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Review

A framework for understanding sustainable public purchasing

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ABSTRACT

Increasing scholarship across numerous literatures discuss the significant promise that sustainable public purchasing (SPP) has for reducing negative environmental impacts throughout the supply chain. As governments worldwide have begun embracing this promise, researchers note that we lack a broader conceptual framework that articulates the motivations for public organizations to adopt SPP, in part because existing literature is widely dispersed across multiple fields and journals. We address this gap by undertaking a significant literature review and content analysis to develop a cogent framework of SPP adoption. The resulting theoretical framework reveals four critical macro-themes associated with SPP adoption: capacity, culture, stakeholders, and institutional setting. Capacity, culture, and internal stakeholders relate to the internal organizational setting, although they are shaped by pressures from external stakeholders and nested within the broader institutional setting. The framework and themes are illustrated by applying them to the City of Tempe's (Arizona, USA) decision to adopt SPP. The research sets the stage for future empirical studies related to SPP adoption and implementation success, both of which are inherently linked.

1. Introduction

Globally, public sector spending composes 19 percent of the carbon and 38 percent of the material footprint (Ottelin et al., 2018). Worldwide, these purchases account for 17.1 percent of global gross domestic product (GDP) (World Bank Group, 2017), although some countries have a much greater proportion of government purchases. For instance, in the US, public sector spending accounts for 24 percent of US GDP (Hafsa et al., 2021a). Because of the public sector's significant sustainability footprint and its substantial purchasing power, international organizations such as the United Nations (UNEP, 2017) and the Organisation for Economic Co-operation and Development (OECD, 2008, 2015) are promoting sustainable public purchasing (SPP).

Sustainable public purchasing (SPP) involves the public sector procuring products and services that improve conditions to the natural environment and societal actors, while helping stimulate the global production of more sustainable products and services (Li and Geiser, 2005; UNEP, 2017). In the last 10 years, many national and sub-national governments have responded by endorsing SPP, and local governments are following suit (Darnall et al., 2017b, 2018b; Lukacs de Pereny et al., 2020; Testa et al., 2020; Leal et al., 2020). Additionally, international governance organizations, such as the United Nations(UNEP, 2017, 2022) and OECD (2021), and the EU are doing the same (Tátrai and Diófási-Kovács, 2021). However, despite the widespread promotion of SPP, and hundreds of scholarly papers that have been published on sustainable purchasing, we have limited understanding of the conceptual factors related to SPP adoption (Preuss, 2009; Walker and Brammer, 2009; Amann et al., 2014). This research draws on scholarship across multiple and diverse fields to focus on the drivers of adoption of SPP in public sector organizations globally.

Within the field of public management, existing scholarship has tended to focus on issues related to contract management (Brown et al., 2015; Potoski, 2008), collaborative contracting (Bovaird, 2006), purchasing groups (Schotanus et al., 2011) and the tendering process (Bovaird, 2006; Gelderman and Semeijn, 2006). Other studies have examined how public sector purchasing can co-produce societal benefits (e.g., Bovaird, 2006) such as innovations in public service provision (Edler and Georghiou, 2007; Aschhoff and Sofka, 2009) or economic development (Nijaki and Worrel, 2012; Loader, 2007; Patil et al., 2017; Walker and Preuss, 2008). Related to SPP more specifically, scholars have identified an array of barriers to governments adopting sustainable purchasing practices (Filho, 2017), such as costs and resource

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constraints (Preuss, 2009), in addition to difficulties changing the status quo (Young et al., 2016), low levels of awareness, decentralized purchasing structures, time pressures, conflicting priorities, and lack of top management commitment (McMurray et al., 2014). Other barriers relate to difficulties in identifying sustainable products (Walker and Brammer, 2009; Brammer and Walker, 2011), and a lack of mandatory guidelines, and a common definition of the sustainable procurement term (Gormly, 2014).

However, much of this literature is widely dispersed across a variety of journals and so discussions are fragmented and disconnected. Additionally, while existing research focuses much attention on SPP implementation and outcomes, far less attention has been given to the motivators for SPP adoption.

