Sustinere
Journal of Environment and Sustainability
Volume 5 Number 3 (2021) 201-222

Print ISSN: 2549-1245 Online ISSN: 2549-1253
Website: https://sustinerejes.com E-mail: sustinere.jes@iain-surakarta.ac.id

REVIEW

Conceptual framework for integrating environmental sustainability into supplier selection in procurement decisions

Tonny Ograh*, Joshua Ayarkwa, Dickson Osei-Asibey, Alex Acheampong, Peter Amoah
Department of Construction Technology and Management, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana

Article history:
Received 18 March 2021 | Accepted 15 October 2021 | Available online 31 December 2021

Abstract. Theories are used to improve conceptualization of research ideas. These theories enhance valuable elucidations that helps us to grasp the meaning of research findings. Nevertheless, the use of theories to promote studies in green supplier selection in procurement decisions has attracted little attention. With the emergence of sustainable procurement, public procurement practitioners in Ghana are yet to achieve relevant knowledge on green supplier selections due to insufficient knowledge and inadequate appropriate frameworks. The flagrancy of the consequences of public procurers' failure to integrate environmental considerations into supplier selection explains the adoption of a multi-theory approach for comprehension of the dynamics of green integration into supplier selection. In this paper, the practicality of three theories for improving the understanding of the influential factors enhancing the integration of environmental sustainability into supplier selection was reviewed. The three theories are: Resource Based Theory, Human Capital Theory and Absorptive Capacity Theory. This review uncovered knowledge management, top management commitment, and environmental management capabilities as important elements needed for the integration of environmental sustainability into supplier selection in public procurement. The theoretical review yielded a framework that conceptualizes knowledge and capabilities of practitioners relevant to incorporation of environmental sustainability into supplier selection in public procurement.

Keywords: environment; sustainability; supplier selection; green procurement

1. Introduction

In recent times, environmental concerns have become an important issue in procurement (Deans, 1999; Islam et al., 2017; Kaya, 2014; Preuss, 2005). Today, the public sector is increasingly under pressure to integrate environmental credentials into their procurement decisions. This pressure is induced by a number of government regulations, interested groups and Non-Governmental Organizations (NGOs) (John et al., 2010). Green in this paper concerns environmental dimension of the three pillars of the sustainability concept: economic, environmental and social (Adjei, 2010; Naoum & Egbu, 2016; Winter & Lasch, 2016). Green

*Corresponding author. E-mail: tograh1978@gmail.com
DOI: https://doi.org/10.22515/sustinere.jes.v5i3.182

initiatives in procurement which started between 1980s and 1990s (Dowlatshahi, 2000), is seen as advancing Sustainable Development (SD)(Seuring & Müller, 2008).

Green procurement has substantial consequences for public organizations willing to achieve its implementation, particularly when it comes to supplier selection (Igarashi et al., 2013). Before the early part of 1990s, procurement decisions such as selection and evaluation of suppliers were based on conventional criteria (price, quality and delivery) (Dowlatshahi, 2000). However, green initiatives in procurement call for the insertion of environmental credentials into supplier selection (SS), leading to green supplier selection (GSS) concept (Paul et al., 2008).

Selecting a responsive green supplier is a multi-dimensional decision problem which can influence the repercussion of a poor decision-making process (Chan et al., 2008). The ability to recommend an environmentally friendly supplier is the basis for the successful integration of green credentials into supplier selection. In particular, finding and selecting competent suppliers has become a vital issue for efficient management of sustainable procurement (SP).

This paper aims at promoting environmental sustainability (ES) which is fundamental to achieving the SDGs in general, particularly in the setting of emerging countries where the concept is at the embryonic stage (DuPlessis, 2001). These aspects encompass criteria, tools, indicators etc. However, many decision-makers select suppliers based on their experience, knowledge and intuition. These approaches are obviously subjective and the inherent weakness has been addressed in previous studies (Kontio, 1996). Weber et al. (1991) indicated that supplier selection decisions are complicated, based on the fact that conflicting decisions have to be considered. Hence, the emphasis on the concept of environmental supplier selection (ESS) in this paper. ESS is operationalized as a "*set of purchasing policies held, actions taken, and relationships formed in response to concerns associated with the natural environment*" (Zsidisin & Siferd, 2001).

ES calls for proper understanding of the global problems which is seen as systematically interdependent and interconnected (Gladwin et al., 1995). Despite the actuality of these expositions on the environmental supplier selection concept, in-depth understanding still remains far-fetched. Most public organizations lack the requisite resources to propel public sector ES, and these organizations face many barriers while integrating environmental issues into supplier selections (Ayarkwa et al., 2020). Knowledge of suppliers is important in public sector environmental procurement (Awuzie & Emuze, 2016; Grandia, 2016; Ruparathna & Hewage, 2015; Sourani & Sohail, 2011). It is also essential to recognize the acceptance or resistance of suppliers to compliance with sustainable public procurement (Zaidi et al., 2018).

Cabezas and Fath (2002) call for the use of theories to support sustainability studies. According to Cabezas and Fath (2002), using theories to promote sustainability studies is beginning to see some initial inquiries. Green Procurement (GP) has gotten to a point where meticulous application of theories are needed to achieve efficient incorporation of green into supplier selection. Basically, rigour in theory cannot be sacrificed with other GP variables. Laying emphasis on theoretical lens is likely to be helpful (Koala & Steinfeld, 2018), and integration of green into supplier selection may be enhanced through vigorous theoretical results, while practitioners can profitably feed academic research with new challenges, recommendations and instincts. Therefore, to advance research in GP studies, the possibilities of some of these theories has to be well explored (Mensah et al., 2020), especially in the area of green supplier selection.

2. Methodology

Developing a framework for conceptualizing environmental sustainability into supplier selection in procurement requires an exploration of underpinning theories with the potential to advance research (Mensah et al., 2020), especially in the area of green supplier selection. This study looks at the practicality of three theories for appreciating the influential factors enhancing the integration of environmental sustainability into supplier selection. The theories are: Resource Based Theory, Human Capital Theory and Absorptive Capacity Theory. These theories were principally selected through literature review, based on their relevance to the development of a

framework aimed at integrating ES into supplier selection (Ellram & Liu, 2002; Starbird, 2002; Zhou & Xu, 2018; Zsidisin & Siferd, 2001), and their usefulness in explaining and interpreting issues involved. Furthermore, the theories touch on knowledge and relationships that borders on the issues involved in this paper.

It was also necessary to review the literature to identify the areas requiring improvement in order to achieve successful integration of ES into supplier selection in procurement decision. The literature was systematically reviewed by using a three-step model. A search was run for keyword selected themes. Google Scholar Advanced Search, Science Direct and Scopus were used to run the search to identify the relevant themes. Subsequently, the papers were coded individually, which led to two sets of clusters. The two sets of clusters were individually created to increase the reliability of the study. Lastly, the two sets of clusters were merged in a consensus session by the authors. Similar cluster topics were merged that led to final research clusters: Sustainability, Sustainable Public Procurement (SPP), Green Public Procurement (GPP), Environmental Public Procurement (EPP) and GSS.

Concerning keywords, procurement words, phrases or terms such as sustainable procurement, environmental procurement, green procurement and green supplier selection from the procurement literature were used. "Sustainable" is a broad term which embraces the three aspects: economic, environmental and social. "Vendor", "contractor" and "partner" were used alternatively with "supplier". For the word "selection", the substitutes were "choice", "evaluation", "assessment" and "qualification." In total, 28 combinations of keywords were used in the search for relevant literature identifying the areas requiring improvement in order to achieve successful integration of ES into supplier selection in procurement decision.

Because GSS is a decision-making process in procurement, a search by multiple word phrases such as green selection, supplier selection, green purchasing, and decision making in the title and abstract were used. Though, purchasing and procurement were used interchangeably, the difference between the terms has been discussed by some researchers, who think there are no common differentiations (Cousins et al., 2008; van Weele, 2010).

In total, 50 articles were reviewed, all published in 11 peer-reviewed journals in the areas of sustainable supply chain management, sustainable procurement management, and environmental management between 2009 and 2019. From 2010, many works were done on barriers to SPP, GPP/EPP and GSS or Environmental Supplier Selections. All the selected journals had Impact Factor ratings higher than 1.0 by Thomas Reuters in the recent past. The 11 selected journals were: International Journal for Scientific and Engineering Research, Journal of Purchasing and Supply Management, European Journal of Purchasing and Supply Management, European Journal of Operations Research, Management Science, Decision Sciences, Journal of the Operational Research Society, Journal of Operations Management, Environmental Science & Technology, Journal of Environmental Management and Journal of Business Logistics. Systematic search was to ensure an accumulation of a relatively complete census of the relevant literature (Webster & Watson, 2002).

Through critical evaluation of the underpinning theories, drivers of change based on the principles underlying the theories were applied to the areas requiring improvement to achieve the expected improvements for the integration of ES into supplier selection.

3. Results

3.1. Areas requiring improvement in order to achieve successful integration of ES

Integration of green into supplier selection is a complicated process (Corbett & Kleindorfer, 2003; Kleindorfer & Saad, 2005; Linton et al., 2007). As public organizations seek to become more environmentally sustainable, they encounter a variety of barriers (Herren & Hadley, 2010). Seuring and Müller (2008) observed several barriers to the achievement of environmental sustainability in supplier selection including lack of knowledge and skills (Kumar et al., 2019;

Mehrabi et al., 2012), technology and infrastructure (R.-J. Lin, 2013; Teixeira et al., 2016; Vachon, 2007), and financial constraints (Ameyaw et al., 2012; Brammer & Walker, 2011; Chari & Chiriseri, 2014; Ho et al., 2009; Tippayawong et al., 2015; UNEP, 2013).

3.1.1. Lack of knowledge and skills

Some of the barriers classified under lack of knowledge and skills include: lack of knowledge on green procurement, awareness and training; lack of information; and lack of supplier knowledge and willingness (Evangelinos & Jones, 2009; Iles & Ryall, 2016; Islam et al., 2017; Laosirihongthong et al., 2020; Montalbán et al., 2017; Seuring & Müller, 2008; Testa et al., 2021; Tseng & Chiu, 2013; Walker & Brammer, 2009; Wright, 2010). Introducing and practicing green initiatives in the traditional supply chains needs acceptable knowledge on green supply chain concept, especially in selection process, proper training, and support (Islam et al., 2017; Seuring & Müller, 2008; Tseng & Chiu, 2013). The lack of knowledge of green practices significantly hinders the implementation of green practices in supplier selection (Kumar et al., 2019; Mehrabi et al., 2012). It is essential to recognize the acceptance or resistance of suppliers for the compliance of green procurement. In order to confirm suppliers' commitment to environmental sustainability, they must be required to present some proof (Genovese et al., 2013; Ralph & Stubbs, 2014; UNEP, 2013; Zaidi et al., 2018). Lack of understanding and awareness of sustainability issues result in confusion and a lack of staff commitment to incorporate green into supplier selection (Evangelinos & Jones, 2009; Wright, 2010). Also, because of lack of knowledge on environmental issues regarding green procurement, public organizations continue to depend on polluted materials and processes, which have serious economic ramifications (Laosirihongthong et al., 2020; Tseng & Chiu, 2013). Insufficient prospect for practitioners' training on green practices restricts their knowledge-base to the traditional supply chain operations (Kabra et al., 2015; Lintukangas et al., 2015; Muduli & Barve, 2013; Zhao et al., 2017). This subsequently affects the capabilities and competences of supply chain actors on green products, impeding the awareness creation for high patronage. The lack of awareness on green products significantly impedes incorporation of green practices into procurement (Kumar & Chandrakar, 2012; Sarkis et al., 2011). The above literature therefore underscores the need to improve the lack of knowledge barrier in order to succeed in the integration of ES into supplier selection in procurement.

