

A Conceptual Model of the Relationship between Project Managers' Competencies and the Success of Sustainable Development Projects

Afaf Hassan

Department of Environmental and Public Health, Abu Dhabi University, Abu Dhabi, United Arab Emirates

Project managers (PMs) often play a significant role in achieving sustainable development projects (SDPs). Hence, this study focuses on project managers' competencies (PMCs) required to achieve SDPs successfully. It also presents a systematic literature review on PMCs and sustainability from a project-based perspective. Considering a search of eighty-two articles from peer-reviewed journals, fifty relevant articles were identified and synthesized previous knowledge on PMCs and SDPs. The literature review revealed that six key PMCs enhance the outcome of SDPs (particularly environmental protection, social inclusion, and economic growth). The PMCs influencing SDPs are leadership, strategic planning, effective communication, stakeholder management, sustainability knowledge, and risk management. Accordingly, a conceptual model was developed using the research findings. The developed model illustrates the association between project managers' competencies and the achievement of sustainable development projects.

Keywords: Sustainable development, competencies, project manager, sustainability projects

1. Introduction

Project managers' competencies are characteristics related to high job performance while performance is specific actions or behavioral signs used to evaluate individuals. Initially, PMCs have been categorized into two groups. The first group is consummate competencies that cover conceptualization, objectivity, productivity, impact, diagnostic use of concepts' power, self-confidence, efficiency orientation, oral presentations, and process management. The second group is threshold competencies that include knowledge, logical thinking, self-control, authority, spontaneity, energy, adaptability, self-assessment, and development of others. However, other scholars have suggested various classifications for PMCs such as teamwork, achievement orientation, communication, leadership, flexibility, innovation, planning, decision-making

competencies, development orientation, motivation, quality focus, influence, and customer focus.

Sustainable development projects are designed to meet the needs of the present without compromising the needs of the future, in a way that sustains environmental protection, social equity, and economic growth (Fukuda-Parr & Muchhala, 2020). Sustainable development has emerged as an international matter that addresses environmental issues in a developmental context with “a shared focus on economic, environmental, and social goals is a hallmark of sustainable development and represents a broad consensus on which the world can build” (Sachs, 2012, p. 2206). Therefore, environmental, social, and economic sustainability are often integrated into sustainable development strategies, but with a new framework that compromises concerns about ecological protection social inclusion, and economic growth (Ciegis et al., 2011; Meng & Li, 2001)

Project managers' competencies can be effectively utilized to achieve sustainable development outcomes (Remington-Doucette & Musgrove, 2015). A manager with robust PMCs highly performs in SDPs, as such competencies allow them to shape sustainability visions, build credible strategies, realize the complications of diverse systems, and discover future options (Wiek et al., 2011). Further, effective PMCs directed towards achieving sustainable projects enable project managers to understand the value of knowledge; meet business objectives; boost staff development; learn from present and past projects; support socio-economic development; ensure sustainable development practices; solve real-life problems; develop innovative practices; commit to reach quantity of environmental, social, and economic outcomes (Bruwer et al., 2018; Chung et al., 2016; Dudin et al., 2017). In this concern, Wiek, Withycombe, and Redman (2011) have added that project managers who acquire the needed competencies have a higher probability of making effective decisions about what should or should not be done, and under what circumstances, in SDPs.

This study is significant as sustainable development is important to cope with the current requirements of a better environment, society, and economy (Drechsler et al., 2021; Secundo et al., 2020). Hence, for sustainable development to be realized in projects, the demand for project managers who acquire effective competencies is increasing (Bogers et al., 2020; McGregor & Tweed, 2001; Shaikh et al., 2017). This is because such competencies can enhance the overall performance of project managers in adopting and implementing sustainable projects (Arditi et al., 2013). For example, project managers who acquire robust leadership, strategic planning, effective communication, stakeholder management, sustainability knowledge, and risk management competencies (Bruwer et al., 2018; Dzhengiz & Niesten, 2019; Fukuda-Parr & Muchhala, 2020) have higher potential to deliver sustainable

development projects (including environmental protection, society inclusion, and economic growth) successfully (Bruwer et al., 2018; Chung et al., 2016; Dudin et al., 2017; Dzhengiz & Niesten, 2019). While, project managers who lack such competencies might confront difficulties in communicating with stakeholders, resolving conflicts, solving problems, dealing with technologies, or making adequate decisions (Arditi et al., 2013; Chong, 2013; Hedelin et al., 2017).

Accordingly, this systematic literature review does not merely focus on reviewing literature within a particular discipline but also offers an inclusive analysis of two key disciplines PMCs and SDPs. Yet, the in-depth literature review reveals that particular project managers' competencies influence sustainable development projects. Using the outcome of this literature review, a conceptual model demonstrating the association between PMCs and SDPs was established. Furthermore, based on the findings of this study, promising avenues have been acknowledged for future research.

2. Research Methodology

This research implemented the systematic literature review method introduced by Page et al. (2021). Mainly, the review was based on peer-reviewed literature published in international scientific journals. Relevant articles were selected using key terms, from the Abu Dhabi University (ADU) Library database, Google Scholar, and Web of Science (WOS). The key terms were competencies, sustainability projects, project managers, and sustainable development. The research in the ADU library database, Google Scholar, and WOS revealed 82 peer-reviewed articles. The gathered articles were relevant, rich in content, and suitable to investigate the existing arguments of the study. Initially, the author screened each article to check if it met the inclusion criteria for an efficient analysis. The inclusion criteria focused on peer-reviewed articles that discuss competencies, sustainability projects, project managers, and sustainable development. In specific, the author read the abstracts of each article and if it was relevant to the research topic, the author continued reading the remaining sections. This helped the author collect the articles that met the inclusion criteria, and exclude the irrelevant articles. Thus, the author followed the steps demonstrated in Figure 1 to carry out the systematic literature review (Page et al., 2021).

