos, M. C., Arnott, J. C., Ardoin, N. M., Baja, K., Bednarek, A. T., Dewulf, A., ... Wyborn, C. (2018). To co-produce or not to co-produce. *Nature Sustainability*, 1(12), 722–724. <https://doi.org/10.1038/s41893-018-0191-0>
76. Lemos, M. C., Wolske, K. S., Rasmussen, L. V., Arnott, J. C., Kalcic, M., & Kirchhoff, C. J. (2019). The closer, the better? Untangling scientist–practitioner engagement, interaction, and knowledge use. *Weather, Climate, and Society*, 11(3), 535–548. <https://doi.org/10.1175/WCAS-D-18-0075.1>
77. Lin, C., Kuei, C., Madu, C. N., & Winch, J. (2010). Identifying critical success factors for supply chain excellence. *International Journal of Strategic Decision Sciences (IJSDS)*, 1(3), 49–70.
78. Lo, S.-F., & Sheu, H.-J. (2007). Is corporate sustainability a value-increasing strategy for business? *Corporate Governance: An International Review*, 15(2), 345–358.
79. Lozano, R., Barreiro-Gen, M., Lozano, F. J., & Sammalisto, K. (2019). Teaching sustainability in European higher education institutions: Assessing the connections between competences and pedagogical approaches. *Sustainability*, 11(6), 1602.
80. Luo, X., & Bhattacharya, C. B. (2006). Corporate social responsibility, customer satisfaction, and market value. *Journal of Marketing*, 70(4), 1–18.
81. Mach, K. J., Lemos, M. C., Meadow, A. M., Wyborn, C., Klenk, N., Arnott, J. C., ... Wong-Parodi, G. (2020). Actionable knowledge and the art of engagement. *Current Opinion in Environmental Sustainability*, 42, 30–37. <https://doi.org/https://doi.org/10.1016/j.cosust.2020.01.002>
82. Madu, C. N., & Kuei, C. (2012). Introduction to sustainability management. In *Handbook of sustainability management* (pp. 1–22). World Scientific.
83. Magretta, J. (2002). Why business models matter. Harvard Business School Boston, MA.
84. McMichael, A. J., Butler, C. D., & Folke, C. (2003). New visions for addressing sustainability. *Science*, 302(5652), 1919–1920.
85. Miguel, B. C., & Santiago, G. B. (2010). Application of the total quality management approach in a Spanish retailer: the case of Mercadona. *Total Quality Management*, 21(12), 1365–1381.
86. Milgrom, P., & Roberts, J. (1986). Relying on the information of interested parties. *The RAND Journal of Economics*, 18–32.
87. Montiel, I. (2008). Corporate social responsibility and corporate sustainability: Separate pasts, common futures. *Organization & Environment*, 21(3), 245–269.
88. Morsing, M., & Schultz, M. (2006). Corporate social responsibility communication: stakeholder information, response and involvement strategies. *Business Ethics: A European Review*, 15(4), 323–338.
89. Naudé, M. (2011). Sustainable development in companies: Theoretical dream or implementable reality? *Corporate Ownership and Control*, 8(4 D), 352–364. <https://doi.org/10.22495/cocv8i4c3art4>
90. Nawaz, W., & Koç, M. (2018). Development of a systematic framework for sustainability management of organizations. *Journal of Cleaner Production*, 171, 1255–1274.

- <https://doi.org/10.1016/j.jclepro.2017.10.011>
91. Nielsen, A. E., & Thomsen, C. (2011). Sustainable development: The role of network communication. *Corporate Social Responsibility and Environmental Management*, 18(1), 1–10. <https://doi.org/10.1002/csr.221>
 92. Oriade, A., Osinaike, A., Aduhene, K., & Wang, Y. (2021a). Sustainability awareness, management practices and organisational culture in hotels: Evidence from developing countries. *International Journal of Hospitality Management*, 92(September 2020), 102699. <https://doi.org/10.1016/j.ijhm.2020.102699>
 93. Oriade, A., Osinaike, A., Aduhene, K., & Wang, Y. (2021b). Sustainability awareness, management practices and organisational culture in hotels: Evidence from developing countries. *International Journal of Hospitality Management*, 92, 102699.