3.1.2. Insufficient Technology and Infrastructure

Insufficient technology and infrastructure identified as a general barrier to integrating green into supplier selection include: lack of supporting tools; lack of modern technologies; lack of research and development practices for product recovery; and lack of shared knowledge of best practices. Integrating green into supplier selection require different modern and high-tech green technologies, infrastructure and eco-designs, which require huge financial investment (R.-J. Lin, 2013; Teixeira et al., 2016; Vachon, 2007). Due to the cost implication involved in acquiring green technologies such as electronic technology and modernizing the supply chain processes, both green buyers and suppliers are faced with difficulties in achieving their green agenda (Ho et al., 2009; Tippayawong et al., 2015). There is therefore the need to improve the insufficient technology and infrastructure barrier in order to succeed in the integration of ES into supplier selection in procurement.

3.1.3. Financial constraints

The literature review identified financial constraints as a major barrier to the integration of green into supplier selection. Other barriers related to financial constraints identified include: perception that green products are expensive (Ameyaw et al., 2012; Brammer & Walker, 2011; Chari & Chiriseri, 2014; UNEP, 2013); uncertainty related to economic issues (Olugu et al., 2011; Richey Jr et al., 2010) and lack of tax knowledge on returned products. Financial constraints limit

the implementation of green initiatives into supplier selections due to competing priorities for limited resources, and also, that the long-term savings of these projects are not accounted for in budget modelling (Khiewnavawongsa & Schmidt, 2013; Mathiyazhagan et al., 2013; Petljak et al., 2018; Wright, 2010). Budget is also required for special training programmes of GPP practitioners. The financial cost involved in GSS is another decision rule for the organization. Budgetary support is very important for GSS in the public sector (Kipkorir & Wanyoike, 2015; Ruparathna & Hewage, 2015).

Also, integrating green into supplier selection requires huge financial investment (Lin, 2013; Teixeira et al., 2016; Vachon, 2007). Organizations consider the price of green items as an extra burden on their exchequers (Brammer & Walker, 2011). Products and services promoting green in supplier selection are often perceived as being expensive or requiring considerable capital investments (Blair & Wrigh, 2012) since green responsible production methods are often perceived as being generally more expensive than conventional methods. With an overarching procurement objective of obtaining goods at the lowest possible price (Lysons & Farrington, 2004), coupled with tight budget constraints, the cost effectiveness of green procurement remains a particularly important barrier to purchasing (Chari & Chiriseri, 2014). Again, organizations perceive integration of green into selection process as a programme with high initial and operating cost with no short-term benefits, and so are demotivated to such initiative (Chin et al., 2015; Zhua & Sarkis, 2004). The perception of high initial and operating cost of greening the supply chains is a significant barrier to implementing Green Supply Chain Management (GSCM) practices in the supplier selection process (Kumar & Chandrakar, 2012; Mutingi, 2013; Ojo et al., 2014). Therefore, this can be seen as a major barrier to the incorporation of green into supplier selection.

A potential hindrance toward the implementation of green practices is the uncertainty related to economic issues (Olugu et al., 2011; Richey Jr et al., 2010). For example, the cost of disposing hazardous products are significantly huge, and this huge cost implication causes uncertainty of implementing green practices (Kushwaha, 2010; Sambrani & Pol, 2016). Greening the supply chain is a novel phenomenon that practitioners and suppliers are not fully aware, and the associated economic benefits are also not clearly perceived (Li et al., 2017). Hence, they are not motivated to integrate green practices into supplier selection. The above literature therefore underscores the need to overcome the financial constraints barrier in order to succeed in the integration of ES into supplier selection in procurement.

3.2. Relevance of the Resource Based Theory (RBT) to integration of ES into green supplier selection

The early RBTs defined resources only as anything that could be considered a strength or weakness of a given organization (Wernerfelt & Montgomery, 1986). Ultimately, this incomplete view was extended because the differences between resources and capabilities have become necessary and also considering everything as a resource reduced the power of the concept (Conner, 1991). Resources were redefined as inputs such as capital goods, individual skills, finance, etc. In a similar view, capabilities were redefined as the ability of a group of resources to perform a task (Grant, 1991). Resources were recognized as a source of sustainable competitive advantage because it is difficult to purchase or copy in comparison to the resources on which they are based (Collis & Montgomery, 1999). Studies have established the relationship among resources, capabilities and integration (Wang & Ahmed, 2007). Subsequently, Resource Based View (RBV) theorist considered organizational knowledge as the ultimate ability (Grant, 1991; Santos & Eisenhardt, 2005) because it can provide the basis for dynamic capabilities (Teece et al., 1997), which would help it to thrive in turbulent and competitive environments (Liu et al., 2011).

The explanation of RBT, within the context of public procurement, requires procurement practitioners to acquire necessary skills, knowledge and insights which can increase

incorporation of green into supplier selection. The following are RBT issues that influence the integration of green into supplier selection in procurement decisions.

3.2.1. Knowledge and skills (KS)

Huang et al. (2017) and Kanter (1999), define knowledge as a product of learning that can enhance green integration through germane action and cherished decision making. In the era of environmentally sustainable procurement, incorporating green into supplier selection requires the ability to attain green knowledge to meet the needs of the buyer (Awuzie & Emuze, 2016; Grandia, 2016; Ruparathna & Hewage, 2015; Sourani & Sohail, 2011). Therefore, knowledge sharing is crucial to building trust and durable relationships among the actors within the supply chain (Sodhi & Son, 2009). However, the need to share information among different sources can make the problem worse, making the process vulnerable to human error. Effective skills to acquire, manage and share knowledge can help solve problems and prevent these errors (Konys, 2015). Organizations are required to identify and access relevant knowledge about green suppliers when needed (Irani et al., 2017), and quick access to knowledge can be essential for making new decisions (Hashim & Tan, 2015).

Knowledge management (KM) requires organizations to obtain past and present information about green-oriented suppliers (Desouza et al., 2003) in order to make better decisions. KM is a strong area, created by numerous factors such as human resource, management change, information and technology, measuring performance, and placing value (Bukowitz & Williams, 1999).

3.2.2. Top management commitment (TMC)

Closely linked with RBT is the commitment of top management. It is argued that TMC and sustainability culture plays a critical moderating role in enhancing environmental management practices and developing resource pool in the organization (El-Kassar & Singh, 2019; Fraj et al., 2011; Renwick et al., 2013). TMC refers to the emphasis top-level managers place on the development of capabilities and skills, i.e. their willingness to prioritize a specified set of resources inside an organization. This commitment is an important aspect of buyer–supplier relationships that could help improve knowledge sharing among the actors within the supply chain (Modi & Mabert, 2007), and increase the quality in management programme and partnerships (Ragatz et al., 1997) that will make a programme successful. TMC relate to better green product design processes, customer relationships, customer focus, and supplier relationships (Ahire & Ravichandran, 2001). TMC is also a key issue in developing consistent green programme for building strong relationships (Chen & Paulraj, 2004). Therefore, TMC can be seen as a significant resource for harnessing green capabilities of both buyer and supplier.

3.2.3. Environmental investment (EI)

Environmental investment refers to the share of capital expenditures allocated to improve an organization's environmental commitment in procurement decisions. These investments can be allocated to green management designs and systems (Klassen & Whybark, 1999). EIs propel organization to develop complex capabilities (Lucas, 2010). The volume of capital overheads assigned to EI relates to an organization's level of investments (Klassen, 2000). Organizational slack (Bansal, 2005) could help to increase more budgets and managerial agendas for the fusion of these externalities as environmental performance.

3.2.4. Environmental management capabilities (EMC)

EMC is the organization's abilities or skills that enable it to manage environmental issues. Since practitioners often spur improvement in greening the supply chains, organization's capabilities incline to green requirements. Therefore, EMCs are seen as assets, technologies, and skills which influence organization to react in a timely and decisive manner to the varying

environmental requirements of the organizations (S.-Y. Lee & Klassen, 2008). Operationalizing this definition, literature identified five specific but interrelated capabilities (Bowen, 2001; Lee & Rhee, 2007): Product, Organization, Process, Supply chain, and Relationships. The first three of these capabilities are internally oriented EMCs and the last two are inter-organizational that exploit external relationships with direct and indirect stakeholders (externally oriented EMCs).

3.3. Acquisition of knowledge on environmental supplier selection: Perspective of human capital theory

Although Adam Smith added human capacities to his idea of capital stock in 1776, it was around late 1950s and 1960s that this concept began to feature prominently. Scholars have underscored the need to invest in human capital as a vital element of long-term economic growth (Akintoye & Adidu, 2008). Human resource constitutes the ultimate basis for the wealth of an organization. Smith (1776) described "financial capital and natural resources as passive factors of production and human beings as active agents who utilize these passive resources to build economic, social and political organizations, and promote national development".

The term "capital" denotes a usable productive resource. Human capital (HC) considers human beings as one of the means and factors that contribute to Sustainable Development (SD) (Šlaus & Jacobs, 2011). An important element in the conceptualization of green supplier selection is HC, which is the resources (knowledge, experience and skills) owned by sustainable practitioners in the organization (Pil & Leana, 2009). Practitioners use their HC to perform their functions (Spillane et al., 2012). HC can be obtained through the experience and training (Pil & Leana, 2009) which shape their individual knowledge and skills that form a frame of reference through which they perform their function (Hargreaves & Fullan, 2013).

Human capital (HC) refers to the capital provided by employees or individuals. HC is created by changes in persons that bring about skills and capabilities that enable them to act in new ways (Becker, 1964). These skills and capabilities that buyers acquire become intangible asset for an organization. In incorporating ES into supplier selection, human capital equips both buyers and suppliers with capabilities for successful integration.