In addition, the author used the PRISMA 2020 Checklist initiated by Aczel et al. (2020), to strengthen this systematic literature review. The checklist detects detailed research criteria, as summarized in Table 1. After adopting the PRISMA 2020 checklist for research criteria, the author included or excluded some of the collected articles. Accordingly, the author identified eighty-two relevant articles from the ADU Library, Google Scholar, and WOS. Eleven articles were rejected after the thorough content verification process

summarized in Table 1. The reason is that they had duplicate information or were marked as ineligible. The remaining (seventy-one) articles were examined and evaluated as shown in Figure 1. This reduced the number of included studies from seventy-one to fifty articles. These fifty peer-reviewed articles were analyzed to develop the conceptual model of this research. The knowledge, arguments, and results extracted from these journal articles established a comprehensive conceptual model that determines the essential competencies of project managers and their associations with the success of sustainable development projects. In particular, the influence of PMCs on economic, social, and environmental aspects (the three bottom lines of sustainability) within a certain project (Königová & Fejfar, 2012; Li et al., 2021; Maier et al., 2020). Nevertheless, the valuable information attained from these studies was used to satisfy the main purpose of this study, which is conducting a systematic literature review to develop a conceptual model that illustrates the influence of PMCs on SDPs.

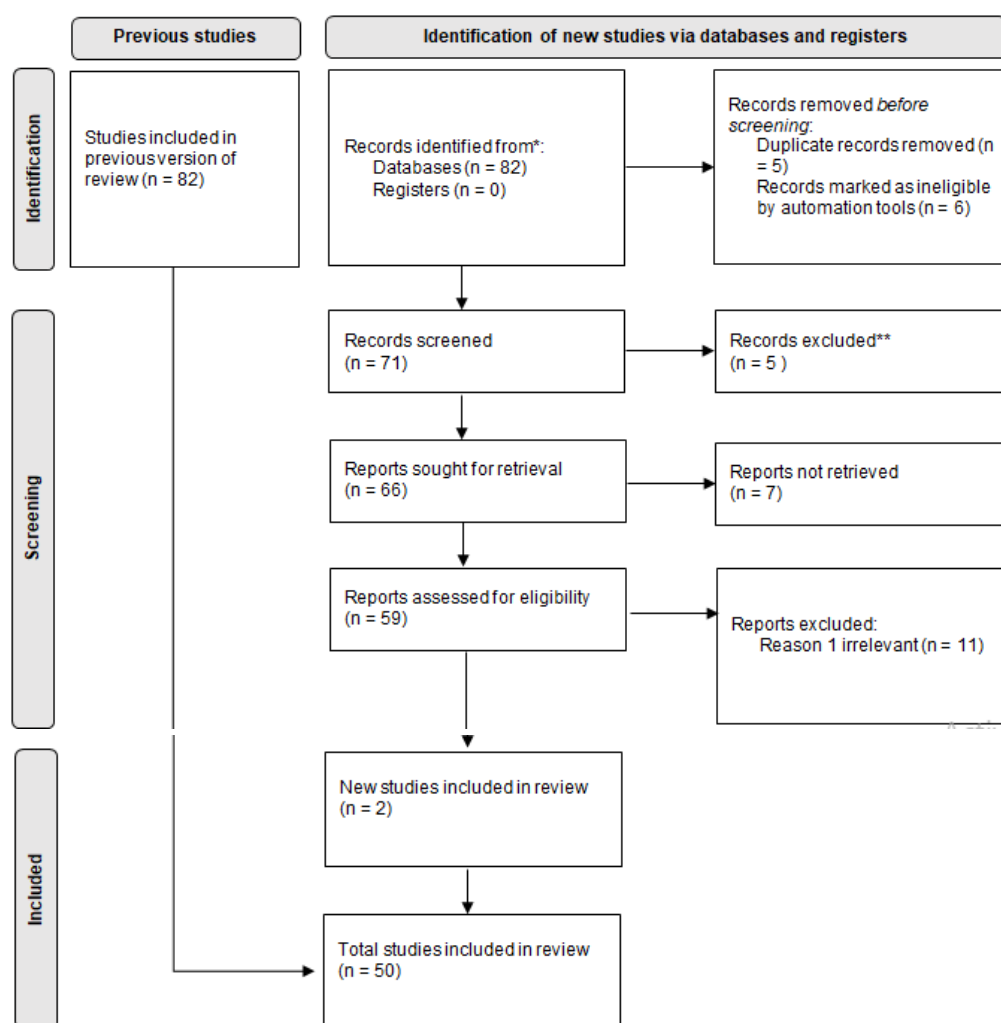


Figure 1. PRISMA 2020 flow diagram for the systematic literature review of the study (Page et al., 2021)

Table 1. PRISMA 2020 checklist for the research criteria (accessible at <https://prisma.shinyapps.io/checklist/>)

1	Title	Relevant.
2	Abstract	For PRISMA 2020 Abstract Checklist, refer to https://prisma.shinyapps.io/checklist/
3	Introduction	Rational Objectives
4	Methods	Eligibility criteria Information sources Search strategy Selection process Data collection process Data items Study risk of bias assessment Effect measures Synthesis methods Reporting bias assessment Certainty assessment
5	Results	Study selection Study characteristics Risk of bias in studies Results of individual studies Results of syntheses Reporting biases Certainty of the evidence.
6	Discussion	General interpretation Limitations Implications
7	Other information	Registration and protocol Support Competing interests Availability of data Code Other materials

3. Literature Review

The success of sustainable development projects, which aim to balance environmental, social, and economic goals, profoundly depends on the competencies of the project managers leading them (Abraham et al., 2001; Chong, 2013). Project managers with robust skills in strategic planning, risk management, stakeholder engagement, and other interdisciplinary collaborations are crucial for navigating the complications of sustainability initiatives (Bruwer et al., 2018; Wadongo et al., 2011). Without these competencies, SDPs may fail to meet their intended outcomes, wasting natural resources, and missing opportunities to address existing global challenges such as social inequality and climate change (Fukuda-Parr & Muchhala, 2020; Hassan, 2020). Therefore, enhancing project managers' competencies is

essential to ensure that sustainable development projects are executed successfully and contribute effectively to long-term sustainability goals. Accordingly, the following sections demonstrate knowledge collected from existing literature about PMCs, SDPs, and the most influencing PMCs on the success of SDPs.