This research consolidates existing knowledge in a way that offers a cogent understanding of why governments adopt SPP. We respond to the expressed need for more theoretical investigations of SPP (e.g., Preuss, 2009; Walker and Brammer, 2009; Amann et al., 2014). By offering a much-needed foundation for understanding SPP adoption, this research sets the stage for future empirical testing of factors related to SPP adoption, in addition to SPP implementation success, which is inherently linked with adoption motivations.

To develop our conceptual framework of SPP adoption, we undertake a significant literature review and content analysis to identify four overarching themes associated with SPP adoption: capacity, culture, and stakeholders, and institutional setting. We then draw on general organization theory literature (Quinn and Rohrbaugh, 1983; Schein, 1990), the resource-based view (Barney, 1991; Das and Teng, 2000), and stakeholder theory (Freeman, 1984) to articulate a theoretical understanding of these themes. These themes are the basis for research propositions that inform a broader research agenda for understanding the important issue of public sector sustainable purchasing. Knowledge of the factors that lead to SPP adoption, we hope, can facilitate the uptake of SPP. Moreover, these facilitators are also likely related to the ultimate implementation success of SPP.

2. Theory - sustainable public purchasing

Sustainable public purchasing is embedded within the public organization's general procurement setting. This setting is described below and followed by a discussion of how public organizations are integrating sustainability within purchasing.

2.1. Public purchasing

Public purchasing refers to the acquisition of goods, services, and materials by governments and public authorities (Uyarra and Flanagan, 2010; Brammer and Walker, 2011; Hafsa et al., 2021a; Aschhoff and Sofka, 2009). Typical examples of the public services that are supported by government purchases include national defense, public health, public transportation, highways and roads, waste management, and public education (Hafsa et al., 2021a). A key economic activity of the public sector (Thai, 2001; Aschhoff and Sofka, 2009). Globally, public purchasing accounts for about 17 percent of total general expenditures (World Bank Group, 2017) and between 20 and 70 percent of national revenues within developing countries (Adjei-Bamfo et al., 2019). Given its total volume, public purchasing is the largest single marketplace across the globe (World Bank Group, 2017).

There are two types of public purchases: direct and indirect. Direct purchases involve all forms of purchasing, contracting and supply practices (Walker and Brammer, 2012; Walker and Phillips, 2009) that involve direct exchange of taxpayer money for goods, works, and services (Hafsa et al., 2021a). Goods relate to physical products (e.g., machinery, vehicles, furniture, etc.) which are supplied by another party in response to a request, whereas works are related to civil works like construction of bridges, highways, and buildings (Raj et al., 2020). Services are related to activities such as training and conducting feasibility studies and providing maintenance and utility management service (Raj et al., 2020).

Other purchases are indirect and involve using taxpayer revenue to transfer money to citizens in the form of purchase reimbursements, pre-approved cash transfers or government cash payments to eligible citizens that can only be used for authorized purchases, and grants (Hafsa et al., 2021a). While citizens ultimately purchase and consume these goods, the government reimburses the costs and imposes important restrictions on what types of purchases can be reimbursed (Hafsa et al., 2021a).

Regardless of whether purchases are direct or indirect, public sector purchasing is characterized by its high degree of regulation (Thai, 2001). As stewards of public resources, public agencies operate in a context characterized by greater external demands from stakeholders for integrity and accountability in their purchasing processes (Schotanus and Telgen, 2007). Oversight is designed to protect public sector purchasing from being influenced politically and to avoid fraud or corruption in tax dollar expenditures. While both public and private sector organizations pursue social, economic, and political objectives through procurement policies and regulations (McCrudden, 2004), the public sector tends to take a broader approach by encouraging local economic development (Walker and Brammer, 2012; Wilkinson et al., 2001) via purchasing from locally owned businesses (Nijaki and Worrel, 2012). Public sector organizations also commonly have policies that give preference in purchasing decisions to various groups such as minority/women-owned and small businesses (Loader, 2007; Patil et al., 2017; Walker and Preuss, 2008; Smith and Fernandez, 2010). Pursuing these multifaceted objectives increases complexity, oversight, and stakeholder participation in the policies that guide public sector purchasing decisions (Stritch et al., 2020).