It is perhaps more difficult to assess and monitor human capital, such as the level of knowledge of procurement professionals, than other aspects of the selection process, as the rarest and most complex resources in the sustainable procurement are human resources (Battagello et al., 2019). Although sustainability is seen as a solution to the world's most difficult problem, this fact by itself cannot help organizations achieve maximum ecological and economic benefits (Hsu & Hu, 2009; Salah et al., 2014; Shaw et al., 2012). Therefore, public institutions need to focus on vital aspects such as human capital in order to integrate environmental issues into procurement and enhance their reputation. Organizations' leaders have increasingly stressed the need for public organizations to entice, develop and retain talent effectively. In today's world, HC has become significantly important than all other tangible resource for public organizations (Almendarez, 2013).

Apparently, man has seen amazing successes in exploiting the environment. The bane is how to find ways to exploit all forms of resources in a way that promotes human well-being and sustainable growth (Šlaus & Jacobs, 2011). HC is the lever of profit in green procurement, anchored in a certain way to the talent of practitioners (Čater & Čater, 2009). In the literature, it includes things like knowledge, competence, ability, experience, creativity, teamwork, skills, attitude, loyalty and motivation of people (Sydler et al., 2014). In the last years of the millennium, senior executives have had to assume that "people, not money, buildings or equipment, are the essential differentiators of a commercial enterprise (Fitz-Enz, 2000). One of the strategies for investing in human resources includes in-service training or on-the-job training organized by organizations to cater for their workers.

Knowledge acquisition is vital for integrating ES. In view of HCT, training to improve capacity of procurement practitioners in developing countries cannot be overlooked. Formal

education and training are vital tools for improving the capacities of practitioners. Crook et al. (2011) see education and training as important for the development of green sustainability. Complexity of integration of environmental issues into procurement call for sufficient knowledge and skills. Thus, knowledge of plethora of laws affecting procurement, preparing of tender documents, evaluation of sustainable bids, implementation of environmental issues etc. are required. Therefore, knowledge is used to enhance environmental consideration in the selection process. Although procurement practitioners in less affluent societies are focusing on integrating sustainability into their practice, insufficient knowledge and skills is hampering their efforts (Crook et al., 2011). Therefore, realistic research is needed to propose effective modes of developing relevant environmental knowledge and skills among practitioners to promote integration of green into supplier selection in the developing countries to meet SDGs.

3.3.1. Challenges not addressed by HCT

Theorization of HCT is significant for the integration of environmental consideration into suppler selection in the context of an emerging society's procurement practices. Also, Theories are necessary for development of knowledge on ES issues. However, Foss (2011) raised some challenges that confront HCT. It is worth looking at these challenges in the context of this paper. An important question is whether every organization inevitably uses knowledge and skills to enhance incorporation of environmental issues into suppler selection process. He found out that this challenge has not been well addressed.

Foss et al. (2011) believes that HCT should attract and employ suppliers with valuable knowledge of ES. This may be difficult because individual suppliers have a unique combination of HC that is hard to monitor and evaluate in advance. Therefore, HC markets are imperfect and risky. As noted by Ployhart (2006), identifying suppliers with environmental credentials can be particularly problematic. This challenge is magnified when focal skills are organization-specific and not previously noticeable (Barney et al., 2011).

According to Akerlof (1970), selection challenges may also arise from adverse selection problem. This problem occurs when there is asymmetric information in the market where suppliers know more about their skills and knowledge than prospective buyer. As buyers offer competitive pricing to lessen the risk of engaging lemons, suppliers with exceptional human capital choose to avoid this supply-switching penalty. Thus, suppliers will provide unreasonably low-quality products (Akerlof, 1970). Causal ambiguity can further complicate this lemon problem by making it more difficult to determine how potential suppliers have contributed to the sustainability successes of previous buyers. However, these challenges are dealt with at the overall foundation level. Therefore, not much has been done in the HCT implementation to meet some of its challenges at the micro level. In line with these aforementioned challenges, this study focuses on obtaining a better appreciation of the exact foundations of strategic knowledge that helps to reduce the challenges that hinder the integration of environmental considerations in the selection of suppliers of public organizations.

3.4. Mediating effects for integrating ES capabilities: the expositions of the Absorptive Capacity Theory (ACT)

The AC could be linked to theories of dynamic power that emphasize the cumulative nature of knowledge (Volberda et al., 2010). The absorptive capacity of an organization is the ability of an organization to recognize the value of new external information, assimilate and apply it for sustainability purposes. Zahra and George (2002) classified AC into two perspectives: potential and realized. Therefore, AC is seen as a dual construct (Bjorvatn & Wald, 2018). Potential absorptive capacity is made up of organization's ability to identify and acquire knowledge generated externally. AC helps organizations to develop routine procedures and processes that enable them to synthesize the process, interpret and understand information obtained from these external sources (Zahra & George, 2002). Realized AC includes the conversion and exploitation of

existing, newly acquired, and secured knowledge (Zahra & George, 2002). Realized AC improves short-term integration while potential AC improves long-term integration. Figure 1 shows how knowledge is integrated during the different stages.

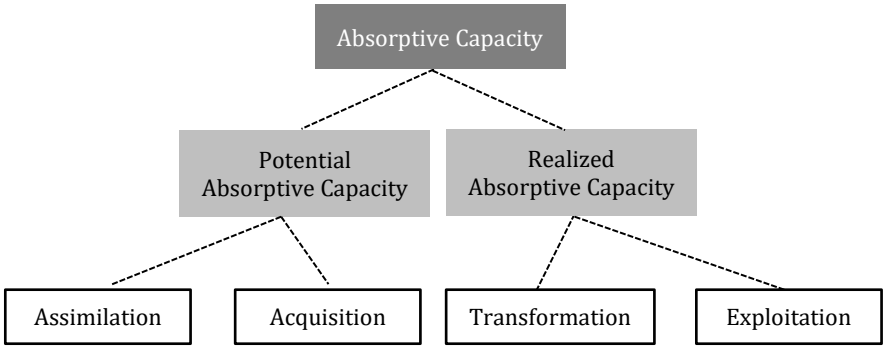

Figure 1. Process of knowledge integration

Other researchers define three concepts that shape AC. According to Lane et al. (2006), organizations recognize new external knowledge (exploratory learning), assimilate this external knowledge (transformational learning) and apply the assimilated knowledge (exploitative learning). ES follows AC's process to acquire, assimilate, transform and exploit external knowledge (Delmas et al., 2011; Gluch et al., 2009). Green practitioners use AC to improve organizations' response to sustainability issues (Roy & Thein, 2008) through improved exploratory and exploitative green learning.

Dynamic capabilities are the organization's ability to integrate, develop and reconfigure internal and external skills to deal with rapidly changing environments. Through dynamic capabilities, the organization transcends resource-based view (RBV) of the entity, which is characterized by filler thinking and post-reflection (Priem & Swink, 2012). Specifically, dynamic abilities are directed by pathway dependent learning mechanisms (Eisenhardt & Martin, 2000).

Researchers lay emphasize on the capacity that can influence the adoption of green initiatives (Arfi et al., 2018). It is the AC of an organization that influences the ability to absorb, identify and use outside knowledge. AC is gradually seen as a critical component of nursing innovation performance and competitiveness (Barringer & Harrison, 2000; Boakye, 2018). According to Kokshagina et al. (2017), the ability of organizations to obtain new knowledge depends on a strong corresponding knowledge function. Therefore, an organization requires to mobilize resources and capacities to maintain a constant level of AC. According to Lane et al. (2006), AC uses learning processes related to exploration, uptake (assimilate) and exploitation to improve the integration of green into supplier selection. Several studies indicate that learning can be used to facilitate precedents and supplier performance (Carter, 2005; Modi & Mabert, 2007).

3.4.1. Levels of learning or capacity development (CD) for green integration

Different views on learning or CD mirrors the viewpoint that organization's capacity learning may occur at individual level, institutional level and within the enabling environment. Many authors on CD, sometimes referred to these levels of learning in different ways. For example, institutional level is intermittently referred to as the organizational level and the enabling environment is sometimes called the societal level. These differences may resonate the extent to which capacity is comprehended, but they fail to challenge the notion that Capacity Building (CB) occurs at different levels that create an integrated system. This connectivity means that any attempt to develop or assess CB for environmental supplier selection essentially needs to consider capacity at each level, else it will become skewed or ineffective. Usually, special care ought to be paid to emerging trends and new ideas that may inspire the need for the application of capacities.

The enabling environment refers to the wider system which create room for individuals and organizations to function and also help to ease or impede their presence and performance. Though CB at environmental level is difficult to obtain concretely, it is crucial to the understanding of issues about capacity building (UNDP, 2008). Examples of CB at environmental level encompass legislation, policies, social norms, power relations etc., all of which help to regulate the conduct, priorities, and modes of operation across supplier selection.

The CB at the organizational level refers to the internal procedures, policies, arrangements, and frameworks that aid organizations to adopt and integrate environmental sustainability into supplier selection, and that bring together individual capabilities within the supply chain to work together and achieve environmental goals.

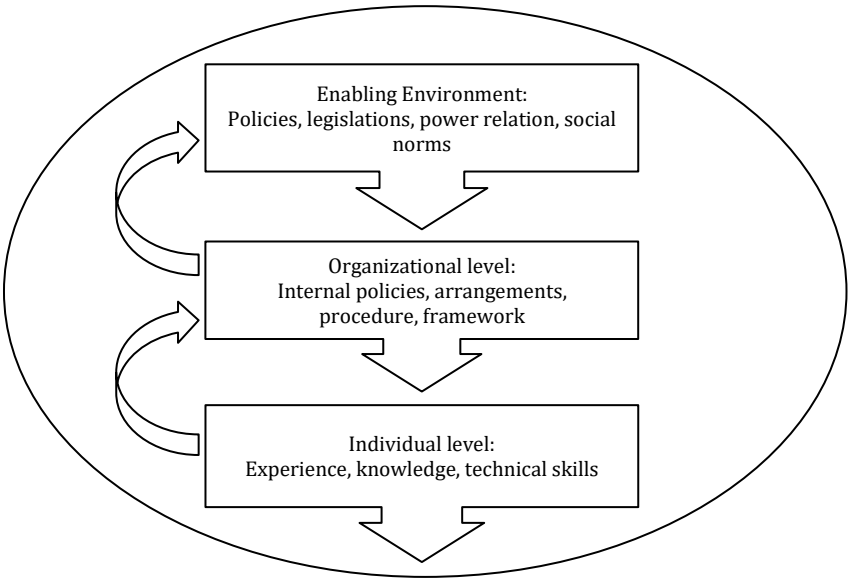

Figure 2. Holistic approaches to levels of capacity development

At the individual level, capacity denotes the skills, experience and knowledge that are bestowed in the actors of environmental sustainability. Each procurer is gifted with a blend of capacities that helps them to select suppliers with environmental credentials within their mandates. These capacities can be obtained through education and training, or through learning by practicing and experience. Figure 2 shows how the three levels for CB are jointly collaborative and how each level inspires the other through multifaceted co-dependency relationships.