3.1 Project Manager Competencies

Project manager competencies are often related to managerial performance, which makes them a key requirement for consistent performance over time (Bucur, 2013). PMCs are used as performance measures and understanding them is crucial to elevate projects' performance (Bucur, 2013). Dubois (2002) defined competency as a trait that improves individuals' performance, through better mindsets, knowledge, skills, thought patterns, self-confidence, and social responsibilities, (Dubois, 2002). Boyatzis (1982) stated that PMCs are the characteristics of a project manager that lead to outstanding work performance. Watson, et al. (2004) categorized PMC into seven categories that are general management, business competencies, operational, people management, technical competencies, personal competencies, and self-management. This implies that PMCs could differ depending on the situation, but in common they add great value to the achievements of project managers. Further, scholars have highlighted a wider range of PMCs (Abraham et al., 2001; Wickramasinghe & De Zoyza, 2011). For example, Abraham et al. (2001) have mentioned that successful project managers acquire key competencies such as leadership skills, interpersonal skills, problem-solving, good communication skills, teamwork, result orientation, trustworthiness, quality focus, customer focus, flexibility, adaptability, business expertise, hard work, staff development, dependency, leadership, , stakeholder management, sustainability knowledge, technical expertise, safety development, safety conscious, imagination, risk-taking, time management, uncompromising, previous foreign experience, innovation, purposeful, professional dress, and proficiency in a foreign language. Wickramasinghe and De Zoyza (2011) have explained that PMCs include learning, flexibility, listening, creativity, negotiation, continuous learning, ethics, risk-taking, team player, conflict resolution, empowerment ability, holistic, time management ability, attitude to meet targets, oral communication, written communication, planning, scheduling, customer relations knowledge, cost awareness, change handling skills, strategizing ability, technology adoption skills, empathy with people, coaching ability, safety focus, customer focus, pressure management skills, achievement-oriented, positive vision, and quality focus.

Later, Königová and Fejfar (2012) stated a different set of PMCs are leadership, responsibility, loyalty, communicativeness, organizational skills, comportment, flexibility, proactivity, self-confidence, and decisiveness. Arditi

et. al. (2013) suggested that achievement, decision-making, oral communication, analytical thinking, leadership, strategic planning, effective communication, stakeholder management, sustainability knowledge, risk management, relationships, business awareness, initiative, sensitivity, resilience, planning, customer focus, authority, presence, motivating others, flexibility, adaptability, teamwork, quality focus, risk taker, innovation, learning orientation, and developing people are key PMCs. Yet, Raišienė (2014) emphasized that PMCs include the ability to collaborate, communicate, make decisions in a team, overcome various contradictions, and help the employees achieve the aimed result. Although there are numerous PMCs, scholars classified managerial experience and workplace effectiveness; career awareness; conceptual skills; personal image; personal value; incentives and networks; and awareness of emotional and physical barriers to be vital PMCs that will help managers achieve their sustainable development targets (Shaikh et al. 2017). Recently, project manager competencies have been summarized into ten main categories project planning and organization; communication skills; leadership and team management; risk management; budget and financial management; quality management; problem-solving and decision-making; adaptability and flexibility; technical proficiency; and ethics and professionalism (Eskerod & Huemann, 2013; Oduoza, 2020).

3.2 Sustainable Development Projects

Although the definitions of sustainable development might vary, in common, they aim for a combination of environmental protection, social inclusion, and economic development, bearing in mind that the detailed objectives vary globally; between and within existing societies (Sachs, 2012). Thus, SDPs are considered to be successful, when an advancement in the three key pillars of sustainability (environmental, social, and economic) is achieved (Ciegis et al., 2011). Sustainable development is defined as a development that meets the requirements of the present without compromising the capacity of future generations to satisfy their own needs. This perception incorporates balancing environmental protection, social equity, and economic growth (Fukuda-Parr & Muchhala, 2020). The goal is to encourage a resilient, sustainable, and inclusive economy that offers opportunities for all while preserving the ecosystems and planet's resources for future generations (Fukuda-Parr & Muchhala, 2020). Another aim of SDPs is to find active solutions for multifaceted challenges such as pollution, ecosystem resilience, food security, climate change, energy, migration, and many other issues that necessitate a cross-disciplinary standpoint (Secundo et al., 2020). Secundo et al. (2020) also stated that a sustainable development framework involves a wide variety of environmental, social, and economic issues, including climate change, biodiversity, energy, gender, healthcare, security of food supply,

economic growth, education, equality, peace, and sustainable consumption and production.

However, sustainable development projects aim to expand the chance for current generations to fulfill their needs without compromising the capacity of future generations to meet their needs (Remington-Doucette & Musgrove, 2015). SDPs also compromise adequate responses to current and predicted problems such as climate change, poverty, pandemics, and desertification, which commonly feature high degrees of urgency, damage potential, and complexity, (Wiek et al., 2011). SDPs lead to creating partnerships and dialogue between local governments and their communities, given that local governance is vital for sustainable development (Sobol, 2008). If project managers and their team members are inspired to perform as key players in local projects' development, they would be responsible for the directions and visions set by local laws, regulations, and policies (Sobol, 2008). Hence, the relationship between local society and government can improve or sometimes hinder any ongoing sustainable development initiatives (Sobol, 2008). Accordingly, moving toward sustainable development in projects demands more transparent decision-making procedures that inspire participation by several stakeholders (Sobol, 2008). Yet, the success of SDPs requires project managers with vigorous PMCs, that allow project managers to overcome challenges and move toward sustainable development (economic, social, and environmental) goals.

3.3 Project Managers' Competencies and Sustainable Development Projects

Sustainable development projects emphasize the importance of environmental, social, and economic responsibilities (Fukuda-Parr & Muchhala, 2020; Secundo et al., 2020). Thus, this is reliable when in charge project managers acquire time, resources, and talent for local or international projects without waiting for an immediate outcome (Fulop, 2012; Wadongo et al., 2011). This implies that acquiring adequate PMCs can increase project managers' opportunity to complete SDPs efficiently. Hence, this research has focused on PMCs that influence the adoption of SDPs which are (based on the literature review) leadership, strategic planning, effective communication, stakeholder management, sustainability knowledge, and risk management as explained in the following subsections (Bruwer et al., 2018; Dzhengiz & Niesten, 2019; Fukuda-Parr & Muchhala, 2020; Shaktawat & Vadhera, 2021).