The public sector's end users are citizens, who are identified by their rights and changes in purchasing criteria are often politically motivated (Arlbjørn and Freytag, 2012). This means that public sector organizations are subject to political accountability and socio-political uncertainties related to large agenda shifts that come with election cycles (Rainey, Backoff and Levine, 1976; Bozeman and Bretschneider, 1986; Bozeman, 1989, Bretschneider, 1990; Bozeman and Bretschneider, 1994; Moulton, 2009). Greater accountability has led to regulatory safeguards against corruption and the misuse of taxpayer money, which generally require public purchasers to keep an arm's length distance from vendors. One notable exception is that the EU encourages market consultation with vendors prior to developing a tender and in every stage of the procurement process (before, during and after the tender), as long as transparency, equal treatment of all suppliers, and other conditions are satisfied (European Union, 2014).

These safeguards tend to reduce the public sector's discretion associated with vendor selection, while increasing accountability expectations (Schotanus and Telgen, 2007). Increased regulation around vendor selection also means that the public sector purchasers must be cautious (or, in some settings, avoid) collaborations with vendors and contractors (Erridge and Nondi, 1994; Caldwell et al., 2005). All these factors make the public sector purchasing system very different from purchasing in private sector organizations.

2.2. Integrating sustainability into public purchasing

While discussions of sustainability in organizations are not new (Elkington, 1997), discussions about how sustainability connects with public procurement is far more recent.

(Hasselbalch et al., 2014; Hafsa et al., 2021a; Hafsa et al., 2021b). In its simplest form SPP introduces environmentally and socially responsible criteria in purchasing by government agencies or public sector enterprises (Walker and Phillips, 2009; Brammer and Walker, 2011; Coggburn and Rahm, 2005). This instruction is done either formally, by way of SPP policies such as ordinances, executive orders, resolutions, and administrative directives or less formally when governments

append SPP to related policies or plans (Hsueh et al., 2020). For instance, some governments are adding sustainable purchasing requirements to their existing sustainability plans or energy conservation policies (Darnall et al., 2017b, 2018a; Hsueh et al., 2020).

Environmental criteria might include reducing energy and water consumption, greenhouse gas emissions, solid waste, and other impacts. More specific practices might include reducing packaging and waste, assessing vendors for their environmental performance, ability to develop eco-friendlier products, and performance in reducing carbon emissions associated with the transport of goods (Islam et al., 2017). Environmental purchasing criteria are often referred to as "eco," "green, " "environmental," "environmentally responsible," and "environmentally friendly" (e.g., Amann et al., 2014; Bolton, 2008; Li and Geiser, 2005; Walker and Brammer, 2009).

Similarly, social criteria are aimed at improving social equity, diversity, working conditions, and human rights. They may also seek to increase community involvement and support community economic development by focusing on buying from small-scale suppliers (Carter and Rogers, 2008; Romzek and Johnston, 2005; Walker and Brammer, 2009). Other social criteria might emphasize purchasing preferences given to veteran-owned businesses (McGrann, 2014), women-owned businesses (McCrudden and Doreen, 2007; Furneaux and Barraket, 2014), or minority-owned businesses (Stritch et al., 2020; Hawkins et al., 2018). These criteria are also referred to as "equitable," "locally responsible," "socially responsible," "socially just," and "socially friendly."