3.4.2. AC's perspective of Exploration, assimilation and exploitation of knowledge

Exploration involves identifying and understanding knowledge external to the organization, such as variety-seeking processes. In green selection process, the buyer uses exploration of knowledge to locate suppliers with green credentials. Assimilation is an amalgamation of new knowledge and old knowledge, which can be used in new ways (Lane et al., 2006). Sustainable buyers rely on comprehension of knowledge to incorporate green issues into supplier selection without compromising traditional standards. It can sometimes be difficult to exploit new knowledge immediately, so the learning process performs an important function through time (Becerra-Fernandez & Sabherwal, 2014). The process involves using the knowledge gained to develop sustainability results, such as reliability searches (March, 1991). In selecting a green supplier, the buyer relies on internalized knowledge to promote the green concept.

According to Zahra and George (2002), there are four stages of the learning process, which are then grouped into two first-class constructs: Potential; and Realized. Conversely, Todorova

and Durisin (2007) argue that these two phases are parallel rather than consecutive, thus potential and Realized concepts lose their validity. Therefore, AC can be obtained through three mutually supportive learning processes (exploration, assimilation and exploitation) (Lane et al., 2006; Lichtenthaler & Ernst, 2009; Volberda et al., 2010). Formally, learning processes refer to the creation, storage, and transmission of knowledge (Vera & Crossan, 2007). This close relationship between learning and knowledge explains the nature of the ACT. Some initial knowledge is needed to construct a knowledge transmission (Cohen & Levinthal, 1990), and thus, multiple iterations of learning processes enrich and changes the knowledge base of an organization (Lin et al., 2006). AC could enhance integration of practical green credentials through strategic initiatives pursued at the organization level (Delmas et al., 2011) as in the case of an organization's sustainable programme (Aboelmaged & Hashem, 2019).

Organizations can promote sustainability based on the knowledge acquired through learning processes (Albort-Morant et al., 2018; Delmas et al., 2011). Since an organization's green desire largely relate to its context (Pinkse et al., 2010), it can be obtained through acquisition of detailed environmental knowledge which can be assimilated through many conduits (Riikkinen et al., 2017). Furthermore, the ability of an organization to apply the acquired external information could depend on the knowledge and experience of human capital concerning green programmes and how this knowledge can be practicalized (Qian et al., 2013). However, some practitioners lack the ability to learn new knowledge for the integration of ES into supplier selection in procurement.

ACT increases the breadth and depth of relevant knowledge such as environmental management issues available to both buyer and supplier and enhance their willingness to integrate this knowledge. As both learn along with each other, they better understand each other's needs, ensuring smooth integration into the selection process. Through sharing of knowledge, one partners could adjust to adopt a new technology, taste and benchmarks from the market structures (Hult et al., 2004). Certainly, exploration lessons the organization's risk of knowledge ossification. However, if exploration is not pooled together with the prevailing knowledge through assimilation, the organization may incur the cost of acquiring knowledge devoid of gains associated with the exploitation (Lane et al., 2006). Where organization were unable to acquire knowledge through exploration, it is difficult to assimilate and transfer this knowledge within the organization.

Likewise, buyers' demand for environmental considerations allows the supplier to incorporate that knowledge into designing of the product and responding more flexibly to the buyer's changing needs. These assimilation mechanisms take advantage of chain projects and ideas to improve the long-term benefits of supply chain (Knoppen et al., 2011). The organization harnesses the knowledge acquired through its use and implementation (Lane et al., 2006), particularly in combined decision-making among actors which could improve relationship, strategies, or designing new products (Azadegan et al., 2008; Malhotra et al., 2005; Volberda et al., 2010).

Exploitation minimizes organization's risk of inertia due to adoption of new approach. Assimilated knowledge could help to improve the selection process. This exploitative learning transforms assimilated knowledge into action which propels integration of green into products design. The benefit of learning could then be visible in this process (Hult et al., 2004).

Based on the preceding discussion, it is obvious that knowledge and competencies of AC for ES may be relative. For example, managerial awareness and knowledge level of practitioners concerning stakeholder demands and legislation of green sustainability, such as using cleaner technologies and environmental practices of buyers and suppliers (del Río et al., 2010; Roy & Thérin, 2008). The main question that has to be answered is: Can organizations integrate ES into supplier selection effectively if the relevant capacities are developed? Further empirical evidence will be collected through the ongoing PhD study to answer this research question.

3.5. Interrelationship among the three theories for the integration of ES into supplier selection

The enormity of the ramifications of buyer's inability to integrate ES into supplier selection in procurement decisions rationalizes the need to adopt a multi-theory approach for appreciating and understanding the underlying principles of integration (Pramanik et al., 2016). From the review of the three theories, it has been established that one theory relates to the other, as far as issues of green supplier selection processes are concerned. The Figure 3 shows the interrelationship among the three theories reviewed. This interrelationship contributes to an in-depth understanding of the integration of green into supplier selection decision. The interconnectedness among the theories plays an important role in understanding the intricacies that characterize green supplier selection in procurement decisions.

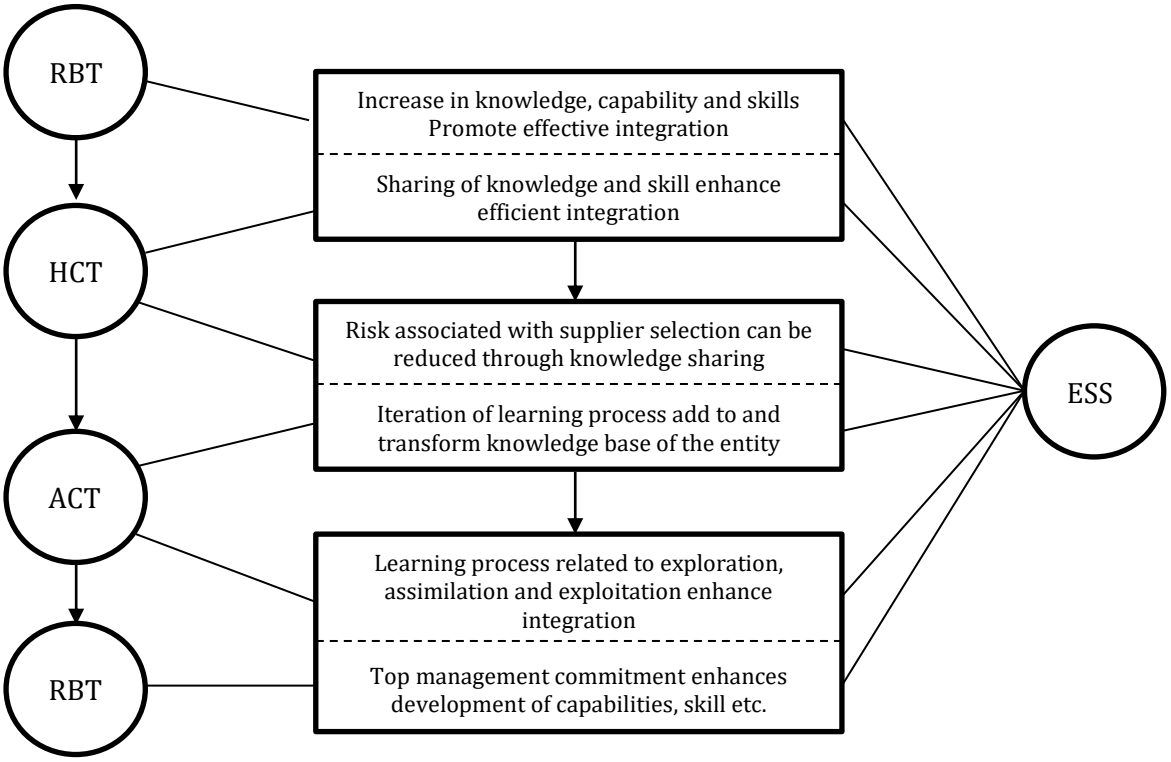

Figure 3. Interrelationships among Theories underpinning integration of Environmental Sustainability into Supplier selection

Due to knowledge gap and insufficient frameworks, procurement practitioners are unable to successfully integrate environmental sustainability into supplier selection in procurement decisions. The RBT is seen as a crucial theory for effective integration of green into supplier selection. From the review of the RBT, it has been established that green buyers need to possess inputs such as knowledge, capability and skills to promote effective integration of environmental issues into supplier selection (Desouza et al., 2003; Irani et al., 2017). Resources are the assets, technologies, and skills that enable an organization to respond in a decisive and timely manner to the various environmental demand (Hashim & Tan, 2015). To increase capacity for effective green integration into supplier selections, both buyer and supplier have to engage in learning to increase their knowledge (Desouza et al., 2003; Irani et al., 2017).. Top management commitment is also an important resource for the development of green capabilities of both the buyer and supplier (El-Kassar & Singh, 2019; Fraj et al., 2011; Modi & Mabert, 2007; Renwick et al., 2013).

The arguments of Human Capital Theory (HCT) suggest that knowledge, which is crucial in green supplier selection, have to be shared between buyers and suppliers to enhance integration (Hult et al., 2004). HCT posits that risk, which is associated with supplier selection, can be minimized through sharing of knowledge between the buyer and supplier (Garfamy, 2011). From the review of ACT, learning may be used to mediate between selected antecedents and supplier performance (Lane et al., 2006). ACT uses learning processes related to exploration, assimilation, and exploitation to enhance effective integration of environmental issues into procurement decisions (Hult et al., 2004; Qian et al., 2013).

3.6. Conceptual framework for integrating environmental sustainability into supplier selection

The conceptual framework was developed on the premise that public institutions are unable to integrate ES into supplier selection in procurement decision. The literature indicates that procurement practitioners in many public institutions lack capacity to undertake integration of ES into supplier selection (Crook et al., 2011). They also lack knowledge on green issues and the ability to learn new knowledge (Crook et al., 2011), insufficient technology and infrastructure (Lin, 2013; Teixeira et al., 2016; Vachon, 2007), and financial constraints (Ameyaw et al., 2012; Brammer & Walker, 2011; Chari & Chiriseri, 2014; UNEP, 2013). These areas (indicated in column 1) are expected to be improved in order to achieve successful integration of ES into supplier selection in procurement decision.