3.3.1 Leadership

Leadership competency is the ability to inspire and guide project team members toward realizing common goals (Dzhengiz & Niesten, 2019). It encompasses effective decision-making, communication, and the capability to foster a positive work environment (Bruwer et. al., 2018). Numerous studies

have emphasized a direct relationship between leadership competency and sustainable development (Bruwer et al., 2018; Dzhengiz & Niesten, 2019; Wiek et al., 2011). Project managers' leadership competency is essential to guide project team members toward sustainable development targets (Dzhengiz & Niesten, 2019). Such a leadership competency enhances sustainable development projects in various ways. In detail, leadership competency motivates project team members to meet the required sustainability goals (Bruwer et al., 2018). This competency fosters an inclusive and collaborative project environment (Wiek et al., 2011). Leadership competency helps set a clear vision and direction that aligns adequately with sustainable development (Mukhopadhyay et al., 2011). They also make significant and informed decisions to guide SDPs' progress (Dzhengiz & Niesten, 2019; Remington-Doucette & Musgrove, 2015). Leadership competency also encourages creative and innovative solutions for SDPs' challenges (Dzhengiz & Niesten, 2019). This competency builds robust relationships with stakeholders and other partners (Bruwer et al., 2018). In addition, leadership competency helps demonstrate a strong commitment to all ethical and sustainable practices; handle conflicts efficiently to maintain project harmony; provide mentorship and required support for team development; and ensure steady focus on short-term and long-term sustainability outcomes (Bruwer et al., 2018; Dzhengiz & Niesten, 2019; Fulop, 2012; Wiek et al., 2011). Considering these findings, the PMs' leadership competency can directly affect the achievement of SDPs.

3.3.2 Strategic Planning

Strategic planning competency is the skill to advance long-term goals and plans by investigating internal and external environments, aligning resources, and predicting future opportunities and challenges (Fanelli et al., 2020). It includes foresight, critical thinking, and the ability to apply and adapt strategies efficiently (Fanelli et al., 2020). Scholars have pointed out a relationship between strategic planning competency for project managers and the completion of SDPs (Arditi et al., 2013; Dudin et al., 2017). In support, strategic planning is an important competency for project managers and they need to acquire it to align the SDPs with long-term sustainability objectives (Fanelli et al., 2020; Remington-Doucette & Musgrove, 2015). It also helps in optimizing resource use, which (in return) leads to minimizing waste (Dudin et al., 2017; Fukuda-Parr & Muchhala, 2020). Strategic planning competency identifies and mitigates any available environmental, economic, and social risks (Fanelli et al., 2020). It enhances stakeholder engagement by providing inclusive planning and encouraging collaboration (Dudin et al., 2017). This competency also improves project managers' ability to set clear key performance indicators (KPIs) and sustainability metrics (Fanelli et al., 2020). Strategic planning competency allows PMs to adapt to changing circumstances

and achieve long-term resilience (Arditi et al., 2013). At the same time, this competency enhances SDPs by applying creative solutions and best practices; ensuring compliance with sustainability regulations; promoting continuous development through evaluation and monitoring; and managing projects that are, inclusive, efficient, and environmentally responsible (Arditi et al., 2013; Fanelli et al., 2020; Remington-Doucette & Musgrove, 2015; Wiek et al., 2011). Eventually, these findings indicate that the PMs' strategic planning competency can directly influence the achievement of SDPs.

3.3.3 Effective Communication

Effective communication competency is to convey information and ideas to others, ensuring mutual understanding and encouraging active interactions (Mukhopadhyay et al., 2011). It involves clarity, active listening, empathy, and suitable non-verbal cues (Mukhopadhyay et al., 2011). PMs' effective communication competency has numerous other benefits that enhance the outcome of SDPs (Dzhengiz & Niesten, 2019; Mukhopadhyay et al., 2011). It is essential to engage and share information with stakeholders in SDPs (Bruwer et al., 2018; Fulop, 2012). Effective communication competency assists PMs in ensuring a clear and transparent flow of information among stakeholders (Remington-Doucette & Musgrove, 2015). It also facilitates a common understanding of SDPs' goals and objectives (Hassan, 2020; Wiek et al., 2011). Another imperative benefit is that this competency encourages stakeholder participation and engagement (Bruwer et al., 2018). Effective communication competency leads to better clarification of responsibilities, roles, and expectations within the SDP team (Fulop, 2012; Wiek et al., 2011). It enhances the ability to address concerns and feedback constructively and promptly (Mukhopadhyay et al., 2011). It also promotes collaboration across diverse teams (Bruwer et al., 2018). Furthermore, effective communication competency enhances decision-making through precise and timely knowledge sharing; fosters trust and reliability with stakeholders; minimizes misunderstandings and conflicts; and keeps all parties informed about achievements, challenges, and progress to ensure alignment with sustainability goals (Dzhengiz & Niesten, 2019; Mukhopadhyay et al., 2011). Ultimately, these outcomes indicate that the PMs' effective communication competency can directly influence the achievement of SDPs (Bruwer et al., 2018; Dzhengiz & Niesten, 2019; Mukhopadhyay et al., 2011).

3.3.4 Stakeholder Management

Stakeholder management competency describes building positive relationships with individuals or groups interested in or affected by a project (Chung et al., 2016). It comprises effective negotiation, communication, and the

ability to address concerns and manage expectations (Bruwer et al., 2018). PMs' stakeholder management competency balances various stakeholder needs and expectations (Dudin et al., 2017; Hassan, 2022). Researchers have highlighted that stakeholder management competency influences the effectiveness of SDPs in different ways (Eskerod & Huemann, 2013; Hassan, 2023b). In clarification, stakeholder management competency enhances PMs' ability to identify and involve all relevant stakeholders early in the project. It also ensures different viewpoints are considered in decision-making (Eskerod & Huemann, 2013; Hassan, 2023c). This competency enhances PMs' ability to build trust and foster collaboration among project stakeholders (Mukhopadhyay et al., 2011). Stakeholder management competency helps PMs address stakeholders' concerns, needs, and expectations (Remington-Doucette & Musgrove, 2015). This competency encourages the engagement of local communities to attain culturally adequate solutions (Eskerod & Huemann, 2013). Yet, stakeholder management competency leverages stakeholder knowledge, expertise, and resources; improves stakeholder buy-in and support for SDPs; resolves conflicts and fosters consensus; and ensures positive impact through ongoing stakeholder participation (Mukhopadhyay et al., 2011). Nevertheless, these findings suggest that the PMs' stakeholder management competency can directly influence the accomplishment of SDPs (Dzhengiz & Niesten, 2019; Eskerod & Huemann, 2013).