Whether environmentally and/or socially focused, public organizations are increasingly interested in SPP because it has the potential to improve the public sector's overall sustainability, while enhancing its operational efficiencies. Other reasons why governments and public authorities see value in SPP relate to its potential as a powerful instrument towards encouraging sustainable production and consumption patterns (Bratt et al., 2013; Filho et al., 2019). The government's massive purchasing power provides significant market incentives for companies that wish to sell to public sector customers (Case, 2004). These incentives extend to supply chains (Bratt et al., 2013). For instance, by encouraging their first-tier suppliers to produce and deliver greener products and services, an estimated 40 percent of these first-tier suppliers will, in turn, assess the environmental activities of the organizations that supply them (Arimura et al., 2011). In this way, SPP can be a motivator for firms to enhance their capacity to produce sustainable products (Ho et al., 2010) and encourage substantial sustainability-oriented product innovations even in countries with weaker environmental standards (Rainville, 2017; Islam et al., 2017; Burchard-Dziubinska and Jakubiec, 2012). Consequently, SPP can help drive the global corporate sustainability agenda (Bratt et al., 2013).

For all these reasons, governments worldwide have begun promoting SPP. At the international level, in 2001, the European Commission adopted a directive on public procurement and integrating environmental and social considerations into public purchasing (Eur-Lex, 2001). Since then, several other directives have been adopted regarding integration of sustainability principles within public procurement. In 2015, OECD published its seminal report, *Going Green: Best Practices for Sustainable Public Procurement* to help governments facilitate their sustainable purchasing efforts. Additionally, since the adoption of the United Nations Sustainable Development Goals in 2015, UN member countries have shown increasing interest in SPP because it addresses Goal 12 (Responsible Consumption & Production) and Target 12.7 (Promote public procurement practices that are sustainable, in accordance with national policies and priorities). However, given the significant endorsement of SPP and its potentially far-reaching benefits, the scholarly literature has given little focus to SPP adoption, focusing instead on SPP implementation and outcomes.

Existing reviews of public sector sustainable purchasing (e.g., Cheng et al., 2018; Hafsa, 2021b) have tended to focus on SPP concepts, trends, and research opportunities. Other research has focused on particular aspects of SPP. Much of this literature is widely dispersed across a variety of journals and so discussions are fragmented and disconnected. As such, we have little understanding of how SPP is conceptualized and understood (Roman, 2017; Walker and Brammer, 2012; Hoejmose and Adrien-Kirby, 2012; Walker et al., 2008; Hasselbalch et al., 2014; Meehan and Bryde, 2011; Preuss and Walker, 2011; Cayolla Trindade et al., 2018).

We address this need by undertaking a systematic literature review and content analysis of existing scholarship. We focus explicitly on scholarship that examines the motivators for public sector organizations to adopt sustainable purchasing policies to develop a theoretical framework of SPP adoption. Our hope is that this framework can serve as a foundation for future research, which empirically assesses SPP adoption, implementation processes, and outcomes.

3. Methods

A literature review is a "systematic, explicit and reproducible design for identifying, evaluating and interpreting the existing body of recorded documents" (Fink, 1998). Literature reviews aim to summarize existing research and identify the conceptual content of the field (Seuring and Müller, 2008). More than 2000 publications in *Journal of Cleaner Production* use a systematic literature review to develop other conceptual frameworks, thus offering some validity to our methodological approach. We use the results of our literature review to develop our conceptual framework of SPP.

As a first step, we focused on English academic articles written between 2000 and 2020. We selected 18 keyword categories related to sustainable purchasing (see Fig. 1) to conduct a search using Google Scholar. We chose Google Scholar because it aggregates numerous academic literature databases, such as Web of Science and Scorpus, into a single search. Additionally, nearly all citations found in databases, such as Web of Science and Scorpus, are also found by Google Scholar, however, Google Scholar generally finds a substantial number of additional citations that are not identified by these other databases (Martín-Martín et al., 2018). This is especially true in the fields of *Business, Economics & Management*, where Google Scholar citations surpass 50 percent of all citations in other indices (Martín-Martín et al., 2018).

Our keyword search yielded 2213 publications. We used content analysis to determine the presence of relevant words or themes within each of these documents. Content analysis is typically used to assess and categorize large amounts of text data in a systematic fashion (GAO, 1996; Krippendorff, 1980). To ensure that each publication was focused specifically on SPP, we manually reviewed each publication's title and the initial sentences of the publication's abstract. We then manuscripts whose topics related to: green supply chains, procurement as a tool for life-cycle assessment, consumer-related purchasing, supplier selection, sustainable purchasing innovations, or corporate sustainability practices in general. This initial analysis was sufficient to determine whether each paper was broadly focused on public procurement sustainability, rather than sustainability in the private sector or consumer purchasing.