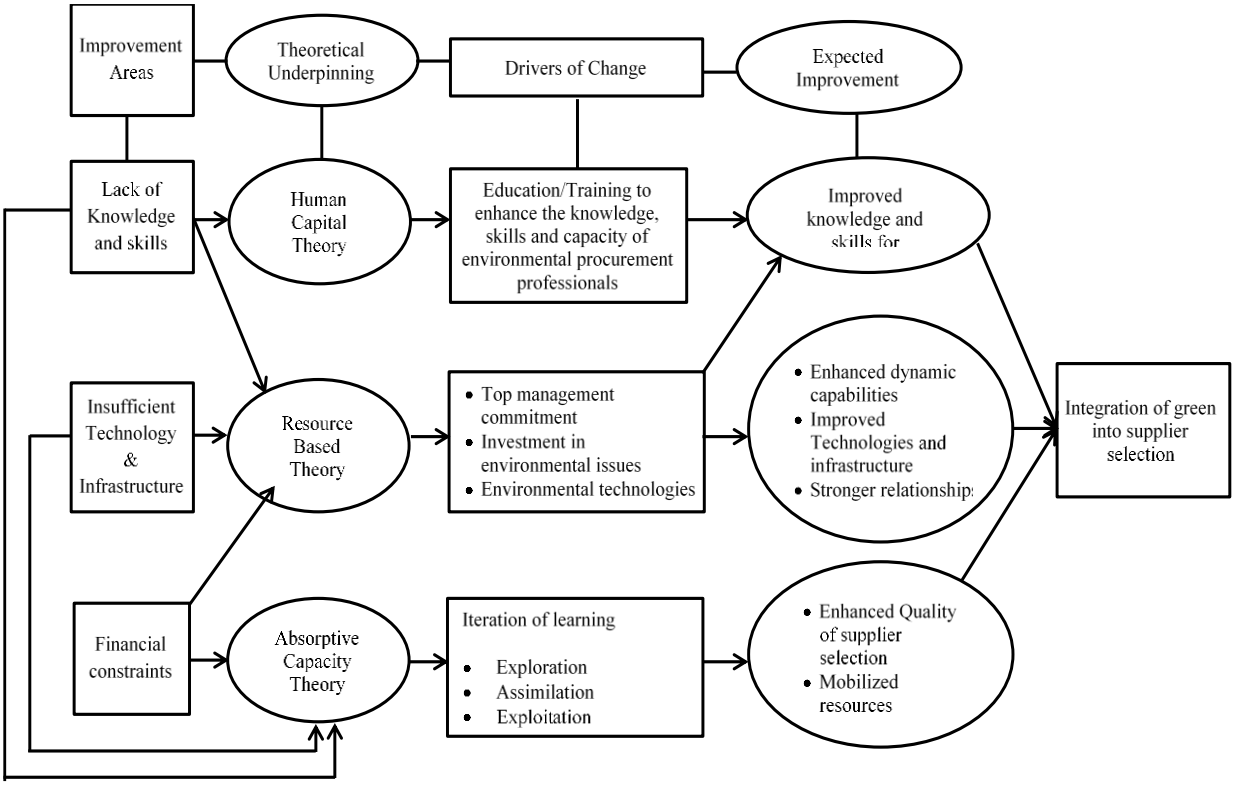

Figure 4. Conceptualized integration of green issues into supplier selection

The principles underpinning the selected theories (indicated in column 2) i.e. Resource Based Theory (RBT), Human Capital Theory (HCT) and Absorptive Capacity Theory (ACT) if applied, will trigger the underlying drivers of change (indicated in column 3) to transform the areas requiring improvement (column 1) into the expected outcomes (indicated in column 4) for a successful integration of ES into supplier selection (Figure 4). Adopting the HCT triggers training

and education drivers to improve the knowledge, skills and capacity of procurement professionals for successful integration of green into supplier selection. Applying the RBT to lack of knowledge, insufficient technologies and infrastructure, will also engender top management commitment to increase investments in environmental issues, improve environmental technologies and infrastructure for enhanced dynamic capacity for integration of green into supplier selection. Adopting ACT will trigger iteration of learning through exploration, assimilation and exploitation to result in enhanced quality of supplier selection in procurement, more mobilized resources and acquired new knowledge. The achievement of all these expected improvements will result in a successful integration of green into supplier selection (Figure 4).

4. Conclusion

There is paucity of knowledge and scanty literature on the use of theories to advance integration of environmental sustainability into supplier selection in procurement decision. This paper has presented a review of relevant theories to facilitate understanding of the issues surrounding environmental supplier selection process. Through the review in this paper, contributions have been made towards improving understanding of the underlying principles for the integration of green into supplier selection in procurement decisions. This forms a basis for empirically investigating the factors influencing integration of green supplier selection into procurement decision in public organization. The study has also shown how education and training are important as tools for enhancing knowledge, skills and capacity of practitioners for the integration of ES into supplier selection in procurement. The study has also uncovered knowledge management, top management commitment, and environmental management capabilities as important elements needed for the integration of environmental sustainability into supplier selection in public procurement.

The interconnectedness among the Resource Base Theory, Human Capital Theory and Absorptive Capacity Theory, illustrated in this paper, facilitated understanding of the complexities surrounding integration of ES into supplier selection. A conceptualization of how organizations can develop their potential to integrate green into supplier selection on the basis of the theories discussed and important areas requiring improvements, has been developed and presented in this paper.

It is therefore recommended to public organizations seeking to achieve integration of ES into procurement decisions to establish strong networks for learning and sharing of knowledge between both buyer and supplier to enhance integration of green issues into supplier selection.

References

Aboelmaged, M., & Hashem, G. (2019). Absorptive capacity and green innovation adoption in SMEs: The mediating effects of sustainable organisational capabilities. *Journal of Cleaner Production*, *220*, 853–863. https://doi.org/https://doi.org/10.1016/j.jclepro.2019.02.150

Adjei, A. B. (2010). *Sustainable public procurement: A new approach to good governance*. IPPC4.

Ahire, S. L., & Ravichandran, T. (2001). An innovation diffusion model of TQM implementation. *IEEE Transactions on Engineering Management*, *48*(4), 445–464. https://doi.org/doi: 10.1109/17.969423

Akerlof, G. A. (1970). The Market for "Lemons": Quality Uncertainty and the Market Mechanism. *Quarterly Journal of Economics*, *235*, 237–251.

Akintoye, I., & Adidu, F. (2008). Optimising National Growth Through Human Resources Investments. *European Journal of Scientific Research*, *22*(3), 433–443.

Albort-Morant, G., Leal-Rodríguez, A. L., & Marchi, V. De. (2018). Absorptive capacity and relationship learning mechanisms as complementary drivers of green innovation performance. *Journal of Knowledge Management*, *22*(2), 432–452. https://doi.org/https://doi.org/10.1108/JKM-07-2017-0310

Almendarez, L. (2013). Human Capital Theory: Implications for Educational Development in Belize and the Caribbean. *Caribbean Quarterly*, *59*(3–4), 21–33. https://doi.org/https://doi.org/10.1080/00086495.2013.11672495

Ameyaw, C., Mensah, S., & Osei-Tutu, E. (2012). Public procurement in Ghana: the implementation challenges to the public procurement law 2003 (Act 663). *International Journal of Construction Supply Chain Management*, *2*(2), 55–65. https://doi.org/DOI 10.14424/ijcscm202012-55-65

An, J., Gharahkhani, P., Law, M. H., Ong, J.-S., Han, X., Olsen, C. M., Neale, R. E., Lai, J., Vaughan, T. L., Gockel, I., Thieme, R., Böhmer, A. C., Jankowski, J., Fitzgerald, R. C., Schumacher, J., Palles, C., BEACON, 23andMe Research Team, Whiteman, D. C., & MacGregor, S. (2019). Gastroesophageal reflux GWAS identifies risk loci that also associate with subsequent severe esophageal diseases. *Nature Communications*, *10*, 4219. https://doi.org/https://doi.org/10.1038/s41467-019-11968-2

Arfi, W. Ben, Hikkerova, L., & Sahut, J.-M. (2018). External knowledge sources, green innovation and performance. *Technological Forecasting and Social Change*, *129*, 210–220. https://doi.org/https://doi.org/10.1016/j.techfore.2017.09.017

Awuzie, B., & Emuze, F. (2016). Barriers to the sustainable procurement of built university assets in sub-Saharan Africa. *International Conference on Infrastructure Development in Africa*.

Ayarkwa, J., Agyekum, K., Opoku, D.-G. J., & Appiagyei, A. A. (2020). Barriers to the implementation of environmentally sustainable procurement in public universities. *International Journal of Procurement Management*, *13*(1), 24–41.

Azadegan, A., Dooley, K. J., Carter, P. L., & Carter, J. R. (2008). Supplier innovativeness and the role of interorganizational learning in enhancing manufacturer capabilities. *Journal of Supply Chain Management*, *44*(4), 14–35. https://doi.org/https://doi.org/10.1111/j.1745-493X.2008.00070.x

Bansal, P. (2005). Evolving sustainably: a longitudinal study of corporate sustainable development. *Strategic Management Journal*, *26*(3), 197–218. https://doi.org/https://doi.org/10.1002/smj.441

Barney, J. B., Ketchen, Jr., D. J., & Wright, M. (2011). The Future of Resource-Based Theory: Revitalization or Decline? *Journal of Management*, *37*(5), 1299–1315. https://doi.org/https://doi.org/10.1177/0149206310391805

Barringer, B. R., & Harrison, J. S. (2000). Walking a tightrope: creating value through interorganizational relationships. *Journal of Management*, *26*(3), 367–403. https://doi.org/https://doi.org/10.1016/S0149-2063(00)00046-5

Battagello, F. M., Cricelli, L., & Grimaldi, M. (2019). Prioritization of Strategic Intangible Assets in Make/Buy Decisions. *Sustainability*, *11*(5), 1267. https://doi.org/https://doi.org/10.3390/su11051267

Becerra-Fernandez, I., & Sabherwal, R. (2014). *Knowledge Management: Systems and Processes*. Routledge.

Becker, G. S. (1964). *Human capital: A Theoretical and Empirical Analysis, with Special Reference to Educatio* (Third Edit). The University of Chicago Press.

Bjorvatn, T., & Wald, A. (2018). Project complexity and team-level absorptive capacity as drivers of project management performance. *International Journal of Project Management*, *36*(6), 876–888. https://doi.org/https://doi.org/10.1016/j.ijproman.2018.05.003

Blair, F., & Wrigh, D. (2012). *Implementing sustainable procurement*. European Pathway to Zero Waste & Resources Action Programme EPOW.

Boakye, D. J. (2018). *The relationship between environmental management quality and financial performance of AIM listed firms in the UK*. Bournemouth University.

Bowen, W. M. (2001). *Environmental Justice Through Research-Based Decision-Making*. Grandland Publishing.

Brammer, S., & Walker, H. (2011). Sustainable procurement in the public sector: an international comparative study. *International Journal of Operations & Production Management*, *31*(4), 452–476. https://doi.org/https://doi.org/10.1108/01443571111119551

Bukowitz, W., & Williams, R. (1999). *Knowledge Management Diagnosis Questionnaire*.

Cabezas, H., & Fath, B. D. (2002). Towards a theory of sustainable systems. *Fluid Phase Equilibria*, *194–197*, 3–14. https://doi.org/https://doi.org/10.1016/S0378-3812(01)00677-X

Carter, C. R. (2005). No TitlePurchasing social responsibility and firm performance: The key mediating roles of organizational learning and supplier performance. *International Journal of Physical Distribution & Logistics Management*, *35*(3), 177–194. https://doi.org/https://doi.org/10.1108/09600030510594567

Čater, T., & Čater, B. (2009). (In)tangible resources as antecedents of a company's competitive advantage and performance. *Journal of East European Management Studies*, *14*(2), 186–209.