3.3.5 Sustainability Knowledge

Sustainability knowledge competency is about understanding the economic, environmental, and social principles required to endorse sustainable practices (Chung et al., 2016). It includes the skill to integrate sustainability into decision-making, operations, and policies to achieve long-term practicability and positive impact (Dudin et al., 2017). Sustainability knowledge competency facilitates PMs' job in understanding and applying sustainable technologies and practices (Hassan, 2020). Many studies have stated that sustainability knowledge competency affects the effectiveness of SDPs in several ways (Dzhengiz & Niesten, 2019). PMs' sustainability knowledge competency enhances SDPs by integrating innovative sustainable practices into the planning and execution phases of projects (Hassan, 2021b). It also makes it easy to identify and implement environmentally friendly techniques and technologies (Bruwer et al., 2018). Sustainability knowledge competency allows PMs to ensure compliance with sustainable development regulations and standards. It also promotes resource effectiveness and waste reduction (Hassan, 2021d). At the same time, sustainability knowledge competency anticipates and mitigates negative environmental impacts. Further, sustainability knowledge competency improves PMs' ability to educate stakeholders on sustainability issues; set and track sustainability metrics and targets; foster innovation in sustainable

solutions; and ensure positive contributions to long-term economic, environmental, and social sustainability (Hassan, 2021c). Yet, these outcomes imply that the PMs' sustainability knowledge competency can directly affect the achievement of SDPs (Hassan, 2023a; Remington-Doucette & Musgrove, 2015).

3.3.6 Risk Management

Risk management competency describes the accurate identification, assessment, and mitigation of potential risks to a project (Hassan, 2021a). It covers strategic planning, analysis, and employment of measures to reduce the impact of adverse events (Hedelin et al., 2017). Risk management competency allows PMs mainly to Identify and mitigate sustainability risks (Oduoza, 2020). PMs' risk management competency has many other benefits that enhance the outcome of SDPs (Oduoza, 2020; Valaskova et al., 2018). In support, risk management competency enhances PMs' ability to identify potential risks early in SDPs' lifecycle (Shaktawat & Vadhera, 2021). It also motivates PMs to assess and prioritize risks based on their likelihood and impact (Hassan et al. 2024; Hedelin et al., 2017). Additionally, risk management competency ensures active measures to prevent and address sustainability (economic, environmental, and social) risks, which can enhance project resilience against any unforeseen challenges (Oduoza, 2020; Shaktawat & Vadhera, 2021). This competency also facilitates informed decision-making by implementing a continuous risk assessment process (Hassan et al., 2024; Shaktawat & Vadhera, 2021). Moreover, Risk management competency improves project managers' ability to minimize SDPs' disruptions and delays; protect SDPs' investments and resources; encourage a culture of risk awareness among stakeholders; and Ensure long-term success through effective risk management (Oduoza, 2020; Valaskova et al., 2018). At last, these outcomes suggest that the PMs' risk management competency can directly influence the success of SDPs (Kattan & Hassan, 2010; Oduoza, 2020; Shaktawat & Vadhera, 2021).

3.4 Elements of Sustainable Development Projects Influenced by PMCs

The three main elements of sustainable development projects, influenced by project managers' competencies, are environmental protection, social inclusion, and economic growth (Adams et al., 2016; Brem & Puente-Díaz, 2020). Each element includes numerous attributes, which could be enhanced by positive PMCs (Li et al., 2021; Maier et al., 2020). The "environmental protection" attributes involve conservation and preservation; sustainable resource management; climate change mitigation and adaptation; environmental impact assessment; and environmental education and awareness (Fukuda-Parr & Muchhala, 2020). The "social inclusion" attribute includes equity and equality;

empowerment and participation; human rights and social justice; capacity building and skill development; and social safety and protection (Brem & Puente-Díaz, 2020). Ultimately, the “economic growth” attributes cover income generation; productivity and efficiency; diversification and resilience; and sustainable business practices (Li et al., 2021; Maier et al., 2020).

4. The Conceptual Model of the Study

Sustainable development is “an integrated strategy of sustainable economic development that fosters social inclusion and environmental conservation” (Fukuda-Parr & Muchhala, 2020, p.104706). Hence, sustainable development projects aim to realize environmental protection, economic growth, and social equity (Bruwer et al., 2018; Chung et al., 2016; Dudin et al., 2017). Thus, SDPs require project managers, who have effective competencies, to expedite the accomplishment of all sustainable development tasks and activities (Maier et al., 2020; Walter et al., 2011). Accordingly, this study proposes a conceptual model that illustrates that project manager competencies influence the success of sustainable development projects, as shown in Figure 2 (Dzhengiz & Niesten, 2019; Mukhopadhyay et al., 2011). This conceptual model has been developed using the findings of the systematic literature review, which revealed a list of six PMCs frequently mentioned in the literature to influence the success of SDPs and the triple bottom line theory of sustainability (Adams et al., 2016; Brem & Puente-Díaz, 2020; Ciegis et al., 2011; Li et al., 2021; Maier et al., 2020; Mukhopadhyay et al., 2011; Walter et al., 2011).

The most frequent PMCs that affect the success of SDPs include leadership, strategic planning, effective communication, stakeholder management, sustainability knowledge, and risk management competencies (Bruwer et al., 2018; Dzhengiz & Niesten, 2019; Fukuda-Parr & Muchhala, 2020; Shaktawat & Vadhera, 2021). First, PMs’ leadership competency enhances SDPs by focusing on sustainability goals, setting a clear (sustainability) vision, fostering collaboration, making informed decisions, encouraging innovation, managing conflicts, and committing to ethical practices (Brem & Puente-Díaz, 2020; Ciegis et al., 2011). Second, PMs’ strategic planning competency improves SDPs by aligning project goals with sustainability objectives; optimizing resource use; minimizing waste; identifying and mitigating risks; setting clear sustainability metrics and KPIs; and adapting to changing circumstances (Bruwer et al., 2018; Maier et al., 2020). Third, PMs’ effective communication competency augments SDPs by encouraging clear information flow among stakeholders, facilitating understanding of project goals and sustainability objectives, and promoting coordination and collaboration across diverse teams (Dzhengiz & Niesten, 2019). Fourth, PMs’ stakeholder management competency augments SDPs by

identifying and involving all stakeholders early; ensuring diverse perspectives in decision-making; building trust and fostering collaboration; and addressing stakeholder concerns and needs (Mukhopadhyay et al., 2011). Fifth, PMs' sustainability knowledge competency improves SPDs by integrating sustainable practices into project planning and execution, applying environmentally friendly technologies and methods, complying with environmental regulations and standards, and encouraging resource efficiency and waste reduction (Bruwer et al., 2018; Remington-Doucette & Musgrove, 2015). Last, risk management competency enhances SDPs by identifying potential risks early; assessing and prioritizing risks; developing risk mitigation strategies; applying risk reduction proactive measures; and conducting continuous risk assessment (Oduoza, 2020; Shaktawat & Vadhera, 2021).