 94. Parmar, B. L., Freeman, R. E., Harrison, J. S., Wicks, A. C., Purnell, L., & De Colle, S. (2010). Stakeholder theory: The state of the art. *Academy of Management Annals*, 4(1), 403–445.
 95. Psychogios, A. G., & Priporas, C.-V. (2007). Understanding Total Quality Management in Context: Qualitative Research on Managers' Awareness of TQM Aspects in the Greek Service Industry. *Qualitative Report*, 12(1), 40–66.
 96. Ramos, T. B., Caeiro, S., Van Hoof, B., Lozano, R., Huisingh, D., & Ceulemans, K. (2015). Experiences from the implementation of sustainable development in higher education institutions: Environmental Management for Sustainable Universities. *Journal of Cleaner Production*, 106, 3–10.
 97. Rebelo, M. F., Santos, G., & Silva, R. (2016). Integration of management systems: towards a sustained success and development of organizations. *Journal of Cleaner Production*, 127, 96–111.
 98. Remington-Doucette, S. M., Connell, K. Y. H., Armstrong, C. M., & Musgrove, S. L. (2013). Assessing sustainability education in a transdisciplinary undergraduate course focused on real-world problem solving: A case for disciplinary grounding. *International Journal of Sustainability in Higher Education*.
 99. Roome, N., & Louche, C. (2016a). Journeying toward business models for sustainability: A conceptual model found inside the black box of organisational transformation. *Organization & Environment*, 29(1), 11–35.
 100. Roome, N., & Louche, C. (2016b). *Journeying Toward Business Models for Sustainability: A Conceptual Model Found Inside the Black Box of Organisational Transformation*. *Organization and Environment* (Vol. 29). <https://doi.org/10.1177/1086026615595084>
 101. Russell, E., Lee, J., & Clift, R. (2018). Can the SDGs provide a basis for supply chain decisions in the construction sector? *Sustainability*, 10(3), 629.
 102. Schaltegger, S., Hansen, E. G., & Lüdeke-Freund, F. (2016). *Business models for sustainability: Origins, present research, and future avenues*. Sage Publications Sage CA: Los Angeles, CA.
 103. Schaltegger, S., & Wagner, M. (2011). Sustainable entrepreneurship and sustainability innovation: categories and interactions. *Business Strategy and the Environment*, 20(4), 222–237.
 104. Schuler, D., Rasche, A., Etzion, D., & Newton, L. (2017). Guest editors' introduction: Corporate sustainability management and environmental ethics. *Business Ethics Quarterly*, 27(2), 213–237.
 105. Segalàs, J., Ferrer-Balas, D., & Mulder, K. F. (2009). Introducing sustainable

- development in engineering education: competences, pedagogy and curriculum. In *Proc. of the 37 th Annual Conference of the Society for Engineering Education (SEFI), Rotterdam, The Netherlands*.
106. Shamir, B., & Howell, J. M. (2018). Organizational and contextual influences on the emergence and effectiveness of charismatic leadership. In *Leadership now: Reflections on the legacy of Boas Shamir*. Emerald Publishing Limited.
 107. Shaw, J. K., & Allison, J. (1999). The intersection of the learning region and local and regional economic development: Analysing the role of higher education. *Regional Studies*, 33(9), 896–902.
 108. Shrivastava, P. (1995). The role of corporations in achieving ecological sustainability. *Academy of Management Review*, 20(4), 936–960.
 109. Soriano, D. R., & Dobon, S. R. (2009). Linking globalization of entrepreneurship in small organizations. *Small Business Economics*, 32(3), 233–239.
 110. Spelt, E. J. H., Biemans, H. J. A., Tobi, H., Luning, P. A., & Mulder, M. (2009). Teaching and learning in interdisciplinary higher education: A systematic review. *Educational Psychology Review*, 21(4), 365–378.