Chan, F. T. S., Kumar, N., Tiwari, M. K., Lau, H. C. W., & Choy, K. L. (2008). Global supplier selection: a fuzzy-AHP approach. *International Journal of Production Research*, *46*(14), 3825–3857. https://doi.org/https://doi.org/10.1080/00207540600787200

Chari, F., & Chiriseri, L. (2014). Barriers to Sustainable Procurement in Zimbabwe. *Greener Journal of Business and Management Studies*, *4*(1), 14–18.

Chen, I. J., & Paulraj, A. (2004). Towards a theory of supply chain management: the constructs and measurements. *Journal of Operations Management*, *22*(2), 19–150. https://doi.org/https://doi.org/10.1016/j.jom.2003.12.007

Chin, T. A., Tat, H. H., & Sulaiman, Z. (2015). Green Supply Chain Management, Environmental Collaboration and Sustainability Performance. *Procedia CIRP*, *26*, 695–699. https://doi.org/https://doi.org/10.1016/j.procir.2014.07.035

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation. *Administrative Science Quarterly*, *35*(1), 128–152. https://doi.org/https://doi.org/10.2307/2393553

Collis, D. J., & Montgomery, C. A. (1999). Competing in Resource Strategy. In M. A. Zack (Ed.), *Knowledge and Strategy*. Routledge.

Conner, K. R. (1991). A Historical Comparison of Resource-Based Theory and Five Schools of Thought Within Industrial Organization Economics: Do We Have a New Theory of the Firm? *Journal of Management*, *17*(121–154). https://doi.org/https://doi.org/10.1177/014920639101700109

Corbett, C. J., & Kleindorfer, P. R. (2003). Environmental management and operations management: introduction to the third special issue. *Production and Operations Management*, *12*(3), 287–289.

Cousins, P., Lamming, R., Lawson, B., & Squire, B. (2008). *Strategic Supply Management: Principles, Theories and Practice*. Pearson Education Ltd.

Crook, A. E., Beier, M. E., Cox, C. B., Kell, H. J., Hanks, A. R., & Motowidlo, S. J. (2011). Measuring Relationships between Personality, Knowledge, and Performance using Single-response Situational Judgment Tests. *International Journal of Selection Adn Assessment*, *19*(4), 363–373. https://doi.org/https://doi.org/10.1111/j.1468-2389.2011.00565.x

Deans, I. (1999). An approach to the environmental management of purchasing in the utilities sector. *Eco-Management and Auditing*, *6*(1), 11–17. https://doi.org/https://doi.org/10.1002/(SICI)1099-0925(199903)6:1<11::AID-EMA95>3.0.CO;2-Y

del Río, P., Carrillo-Hermosilla, J., & Könnölä, T. (2010). Policy Strategies to Promote Eco-Innovation. An Integrated Framework. *Journal of Industrial Ecology*, *14*(4), 541–557. https://doi.org/https://doi.org/10.1111/j.1530-9290.2010.00259.x

Delmas, M., Hoffmann, V. H., & Kuss, M. (2011). Under the Tip of the Iceberg: Absorptive Capacity, Environmental Strategy, and Competitive Advantage. *Business & Society*, *50*(1), 116–154. https://doi.org/https://doi.org/10.1177/0007650310394400

Desouza, K. C., Chattaraj, A., & Kraft, G. (2003). Supply chain perspectives to knowledge management: research propositions. *Journal of Knowledge Management*, *7*(3), 129–138. https://doi.org/https://doi.org/10.1108/13673270310485695

Dowlatshahi, S. (2000). Designer–buyer–supplier interface: Theory versus practice. *International Journal of Production Economics*, *63*(2), 111–130. https://doi.org/https://doi.org/10.1016/S0925-5273(99)00009-2

DuPlessis, C. (2001). *Agenda 21 For Sustainable Construction in Developing Countries*.

Eisenhardt, K. M., & Martin, J. A. (2000). Dynamic capabilities: what are they? *Strategic Management Journal*, *21*(10–11), 1105–1121. https://doi.org/https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E

El-Kassar, A.-N., & Singh, S. K. (2019). Green innovation and organizational performance: The influence of big data and the moderating role of management commitment and HR practices. *Technological Forecasting and Social Change*, *144*, 483–498. https://doi.org/https://doi.org/10.1016/j.techfore.2017.12.016

Ellram, L. M., & Liu, B. (2002). The Financial Impact of Supply Management. *Supply Chain Management Review*, *6*(6), 30–37.

Evangelinos, K. I., & Jones, N. (2009). An analysis of social capital and environmental management of higher education institutions. *International Journal of Sustainability in Higher Education*, *10*(4), 334–342. https://doi.org/https://doi.org/10.1108/14676370910990684

Fitz-Enz, J. (2000). *The ROI of human capital: Measuring the economic value of employee performance*. AMACOM Div American Mgmt Assn.

Foss, N. J., Barney, J. B., Ketchen Jr., D. J., & Wright, M. (2011). Invited Editorial: Why Micro-Foundations for Resource-Based Theory Are Needed and What They May Look Like. *Journal of Management*, *37*(5), 1413–1428. https://doi.org/https://doi.org/10.1177/0149206310390218

Fraj, E., Martínez, E., & Matute, J. (2011). Green marketing strategy and the firm's performance: the moderating role of environmental culture. *Journal of Strategic Marketing*, *19*(4), 339–355. https://doi.org/https://doi.org/10.1080/0965254X.2011.581382

Garfamy, R. M. (2011). Supplier selection and business process improvement: an exploratory multiple case study. *International Journal of Operational Research*, *10*(2), 240–255.

Genovese, A., Koh, S. C. L., Bruno, G., & Esposito, E. (2013). Greener supplier selection: state of the art and some empirical evidence. *International Journal of Production Research*, *51*(10), 2868–2886. https://doi.org/https://doi.org/10.1080/00207543.2012.748224

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. https://doi.org/https://doi.org/10.5465/amr.1995.9512280024

Gluch, P., Gustafsson, M., & Thuvander, L. (2009). An absorptive capacity model for green innovation and performance in the construction industry. *Construction Management and Economics*, *27*(5), 451–464. https://doi.org/https://doi.org/10.1080/01446190902896645

Grandia, J. (2016). Finding the missing link: examining the mediating role of sustainable public procurement behaviour. *Journal of Cleaner Production*, *124*, 183–190. https://doi.org/https://doi.org/10.1016/j.jclepro.2016.02.102

Grant, R. M. (1991). The Resource-Based Theory of Competitive Advantage: Implications for Strategy Formulation. *California Management Review*, *33*(3), 114–135. https://doi.org/https://doi.org/10.2307/41166664

Hargreaves, A., & Fullan, M. (2013). The power of professional capital. *The Learning Professional*, *34*(4), 36–39.

Hashim, K. F., & Tan, F. B. (2015). The mediating role of trust and commitment on members' continuous knowledge sharing intention: A commitment-trust theory perspective. *International Journal of Information Management*, *35*(2), 145–151. https://doi.org/https://doi.org/10.1016/j.ijinfomgt.2014.11.001

Herren, A., & Hadley, J. (2010). *Barriers to Environmental Sustainability Facing Small Businesses in Durham, NC*. Duke University.

Ho, J. C., Shalishali, M. K., Tseng, T., & Ang, D. S. (2009). Opportunities in green supply chain management. *The Coastal Business Journal*, *8*(1), 18–31.

Hsu, C.-W., & Hu, A. H. (2009). Applying hazardous substance management to supplier selection using analytic network process. *Journal of Cleaner Production*, *17*(2), 255–264. https://doi.org/https://doi.org/10.1016/j.jclepro.2008.05.004

Huang, M., Qian, Q., & Zhu, X. (2017). Encoding Syntactic Knowledge in Neural Networks for Sentiment Classification. *ACM Transactions on Information Systems*, *35*(3), 1–27. https://doi.org/https://doi.org/10.1145/3052770

Hult, G. T. M., Ketchen Jr., D., & Slater, S. F. (2004). Information Processing, Knowledge Development, and Strategic Supply Chain Performance. *Academy of Management Journal*, *47*(2), 241–253. https://doi.org/https://doi.org/10.5465/20159575

Igarashi, M., Boer, L. de, & Fet, A. M. (2013). What is required for greener supplier selection? A literature review and conceptual model development. *Journal of Purchasing and Supply Management*, *19*(4), 247–263. https://doi.org/https://doi.org/10.1016/j.pursup.2013.06.001

Iles, D., & Ryall, P. (2016). How can the United Kingdom construction industry implement sustainable procurement strategies? *Roceedings of the 32nd Annual ARCOM Conference, 5-7 September 2016, Manchester, UK*, 1121–1130.

Irani, Z., Kamal, M. M., Sharif, A., & Love, P. E. D. (2017). Enabling sustainable energy futures: factors influencing green supply chain collaboration. *Production Planning & Control*, *28*(6–8), 684–705. https://doi.org/https://doi.org/10.1080/09537287.2017.1309710

Islam, M. M., Murad, M. W., McMurray, A. J., & Abalala, T. S. (2017). Aspects of sustainable procurement practices by public and private organisations in Saudi Arabia: an empirical study. *International Journal of Sustainable Development & World Ecology*, *24*(4), 289–303. https://doi.org/https://doi.org/10.1080/13504509.2016.1209794

John, A. P. I., Richard, B. R. J., & Amita, M. (2010). *Strategic Management (10th Ed.)*. McGraw-Hill.