We next assessed each manuscript's *full abstract* to retain only those publications that focused specifically on public procurement. A total of 554 relevant publications remained in our sample, which we evaluated further by using the same exclusion criteria as noted above and retaining only those publications that focused specifically on public procurement. This review reduced our sample to 148 publications.

To limit the sample to publications that rationalized why public sector organizations were *adopting* SPP, we assessed each publication's abstract using computerized text analysis to determine keywords and phrases used in the 148 papers. We then read each of these papers and grouped the 148 publications into nine macro themes: (1) SPP implementation processes; (2) SPP implementation criteria; (3) SPP implementation outcomes; (4) broader sustainability concepts; (5) SPP concepts; (6) SPP Adoption capacity; (7) adoption culture; (8) adoption stakeholders; (9) institutional setting. As the first five themes and their

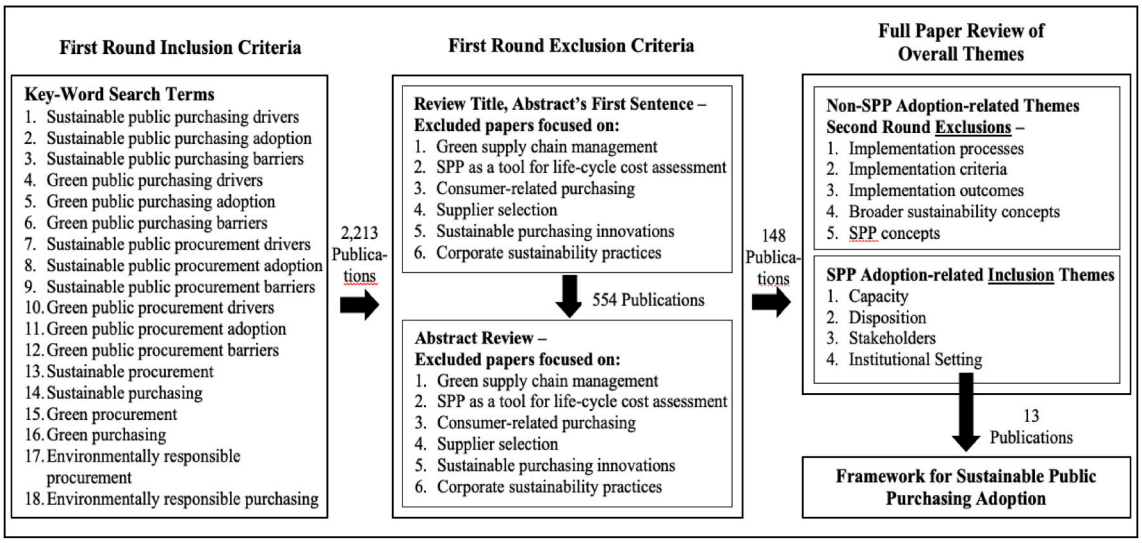

Fig. 1. Identifying the sustainable purchasing adoption literature.

respective papers were unrelated to SPP adoption, they were excluded from the analysis. The remaining four themes focused on SPP *adoption*: capacity, culture, stakeholders (internal and external), and institutional setting (see Table 1, column 1). A total of 13 different articles fit this categorization and are the foundation for our analysis and conceptual framework (see Table 1, column 3).