In addition, the TBL theory adopts the three pillars of sustainability (Li et al., 2021; Maier et al., 2020). These pillars are environmental protection, social inclusion, and economic growth (Adams et al., 2016; Brem & Puente-Díaz, 2020; Li et al., 2021; Maier et al., 2020). The literature review of this study points out the particular elements that become enhanced when project managers acquire the needed competencies while managing sustainable development projects. First, the attributes of the "economic growth" pillar of sustainability, affected by the PMCs, are income generation; productivity and efficiency; diversification and resilience; and sustainable business practices (Li et al., 2021; Maier et al., 2020). Second, the attributes of the "social inclusion" pillar of sustainability, influenced by the PMCs, are equity and equality; empowerment and participation; human rights and social justice; capacity building and skill development; and social safety and protection (Brem & Puente-Díaz, 2020). Last, the attributes of the "environmental protection" pillar of sustainability, affected by the PMCs, are conservation and preservation; sustainable resource management; climate change mitigation and adaptation; environmental impact assessment; and environmental education and awareness (Fukuda-Parr & Muchhala, 2020)

Subsequently, this conceptual model illustrates the associations among the six project manager competencies collected from the literature (to influence the performance of SPDs highly) and the Trippel Bottom Line theory dimensions as shown in Figure 2 (Adams et al., 2016; Li et al., 2021). The influence of each PMC on the success of SDPs has been explained in the previous section. Then, it has been found that each competency is essential for project managers to achieve sustainable development projects successfully (Li et al., 2021; Maier et al., 2020). In addition, having an influencing project manager contributes to the success of SDPs, as they can tackle the economic, social, and environmental attributes (of the TBL) effectively (Adams et al., 2016; Brem & Puente-Díaz, 2020). PMCs also allow them to complete SDPs within the required environmental limits, considering the economic and social

stakeholders' needs (Adams et al., 2016; Brem & Puente-Díaz, 2020). This indicates that, on top of cultivating the outcome of the pillars of sustainability, project managers can develop associations among them ((Li et al., 2021). In support, numerous scholars have agreed that SDPs are designed to respond to existing and anticipated (environmental, economic, and social) challenges, that require PMs with robust PMCs to overcome challenges and move toward achieving sustainability goals (Li et al., 2021; Walter et al., 2011).

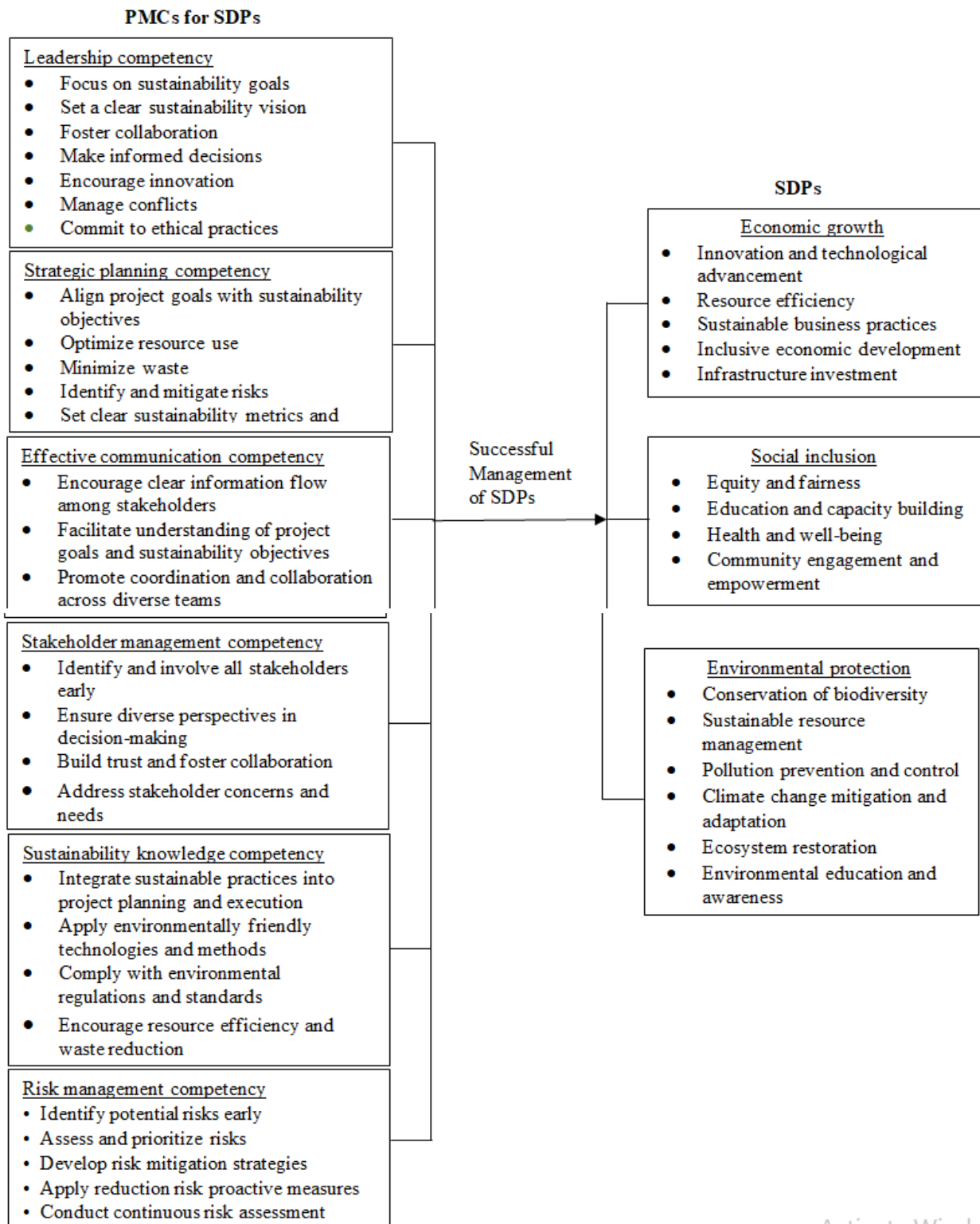


Figure 2. The study conceptual model

5. Limitations of the Literature Review

While this research contributes to existing knowledge by synthesizing and extending previous research on project managers' competencies in successfully achieving sustainable development projects, this study also has some limitations. The selection of publications in this literature review restricts the outcome of the analysis. In particular, the literature review is based on eighty-two articles, reduced to fifty peer-reviewed articles. Although such a selection criterion assures a high-quality literature base, some relevant contributions, such as scientific books or whitepapers, are missing in the review due to restricting the study sample to peer-reviewed publications. Further, limiting the research time frame from 2000 to 2021 has resulted in excluding relevant literature. Additionally, the proposed conceptual model is specific for project managers, not generalized to cover any individual, who works in sustainable development projects. Henceforth, future research is recommended to examine the findings based on an empirical study, to initiate a generalized model that comprises all project stakeholders working on sustainable development projects.