Kabra, G., Ramesh, A., & Arshinder, K. (2015). Identification and prioritization of coordination barriers in humanitarian supply chain management. *International Journal of Disaster Risk Reduction*, *13*, 128–138. https://doi.org/https://doi.org/10.1016/j.ijdrr.2015.01.011

Kanter, J. (1999). Knowledge Management, Practically Speaking. *Information Systems Management*, *16*(4), 7–15.
Kaya, M. B. (2014). *Regulating sustainable public procurement in Turkey in the context of the European Union membership*. University of Nottingham.
Khiewnavawongsa, S., & Schmidt, E. K. (2013). Barriers to green supply chain implementation in the electronics industry. *2013 IEEE International Conference on Industrial Engineering and Engineering Management*, 226–230. https://doi.org/10.1109/IEEM.2013.6962408
Kipkorir, L. E., & Wanyoike, D. M. (2015). Factors influencing implementation of green procurement in multinational tea companies in Kericho County. *International Journal of Economics, Commerce and Management*, *3*(6), 431–446.
Klassen, R. D. (2000). Exploring the linkage between investment in manufacturing and environmental technologies. *International Journal of Operations & Production Management*, *20*(2), 127–147. https://doi.org/https://doi.org/10.1108/01443570010304224
Klassen, R. D., & Whybark, D. C. (1999). Environmental Management in Operations: The Selection of Environmental Technologies. *Decision Sciences*, *30*(3), 601–631. https://doi.org/https://doi.org/10.1111/j.1540-5915.1999.tb00900.x
Kleindorfer, P. R., & Saad, G. H. (2005). Managing Disruption Risks in Supply Chains. *Production and Operations Management*, *14*(1), 53–68. https://doi.org/https://doi.org/10.1111/j.1937-5956.2005.tb00009.x
Knoppen, D., Sáenz, M. J., & Johnston, D. A. (2011). Innovations in a relational context: Mechanisms to connect learning processes of absorptive capacity. *Management Learning*, *42*(4), 419–438. https://doi.org/https://doi.org/10.1177/1350507610389684
Koala, K., & Steinfeld, J. (2018). Theory building in public procurement. *Journal of Public Procurement*, *18*(4), 282–305. https://doi.org/https://doi.org/10.1108/JOPP-11-2018-017
Kokshagina, O., Gillier, T., Cogez, P., Masson, P. Le, & Weil, B. (2017). Using innovation contests to promote the development of generic technologies. *Technological Forecasting and Social Change*, *114*, 152–164. https://doi.org/https://doi.org/10.1016/j.techfore.2016.07.035
Kontio, J. (1996). A case study in applying a systematic method for COTS selection. *Proceedings of IEEE 18th International Conference on Software Engineering*.
Konys, A. (2015). Knowledge-based approach to question answering system selection. In M. Núñez, N. Nguyen, D. Camacho, & B. Trawiński (Eds.), *Computational Collective Intelligence* (pp. 361–370). Springer. https://doi.org/https://doi.org/10.1007/978-3-319-24069-5_34
Kumar, A., Mangla, S. K., Luthra, S., & Ishizaka, A. (2019). Evaluating the human resource related soft dimensions in green supply chain management implementation. *Production Planning & Control*, *30*(9), 699–715. https://doi.org/https://doi.org/10.1080/09537287.2018.1555342
Kumar, R., & Chandrakar, R. (2012). Overview of Green Supply Chain Management: Operation and Environmental Impact at Different Stages of the Supply Chain. *International Journal of Engineering and Advanced Technology*, *1*(3), 1–6.
Kushwaha, G. S. (2010). Sustainable development through strategic green supply chain management. *International Journal of Engineering and Management Sciences*, *1*(1), 7–11.
Lane, P. J., Koka, B. R., & Pathak, S. (2006). The Reification of Absorptive Capacity: A Critical Review and Rejuvenation of the Construct. *Academy of Management Review*, *31*(4), 833–863. https://doi.org/https://doi.org/10.5465/amr.2006.22527456
Laosirihongthong, T., Samaranayake, P., Nagalingam, S. V., & Adebanjo, D. (2020). Prioritization of sustainable supply chain practices with triple bottom line and organizational theories: industry and academic perspectives. *Production Planning & Control*, *31*(14), 1207–1221. https://doi.org/https://doi.org/10.1080/09537287.2019.1701233
Lee, S.-Y., & Klassen, R. D. (2008). Drivers and Enablers That Foster Environmental Management Capabilities in Small- and Medium-Sized Suppliers in Supply Chains. *Production and Operations Management*, *17*(6), 573–586. https://doi.org/https://doi.org/10.3401/poms.1080.0063
Lee, S. Y., & Rhee, S. (2007). The change in corporate environmental strategies: a longitudinal empirical study. *Management Decision*, *45*(2), 196–216. https://doi.org/https://doi.org/10.1108/00251740710727241
Li, E. L., Zhou, L., & Wu, A. (2017). The supply-side of environmental sustainability and export performance: The role of knowledge integration and international buyer involvement. *International Business Review*, *26*(4), 724–735. https://doi.org/https://doi.org/10.1016/j.ibusrev.2017.01.002

Lichtenthaler, U., & Ernst, H. (2009). The Role of Champions in the External Commercialization of Knowledge. *Journal of Product Innovation Management*, *26*(4), 371–387. https://doi.org/https://doi.org/10.1111/j.1540-5885.2009.00666.x

Lin, R.-J. (2013). Using fuzzy DEMATEL to evaluate the green supply chain management practices. *Journal of Cleaner Production*, *40*, 32–39. https://doi.org/https://doi.org/10.1016/j.jclepro.2011.06.010

Lin, Y.-C., Wang, L.-C., & Tserng, H. P. (2006). Enhancing knowledge exchange through web map-based knowledge management system in construction: Lessons learned in Taiwan. *Automation in Construction*, *15*(6), 693–705. https://doi.org/https://doi.org/10.1016/j.autcon.2005.09.006

Linton, J. D., Klassen, R., & Jayaraman, V. (2007). Sustainable supply chains: An introduction. *Journal of Operations Management*, *25*(6), 1075–1082. https://doi.org/https://doi.org/10.1016/j.jom.2007.01.012

Lintukangas, K., Hallikas, J., & Kähkönen, A.-K. (2015). The Role of Green Supply Management in the Development of Sustainable Supply Chain. *Corporate Social Responsibility and Environmental Management*, *22*(6), 321–333. https://doi.org/https://doi.org/10.1002/csr.1348

Liu, M., Wang, K., & Wu, K. (2011). Survival Analysis of Stochastic Competitive Models in a Polluted Environment and Stochastic Competitive Exclusion Principle. *Bulletin of Mathematical Biology*, *73*, 1969–2012. https://doi.org/https://doi.org/10.1007/s11538-010-9569-5

Lucas, M. T. (2010). Understanding environmental management practices: integrating views from strategic management and ecological economics. *Business Strategy and the Environment*, *19*(8), 543–556. https://doi.org/https://doi.org/10.1002/bse.662

Lysons, K., & Farrington, B. (2004). *Purchasing and Supply Chain Management* (7th Editio). Pearson Education.

Malhotra, A., Gosain, S., & Sawy, O. A. El. (2005). Absorptive Capacity Configurations in Supply Chains: Gearing for Partner-Enabled Market Knowledge Creation. *MIS Quarterly*, *29*(1), 145–18. https://doi.org/https://doi.org/10.2307/25148671

March, J. G. (1991). Exploration and Exploitation in Organizational Learning. *Organization Science*, *2*(1), 71–87. https://doi.org/https://doi.org/10.1287/orsc.2.1.71

Mathiyazhagan, K., Govindan, K., Haq, A. N., & Geng, Y. (2013). An ISM approach for the barrier analysis in implementing green supply chain management. *Journal of Cleaner Production*, *47*, 283–297. https://doi.org/https://doi.org/10.1016/j.jclepro.2012.10.042

Mehrabi, J., Gharakhani, D., Jalalifar, S., & Rahmati, H. (2012). *Barriers to green supply chain management in the petrochemical sector*.

Mensah, S., Ayarkwa, J., & Nani, G. (2020). A theoretical framework for conceptualizing contractors' adaptation to environmentally sustainable construction. *International Journal of Construction Management*, *20*(7), 801–811. https://doi.org/https://doi.org/10.1080/15623599.2018.1484860

Modi, S. B., & Mabert, V. A. (2007). Supplier development: Improving supplier performance through knowledge transfer. *Journal of Operations Management*, *25*(1), 42–64. https://doi.org/https://doi.org/10.1016/j.jom.2006.02.001

Montalbán, L., Ballestreros-Pérez, P., Amalia, S., & Pellicer, E. (2017). Sustainable public procurement: barriers and drawbacks, in. *Procs 21st International Congress on Project Management and Engineering, Cadiz, 12–14 July*, 571–582.

Muduli, K., & Barve, A. (2013). Empirical Investigation of the Barriers of Green Supply Chain Management (GSCM) Implementation in Indian Mining Industries. *3rd International Conference on Business, Economics, Management and Behavioral Sciences (ICBEMBS'2013) April 29-30, 2013 Singapore*, 290–294.

Mutingi, M. (2013). Developing green supply chain management strategies: A taxonomic approach. *Journal of Industrial Engineering and Management*, *6*, 525–546. https://doi.org/doi:10.3926/jiem.475

Naoum, S. G., & Egbu, C. (2016). Modern selection criteria for procurement methods in construction: A state-of-the-art literature review and a survey. *International Journal of Managing Projects in Business*, *9*(2), 309–336. https://doi.org/https://doi.org/10.1108/IJMPB-09-2015-0094

Ojo, E., Mbowa, C., & Akinlabi, E. T. (2014). Barriers in Implementing Green Supply Chain Management in Construction industry. *Proceedings of the 2014 International Conference on Industrial Engineering and Operations Management Bali, Indonesia*.

Olugu, E. U., Wong, K. Y., & Shaharoun, A. M. (2011). Development of key performance measures for the automobile green supply chain. *Resources, Conservation and Recycling*, *55*(6), 567–579. https://doi.org/https://doi.org/10.1016/j.resconrec.2010.06.003