 111. Stentoft, D. (2017). From saying to doing interdisciplinary learning: Is problem-based learning the answer? *Active Learning in Higher Education*, 18(1), 51–61.
 112. Sterling, S. (2011). Transformative learning and sustainability: Sketching the conceptual ground. *Learning and Teaching in Higher Education*, 5(11), 17–33.
 113. Sterling, S. (2013). An analysis of the development of sustainability education internationally: Evolution, interpretation and transformative potential. In *The sustainability curriculum* (pp. 56–75). Routledge.
 114. Stough, T., Ceulemans, K., Lambrechts, W., & Cappuyns, V. (2018). Assessing sustainability in higher education curricula: A critical reflection on validity issues. *Journal of Cleaner Production*, 172, 4456–4466.
 115. Stubbs, W., & Cocklin, C. (2008). Teaching sustainability to business students: shifting mindsets. *International Journal of Sustainability in Higher Education*.
 116. Sztangret, I., & others. (2016). Sustainable Development through Knowledge Management on the Example of Public Utilities Enterprise in IT Environment. *Business and Management Studies*, 2(1), 65–72.
 117. Tanner, G., Bamberg, E., Baur, C., & Schümann, M. (2019). Workplace Health Promotion Inspired by Corporate Social Responsibility--Interactions Within Supply Chains and Networks Date submitted: September 30, 2017 Revised version accepted after double blind review: October 2, 2018. *Mrev Management Revue*, 30(2–3), 213–231.
 118. Tapaninaho, R., & Kujala, J. (2019). Reviewing the stakeholder value creation literature: Towards a sustainability approach. In *Social responsibility and sustainability* (pp. 3–36). Springer.
 119. Teece, D. J. (2010). Business models, business strategy and innovation. *Long Range Planning*, 43(2–3), 172–194.
 120. Teece, D., & Pisano, G. (2003). The dynamic capabilities of firms. In *Handbook on knowledge management* (pp. 195–213). Springer.
 121. Tourais, P., & Videira, N. (2019). Innovative approaches to organisational sustainability: state-of-the-art and conceptual framework. In *Social Responsibility and Sustainability* (pp. 37–56). Springer.
 122. United Nations Educational, S., & (UNESCO), C. O. (2014). UNESCO roadmap for implementing the global action programme on education for sustainable development. Unesco Paris.

THE ROLE OF SCIENTIFIC RESEARCH ON SUSTAINABLE DEVELOPMENT
INTO ORGANIZATIONS

123. Vandana, B. S., Antony, P. J., & Alva, S. R. (2020). *Information and Communication Technology for Sustainable Development*. (M. Tuba, S. Akashe, & A. Joshi, Eds.), *Advances in Intelligent Systems and Computing* (Vol. 933). Singapore: Springer Singapore. <https://doi.org/10.1007/978-981-13-7166-0>
124. Waas, T., Verbruggen, A., & Wright, T. (2010). University research for sustainable development: definition and characteristics explored. *Journal of Cleaner Production*, 18(7), 629–636. <https://doi.org/10.1016/j.jclepro.2009.09.017>
125. Waas, Tom, Verbruggen, A., & Wright, T. (2010). University research for sustainable development: definition and characteristics explored. *Journal of Cleaner Production*, 18(7), 629–636.
126. Wals, A. E. J. (2014). Sustainability in higher education in the context of the UN DESD: a review of learning and institutionalization processes. *Journal of Cleaner Production*, 62, 8–15.
127. Ware, S. A. (2001). Teaching chemistry from a societal perspective. *Pure and Applied Chemistry*, 73(7), 1209–1214. <https://doi.org/doi:10.1351/pac200173071209>
128. Windahl, S., Signitzer, B., & Olson, J. T. (2008). *Using communication theory: An introduction to planned communication*. Sage.
129. Winkler, M. (2010). Aggregation vs. global diffusive behavior in the higher-dimensional Keller--Segel model. *Journal of Differential Equations*, 248(12), 2889–2905.
130. Zott, C., & Amit, R. (2010). Business model design: An activity system perspective. *Long Range Planning*, 43(2–3), 216–226.