4. A framework of sustainable public purchasing adoption

The four themes associated with SPP adoption - capacity, culture, stakeholders (internal and external), and institutional setting - exist either internally or externally to the organization (Raj et al., 2020; Walker et al., 2008). The internal drivers most mentioned in the literature were organizational capacity and culture, where capacity included internal capabilities and resources (Grob and Benn, 2014; Hasselbalch et al., 2014; Walker et al., 2008) and culture related to innovation and collaboration (Delmonico et al., 2018; Roman, 2017) (see Table 1). Based on the literature review, both internal and external stakeholders were seen to be influential in SPP adoption. The broader institutional setting, including economic, regulatory and market forces, were found to moderate the other constructs (Brammer and Walker, 2011; Raj et al., 2020; Foo et al., 2019; Grob and Benn, 2014; Hasselbalch et al., 2014; Walker et al., 2008). The four themes are interrelated, and they help public organizations make decisions related to the adoption of an SPP (Hsueh et al., 2020). To simplify the discussion, we present these themes here as distinct categories but acknowledge their interrelatedness in the discussion section.

In developing a theoretical framework of SPP adoption, we suggest that capacity, culture, and internal stakeholders relate to the internal organizational setting and are directly related to SPP adoption (see Fig. 2). However, they are also shaped by pressures from external stakeholders and nested within the broader institutional setting.

Table 1
Themes reflected in Review of the SPP adoption literature.

Theme	Sub-themes	Literature Sources
Internal Environment		
Organization Capacity	- Internal capabilities - Innovation - Information capacity - Knowledge	*Delmonico* et al. *(2018)*; Filho et al. (2019); *Foo* et al. *(2019)*; *Grob and Benn (2014)*; *Hasselbalch et al. (2014)*; *Roman (2017)*; *Testa* et al. *(2012)*; *Walker* et al. *(2008)*
Resources	- Often combined or used interchangeably with capacity	*Ambekar* et al. *(2019)*; *Brammer and Walker (2011)*; Carter and Dresner (2001); Geng and Doberstein (2008); *Grob and Benn (2014)*; *Hasselbalch et al. (2014)*; *Walker* et al. *(2008)*
Organizational Culture	- Culture - Innovation - Collaboration	*Delmonico* et al. *(2018)*; *Raj* et al. *(2020)*; *Roman (2017)*
Internal Stakeholders	- Leaders - Employees	*Ambekar* et al. *(2019)*; *Brammer and Walker (2011)*; Filho et al. (2019); *Roman (2017)*
External Environment		
External Stakeholders	- Customers - Society - Suppliers	*Ambekar* et al. *(2019)*; *Brammer and Walker (2011)*; *Delmonico* et al. *(2018)*; Filho et al. (2019); *Foo* et al. *(2019)*; *Hasselbalch et al. (2014)*; *Raj* et al. *(2020)*; *Roman (2017)*; *Walker* et al. *(2008)*; *Zhu* et al. *(2013)*
Institutional Setting	- Economic Setting - Regulations - Market Forces	*Brammer and Walker (2011)*; *Raj* et al. *(2020)*; *Foo* et al. *(2019)*; *Grob and Benn (2014)*; *Hasselbalch et al. (2014)*; *Walker* et al. *(2008)*; *Zhu* et al. *(2013)*

4.1. Capacity

Capacity is a multidimensional concept that refers to a set of organizational attributes that enable a public organization to act by engaging employees in productive ways (Eisinger, 2002). An organization's capacity delimits the level at which it can satisfy existing expectations and anticipate future needs (Murphy, 2000). Capacity is demonstrated by the resources controlled by an organization, which may relate to human, financial, and other factors (Murphy, 2000). Capacity is also scaffolded by the presence of supporting informal and formal processes (Sobeck and Agius, 2007). Related to SPP, our review of the literature led us to two organizational capacities that are likely to be particularly relevant to SPP adoption: resources (Filho et al., 2019; Hasselbalch et al., 2014) and internal capabilities (Walker et al., 2008; Raj et al., 2020; Grob and Benn, 2014), where resources are typically related to financial constraints. Capabilities relate to the knowledge, skills, and interorganizational capabilities necessary for SPP implementation (see Fig. 1).