Paul, C., Richard, L., Benn, L., & Brian, S. (2008). *Strategic Supply Chain Management*.
Petljak, K., Zulauf, K., Štulec, I., Seuring, S., & Wagner, R. (2018). Green supply chain management in food retailing: survey-based evidence in Croatia. *Supply Chain Management*, *23*(1), 1–15. https://doi.org/https://doi.org/10.1108/SCM-04-2017-0133
Pil, F. K., & Leana, C. (2009). Applying Organizational Research to Public School Reform: The Effects of Teacher Human and Social Capital on Student Performance. *Academy of Management Journal*, *52*(6), 1101–1124. https://doi.org/https://doi.org/10.5465/amj.2009.47084647
Pinkse, J., Kuss, M. J., & Hoffmann, V. H. (2010). On the implementation of a 'global' environmental strategy: The role of absorptive capacity. *International Business Review*, *19*(2), 160–177. https://doi.org/https://doi.org/10.1016/j.ibusrev.2009.11.005
Ployhart, R. E. (2006). Staffing in the 21st Century: New Challenges and Strategic Opportunities. *Journal of Management*, *32*(6), 868–897. https://doi.org/https://doi.org/10.1177/0149206306293625
Pramanik, S., Dalapati, S., & Roy, T. K. (2016). Logistic Centre Location Approach Based on Neutosophic Multicriteria-Decision Making. In *New Trends in Neutrosophic Theory and Applications*. Pons Edition.
Preuss, L. (2005). Rhetoric and reality of corporate greening: a view from the supply chain management function. *Business Strategy and the Environmen*, *14*(2), 123–139. https://doi.org/https://doi.org/10.1002/bse.435
Priem, R. L., & Swink, M. (2012). A Demand-side Perspective on Supply Chain Management. *Journal of Supply Chain Management*, *48*(2), 7–13. https://doi.org/https://doi.org/10.1111/j.1745-493X.2012.03264.x
Qian, H., Acs, Z. J., & Stough, R. R. (2013). Regional systems of entrepreneurship: the nexus of human capital, knowledge and new firm formation. *Journal of Economic Geography*, *13*(4), 559–587. https://doi.org/https://doi.org/10.1093/jeg/lbs009
Ragatz, G. L., Handfield, R. B., & Scannell, T. V. (1997). Success Factors for Integrating Suppliers into New Product Development. *Journal of Product Innovation Management*, *14*(3), 190–202. https://doi.org/https://doi.org/10.1111/1540-5885.1430190
Ralph, M., & Stubbs, W. (2014). Integrating environmental sustainability into universities. *Higher Education*, *63*, 71–90. https://doi.org/https://doi.org/10.1007/s10734-013-9641-9
Renwick, A., Jansson, T., Verburg, P. H., Revoredo-Giha, C., Britz, W., Gocht, A., & McCracken, D. (2013). Policy reform and agricultural land abandonment in the EU. *Land Use Policy*, *30*(1), 446–457. https://doi.org/https://doi.org/10.1016/j.landusepol.2012.04.005
Richey Jr, R. G., Roath, A. S., Whipple, J. M., & Fawcett, S. E. (2010). Exploring a governance theory of supply chain management: barriers and facilitators to integration. *Journal of Business Logistics*, *31*(1), 237–256. https://doi.org/https://doi.org/10.1002/j.2158-1592.2010.tb00137.x
Riikkinen, R., Kauppi, K., & Salmi, A. (2017). Learning Sustainability? Absorptive capacities as drivers of sustainability in MNCs' purchasing. *International Business Review*, *26*(6), 1075–1087. https://doi.org/https://doi.org/10.1016/j.ibusrev.2017.04.001
Roy, M.-J., & Thérin, F. (2008). Knowledge acquisition and environmental commitment in SMEs. *Corporate Social Responsibility and Environmental Management*, *15*(5), 249–259. https://doi.org/https://doi.org/10.1002/csr.145
Ruparathna, R., & Hewage, K. (2015). Sustainable procurement in the Canadian construction industry: current practices, drivers and opportunities. *Journal of Cleaner Production*, *109*, 305–314. https://doi.org/https://doi.org/10.1016/j.jclepro.2015.07.007
Salah, M., Gobalakrishnan, R., Sivakumar, K., & Kannan, L. (2014). Actinobacterial research from the mangroves of India. *Journal of Scientific Transactions in Environment and Technovation*, *7*(3), 108–112.
Sambrani, V. N., & Pol, N. (2016). Green Supply Chain Management: A Literature Review. *IUP Journal of Supply Chain Management*, *13*(4), 7–16.
Santos, F. M., & Eisenhardt, K. M. (2005). Organizational Boundaries and Theories of Organization. *Organization Science*, *16*(2), 453–462. https://doi.org/https://doi.org/10.1287/orsc.1050.0152
Sarkis, J., Zhu, Q., & Lai, K. (2011). An organizational theoretic review of green supply chain management literature. *International Journal of Production Economics*, *130*, 1–15. https://doi.org/https://doi.org/10.1016/j.ijpe.2010.11.010
Seuring, S., & Müller, M. (2008). From a literature review to a conceptual framework for sustainable supply chain management. *Journal of Cleaner Production*, *16*(15), 1699–1710. https://doi.org/https://doi.org/10.1016/j.jclepro.2008.04.020
Shaw, M. R., Klausmeyer, K., Cameron, D. R., Mackenzie, J., & Roehrdanz, P. (2012). Economic Costs of Achieving Current Conservation Goals in the Future as Climate Changes. *Conservation Biology*, *26*(3),

385–396. https://doi.org/https://doi.org/10.1111/j.1523-1739.2012.01824.x
Šlaus, I., & Jacobs, G. (2011). Human Capital and Sustainability. *Sustainability*, *3*(1), 97–154. https://doi.org/https://doi.org/10.3390/su3010097
Smith, A. (1776). *An Inquiry into the Nature and Causes of the Wealth of Nations*. Harriman House Limited.
Sodhi, M. M., & Son, B.-G. (2009). Supply-chain partnership performance. *Transportation Research Part E: Logistics and Transportation Review*, *45*(6), 937–945. https://doi.org/https://doi.org/10.1016/j.tre.2009.05.004
Sourani, A., & Sohail, M. (2011). Barriers to addressing sus-tainable construction in public procurement strategies. *Engineering Sustainability*, *164*(4), 229–237. https://doi.org/https://doi.org/10.1680/ensu.2011.164.4.229
Spillane, J. P., Kim, C. M., & Frank, K. A. (2012). Instructional Advice and Information Providing and Receiving Behavior in Elementary Schools: Exploring Tie Formation as a Building Block in Social Capital Development. *Chong Min Kim Kenneth A. Frank*, *49*(6), 1112–1145. https://doi.org/https://doi.org/10.3102/0002831212459339
Starbird, D. (2002). Business excellence: Six Sigma as a management system: "A DMAIC approach to improving Six Sigma management processes." *ASQ World Conference on Quality and Improvement Proceedings*, 47.
Sydler, R., Haefliger, S., & Pruksa, R. (2014). Measuring intellectual capital with financial figures: Can we predict firm profitability? *European Management Journal*, *32*(2), 244–259. https://doi.org/https://doi.org/10.1016/j.emj.2013.01.008
Teece, D. J., Pisano, G., & Shuen, A. (1997). Dynamic capabilities and strategic management. *Strategic Management Journal*, *18*(7), 509–533. https://doi.org/https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z
Teixeira, A. A., Jabbour, C. J. C., Jabbour, A. B. L. S., Latan, H., & Oliveira, J. H. C. (2016). Green training and green supply chain management: evidence from Brazilian firms. *Journal of Cleaner Production*, *116*(10), 170–176. https://doi.org/https://doi.org/10.1016/j.jclepro.2015.12.061
Testa, F., Iraldoa, F., Freya, M., & Daddi, T. (2021). What factors influence the uptake of GPP (green public procurement) practices? New evidence from an Italian survey. *Ecological Economics*, *82*, 88–96. https://doi.org/https://doi.org/10.1016/j.ecolecon.2012.07.011
Tippayawong, K. Y., Tiwaratreewit, T., & Sopadanga, A. (2015). Positive Influence of Green Supply Chain Operations on Thai Electronic Firms' Financial Performance. *Procedia Engineering*, *118*, 683–690. https://doi.org/https://doi.org/10.1016/j.proeng.2015.08.503
Todorova, G., & Durisin, B. (2007). Absorptive capacity: Valuing a reconceptualization. *Academy of Management ReviewGergana Todorova and Boris Durisin*, *32*(3), 774–786. https://doi.org/https://doi.org/10.5465/amr.2007.25275513
Tseng, M.-L., & Chiu, A. S. F. (2013). Evaluating firm's green supply chain management in linguistic preferences. *Journal of Cleaner Production*, *40*, 22–31. https://doi.org/https://doi.org/10.1016/j.jclepro.2010.08.007
UNDP. (2008). *Capacity development: practice note*.
UNEP. (2013). *Sustainable public procurement: A global review final report*.
Vachon, S. (2007). Green supply chain practices and the selection of environmental technologies. *International Journal of Production Research*, *45*(18–19), 4357–4379. https://doi.org/https://doi.org/10.1080/00207540701440303
van Weele, A. J. (2010). *Purchasing & supply chain management : analysis, strategy, planning and practice*. Cengage Learning Business Press.
Vera, D., & Crossan, M. A. R. Y. (2007). Reconciling learning paradoxes through improvisation. *Proceedings of International Conference on Organizational Learning, Knowledge and Capabilities, London, Ontario, Canada*, 992–1013.
Volberda, H. W., Foss, N. J., & Lyles, M. A. (2010). Perspective—Absorbing the Concept of Absorptive Capacity: How to Realize Its Potential in the Organization Field. *Organization Science*, *21*(4), 931–951. https://doi.org/https://doi.org/10.1287/orsc.1090.0503
Walker, H., & Brammer, S. (2009). Sustainable procurement in the United Kingdom public sector. *Supply Chain Management*, *14*(2), 128–137. https://doi.org/https://doi.org/10.1108/13598540910941993
Wang, C. L., & Ahmed, P. K. (2007). Dynamic capabilities: A review and research agenda. *International Journal of Management Reviews*, *9*(1), 31–51. https://doi.org/https://doi.org/10.1111/j.1468-2370.2007.00201.x

Weber, C. A., Current, J. R., & Benton, W. C. (1991). Vendor selection criteria and methods. *European Journal of Operational Research*, *50*(1), 2–18. https://doi.org/https://doi.org/10.1016/0377-2217(91)90033-R

Webster, J., & Watson, R. T. (2002). Analyzing the Past to Prepare for the Future: Writing a Literature Review. *MIS Quarterly*, *26*(2), xiii–xxiii.

Wernerfelt, B., & Montgomery, C. A. (1986). What is an Attractive Industry? *Management Science*, *32*(10), 1223–1370. https://doi.org/https://doi.org/10.1287/mnsc.32.10.1223

Winter, S., & Lasch, R. (2016). Environmental and social criteria in supplier evaluation – Lessons from the fashion and apparel industry. *Journal of Cleaner Production*, *139*, 175–190. https://doi.org/https://doi.org/10.1016/j.jclepro.2016.07.201

Wright, T. (2010). University presidents' conceptualizations of sustainability in higher education. *International Journal of Sustainability in Higher Education*, *11*(1), 61–73. https://doi.org/https://doi.org/10.1108/14676371011010057

Zahra, S. A., & George, G. (2002). Absorptive Capacity: A Review, Reconceptualization, and Extension. *Academy of Management Review*, *27*(2), 185–203. https://doi.org/https://doi.org/10.5465/amr.2002.6587995

Zaidi, A. A., Jaaron, A. A. M., & Bon, A. T. (2018). The impact of green human resource management and green supply chain management practices on sustainable performance: An empirical study. *Journal of Cleaner Production*, *204*, 965–979. https://doi.org/https://doi.org/10.1016/j.jclepro.2018.09.062

Zhao, R., Liu, Y., Zhang, N., & Huang, T. (2017). An optimization model for green supply chain management by using a big data analytic approach. *Journal of Cleaner Production*, *142*(2), 1085–1097. https://doi.org/https://doi.org/10.1016/j.jclepro.2016.03.006

Zhou, X., & Xu, Z. (2018). An Integrated Sustainable Supplier Selection Approach Based on Hybrid Information Aggregation. *Sustainability*, *10*(7), 2543. https://doi.org/https://doi.org/10.3390/su10072543

Zhua, Q., & Sarkis, J. (2004). Relationships between operational practices and performance among early adopters of green supply chain management practices in Chinese manufacturing enterprises. *Journal of Operations Management*, *22*(3), 265–289. https://doi.org/https://doi.org/10.1016/j.jom.2004.01.005

Zsidisin, G. A., & Siferd, S. P. (2001). Environmental purchasing: a framework for theory development. *European Journal of Purchasing & Supply Management*, *7*(1), 61–73. https://doi.org/https://doi.org/10.1016/S0969-7012(00)00007-1