6. Conclusion

To sum up, Sustainable development projects can be delivered successfully, when project managers have the right competencies (Chung et al., 2016; Dudin et al., 2017). This research is based on a literature review on the influence of project managers' competencies on sustainable development projects. This research offers two primary contributions. First, it synthesized the present knowledge on PMCs and SDPs. The findings were collected by a multidisciplinary analysis of literature that followed a systematic methodology. It has been found that PMCs have been broadly researched in the disciplines of project management, entrepreneurship, innovation, and sustainability as the majority of all research articles inspected were published in these fields. Second, the study conceptual model demonstrates an association between PMCs and SDPs. In brief, the literature has emphasized six main competencies of project managers that can influence SDPs. These competencies involve leadership, strategic planning, effective communication, stakeholder management, sustainability knowledge, and risk management (Bruwer et al., 2018; Dzhengiz & Niesten, 2019; Fukuda-Parr & Muchhala, 2020; Shaktawat & Vadhera, 2021). In turn, the influence of these competencies will drive the success or failure of (the pillars of sustainability) economic growth, society inclusion, and environmental protection. Furthermore, the thematic analysis of the literature emphasized that while project managers utilize in their endeavor to promote sustainability, less emphasis has been on the influence of their competencies on SDPs. Henceforth, extant literature pointed out that PMCs can

affect the success of SDPs, which are full of new ideas, processes, products, technologies, and services (Bogers et al., 2020; Drechsler et al., 2021).

Future research should sensibly investigate PMCs' influence on networks. The reason is that project managers can use their competencies to formulate active networks and to select or impact the strength and number of connections they aim to form. Simultaneously, if there is no formal internal structure for effective sustainable development in projects, project managers might confront high resistance to change inside organizations (Mukhopadhyay et al., 2011). Hence, future research should examine the influence of PMCs on different organizations and among each other. Moreover, no current research yet explores whether project managers' competencies can help them form ties with their project stakeholders. Such ties are important, especially when project managers acquire the needed competencies (Fukuda-Parr and Muchhala, 2020; Hassan, 2021a).

Acknowledgment

A special thanks to Abu Dhabi University for providing valuable resources, as the articles collected from the ADU library formed a solid basis for this research. In addition, many thanks to the preceding scholars who have contributed their knowledge about the issues of project manager competencies and sustainable development projects.

References

- Abraham, S., Karns, L., Shaw, K. & Mena, M. (2001). Managerial competencies & the managerial performance appraisal process. *Journal of Management Development*, 20(10), 842-852.
- Adams, R., Jeanrenaud, S., Bessant, J., Denyer, D. & Overy, P. (2016). Sustainability- oriented Innovation: A Systematic Review. *International Journal of Management Reviews*, 18(2), 180-205.
- Arditi, D., Gluch, P. & Holmdahl, M. (2013). Managerial competencies of female and male managers in the Swedish construction industry. *Construction Management and Economics*, 31(9), 979-990.
- Bogers, M., Chesbrough, H. & Strand, R. (2020). Sustainable open innovation to address a grand challenge. *British Food Journal*, 122(5), 1505-1517.
- Boyatzis, R. (1982). *The Competent Manager A Model for Effective Performance*. New York: John Wiley.
- Brem, A. & Puente-Díaz, R. (2020). Creativity, Innovation, Sustainability: A Conceptual Model for Future Research Efforts. *Sustainability*, 12(8), 3139.
- Bruwer, J., Coetzee, P. & Meiring, J., (2018). Can internal control activities and managerial conduct influence business sustainability? A South African SMME perspective. *Journal of Small Business and Enterprise Development*, 25(5), 710-729.

- Bucur, I. (2013). Managerial Core Competencies as Predictors of Managerial Performance, on Different Levels of Management. *Procedia - Social and Behavioral Sciences*, 78, 365-369.
- Chong, E. (2013). Managerial competencies and career advancement: A comparative study of managers in two countries. *Journal of Business Research*, 66(3), 345-353.
- Chung, L., Lo, C. & Li, P. (2016). The interaction effects of institutional constraints on managerial intentions and sustainable performance. *International Journal of Production Economics*, 181, 374-383.
- Ciegis, R., Kliucininkas, L. & Ramanauskiene, J. (2011). Assessment of state and tendencies of sustainable development in Lithuania. *Management of Environmental Quality: An International Journal*, 22(6), 757-768.
- Drechsler, K., Reibenspiess, V., Eckhardt, A. & Wagner, H. (2021). Innovation Champions' Activities and Influences in Organizations - A Literature Review. *International Journal of Innovation Management*, 25(06), 2150066.
- Dubois, D. (2002) What are competencies and why are they important? *Career Planning and Adult Development Journal*, 18(4), 1-7.
- Dudin, M., Vysotskaya, N., Frolova, E., Pukhart, A. & Galkina, M. (2017). Improving professional competence of the staff as a strategic factor for sustainable development of companies. *Journal of Business & Retail Management Research*, 12(01), 133-142.
- Dzhengiz, T. & Niesten, E. (2019). Competences for Environmental Sustainability: A Systematic Review on the Impact of Absorptive Capacity and Capabilities. *Journal of Business Ethics*, 162(4), 881-906.
- Eskerod, P., & Huemann, M. (2013). Sustainable development and project stakeholder management: What standards say. *International Journal of Managing Projects in Business*, 6(1), 36-50.
- Fanelli, S., Lanza, G., Enna, C. & Zangrandi, A. (2020). Managerial competences in public organisations: the healthcare professionals' perspective. *BMC Health Services Research*, 20(1), 1-9.
- Fukuda-Parr, S. & Muchhala, B. (2020). The Southern origins of sustainable development goals: Ideas, actors, aspirations. *World Development*, 126, 104706.
- Hassan, A., Alshamsi, B., Shbeeb, R., Abdelaziz, A. & Al Mudalaa, S. (2024). The Impact of Safety Management on Individuals' Performance. *The International Journal of Learner Diversity and Identities*, 31 (1), 623-633.
- Hassan, AKM. (2023a). Innovation Champions and Sustainable Development Projects: Systematic Literature Review and Integrative Model. *International Journal of Innovation Management*, 2330002, 1-23.
- Hassan, A. (2023b). A Model Emphasizing Project Managers' Competencies Influencing the Success of SD Projects. *Journal of Human Resources and Sustainability Studies*, 11(1), 61-78.
- Hassan, A. (2023c). Personality Traits and Sustainable Development Projects: A Literature Review of the Conceptual Framework for Project Managers. *Journal of Human Resource and Sustainability Studies*, 11 (1), 14-31.
- Hassan, A. (2022). Diffusion of Innovation in Sustainable Development Projects: A Proposed Integrative Model. *Environmental Management and Sustainable Development*, 11 (2), 26-44.
- Hassan, A. (2021a). Safety Management in Sustainable Construction Projects: A Conceptual Framework. *International Journal of Global Sustainability*, 5 (1), 55-71.
- Hassan, A. (2021b). Innovation Competencies and Sustainability: A Proposed Model for Project Team Members. *International Journal of Regional Development*, 8 (2), pp. 21-35.
- Hassan, A. (2021c). The Antecedents and Challenges of Innovation in Sustainable Development

- Projects: Systematic Review. *Environmental Management and Sustainable Development*, 10 (1), pp. 76-91.
- Hassan, A. (2021d). Towards a Conceptual Framework to Implement Corporate Sustainability Using Change Management Aspects. *International Journal Economics, Business and Management Research*, 5 (1), pp. 58-74.
- Hassan, A. (2020). Managerial Competencies Required to Achieve Sustainable Development Projects: A Proposed Model for Managers. *Environmental Management and Sustainable Development*, 9 (3), pp. 68-86.
- Hedelin, B., Evers, M., Alkan-Olsson, J., & Jonsson, A. (2017). Participatory modelling for sustainable development: Key issues derived from five cases of natural resource and disaster risk management. *Environmental Science & Policy*, 76, 185-196.
- Kattan, I. & Hassan, A. (2010). A Case Study on Improving the Effectiveness of Preventive Maintenance. *International Journal of Management Science and Engineering Management*, 5 (5), pp. 353-361.
- Königová, M. & Fejfar, J. (2012). Evaluation and development of managerial competencies. *Scientific Papers of The University of Pardubice. Series D, Faculty Of Economics & Administration*, pp. 68-80.
- Sachs, J. (2012). From Millennium Development Goals to Sustainable Development Goals. *The Lancet*, 379(9832), 2206-2211.
- Li, Y., Xiang, P., You, K., Guo, J., Liu, Z. & Ren, H. (2021). Identifying the Key Risk Factors of Mega Infrastructure Projects from an Extended Sustainable Development Perspective. *International Journal of Environmental Research and Public Health*, 18(14), 7515.
- Maier, D., Maier, A., Aşchilean, I., Anastasiu L. & Gavriş, O. (2020). The Relationship between Innovation and Sustainability: A Bibliometric Review of the Literature. *Sustainability*, 12(10), 4083.
- McGregor, J. & Tweed, D. (2001). Gender and managerial competence: support for theories of androgyny?. *Women in Management Review*, 16(6), 279-287.
- Meng, Q. & Li, G. (2001). A theoretical discussion on types and measurement of sustainable development. *Chinese Geographical Science*, 11(3), 201-210.
- Mukhopadhyay, K., Sil, J. & Banerjea, N. (2011). A Competency Based Management System for Sustainable Development by Innovative Organizations. *Vision: The Journal of Business Perspective*, 15(2), 153-162.
- Oduoza, C. F. (2020). Framework for sustainable risk management in the manufacturing sector. *Procedia Manufacturing*, 51, 1290-1297.
- Raišienė, A., (2014). Leadership and Managerial Competences in a Contemporary Organization from the Standpoint of Business Executives. *Economics & Sociology*, 7(3), 179-193.
- Remington-Doucette, S. & Musgrove, S. (2015). Variation in sustainability competency development according to age, gender, and disciplinary affiliation. *International Journal of Sustainability in Higher Education*, 16(4), 537-575.
- Secundo, G., Ndou, V., Vecchio, P. & De Pascale, G. (2020). Sustainable development, intellectual capital and technology policies: A structured literature review and future research agenda. *Technological Forecasting and Social Change*, 153, 119917.
- Shaikh, A., Bisschoff, C. and Botha, C. (2017). A Theoretical Model to Measure Managerial and Leadership Competence of Business School Managers. *Journal of Economics and Behavioral Studies*, 9(6), 149-165.
- Shaktawat, A., & Vadhera, S. (2021). Risk management of hydropower projects for sustainable development: a review. *Environment, Development and Sustainability*, 23(1), 45-76.
- Sobol, A., (2008). Governance barriers to local sustainable development in Poland. *Management of Environmental Quality: An International Journal*, 19(2), 194-203.

- Valaskova, K., Kliestik, T., Svabova, L., & Adamko, P. (2018). Financial risk measurement and prediction modelling for sustainable development of business entities using regression analysis. *Sustainability*, 10(7), 2144.
- Wadongo, B., Kambona, O. & Odhuno, E. (2011). Emerging critical generic managerial competencies. *African Journal of Economic and Management Studies*, 2(1), 56-71.
- Walter, A., Parboteeah, K.P., Riesenhuber, F. & Hoegl, M. (2011). Championship behaviors and innovations success: An empirical investigation of university spin-offs. *Journal of Product Innovation Management*, 28(4), 586-598.
- Watson, S., McCracken, M. & Hughes, M. (2004). Scottish visitor attractions: managerial competence requirements. *Journal of European Industrial Training*, 28(1), 39-66.
- Wickramasinghe, V. & De Zoyza, N., (2011). Managerial competency requirements that enhance organisational competences: a study of a Sri Lankan telecom organisation. *The International Journal of Human Resource Management*, 22(14), 2981-3000.
- Wiek, A., Withycombe, L. & Redman, C. (2011). Key competencies in sustainability: a reference framework for academic program development. *Sustainability Science*, 6(2), 203-218.