4.1.1. Resources

Resources are the physical assets that the public organization owns and/or controls (Amit and Schoemaker, 1993; Barney, 1991). They

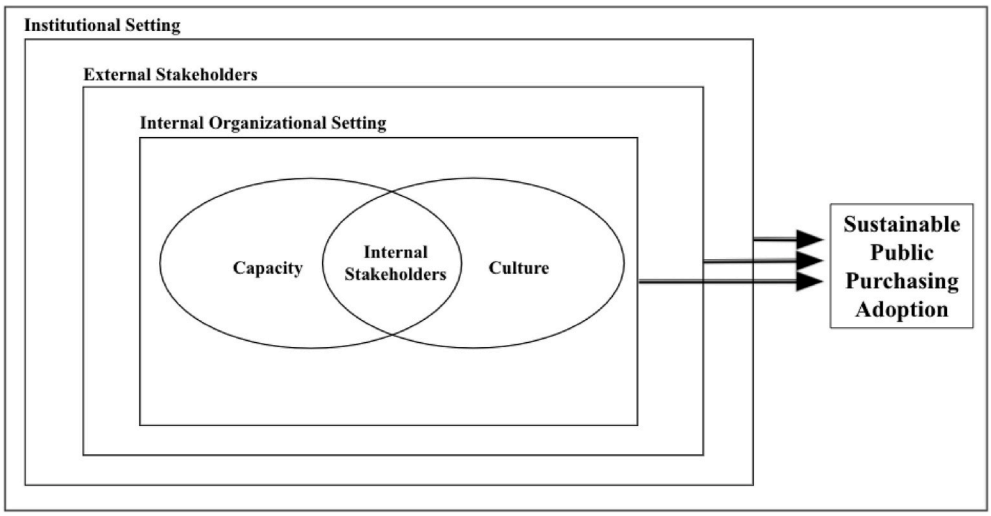

Fig. 2. A framework for sustainable public purchasing adoption.

include financial resources, property, and equipment (Amit and Schoemaker, 1993). Resources help organizations establish a culture for adopting a policy and create a capacity for organizations to follow through with policy implementation (Nakamura et al., 2001). Within the public sector, most financial resources generally derive from tax revenue and are often determined through a political process involving external stakeholders. However, these resources also can be generated from other external sources, such as grants (Darnall and Edwards, 2006). Conversely, scarce resources are associated with an organization's low internal competency and the inability to include sustainability criteria in public purchasing (Testa et al., 2012), which inhibits SPP adoption (Filho et al., 2019). In some cases, a local government may apply for grants or technical assistance at the state or national level to help supplement its resources and build capacity. By drawing on these external resources, public organizations with otherwise lagging capabilities can mitigate the cost of adopting sustainability practices such as SPP (Darnall and Edwards, 2006), thus making SPP adoption possible.

Despite the inherent environmental and societal benefits associated with SPP, the perceived higher costs associated with sustainable procurement, and the unclear payoffs, are some of the most significant barriers to adoption of SPP (Brammer and Walker, 2011; Min and Galle, 2001). However, public organizations may be in a better position to balance these costs if they use their resources to assess the full range of benefits that an SPP may offer, such as reduced wastes and emissions, improved efficiencies, reduced risks to human health, and more equitable societal outcomes (Darnall et al., 2018b).

4.1.2. Internal capabilities

Internal capabilities are related to an organization's ability to deploy and coordinate its resources, which leads to their routine and productive use (Grant, 1991; Collis and Montgomery, 1995). These capabilities derive from knowledge-based practices that are socially complex and less tangible (Barney, 1991; Wernerfelt, 1984). They are also path-dependent such that internal capabilities accrue over time based on the organization's unique actions and learning experiences (Barney, 1991; Feldman and Rafaeli, 2002; Foo et al., 2019). When institutionalized, organizations with strong internal capabilities are recognized for their formalized structures, such as procedures and/or processes, that complement one another (Darnall and Edwards, 2006), thus helping the organization to fulfill its long-term objectives (Bratt et al., 2013). Internal capabilities generally are borne from human-based resources and involve complex patterns of coordination among and between people and other resources (Grant, 1991). Perfecting this resource coordination requires dedicated attention such as learning through repetition and leadership (Feldman, 2000; Feldman and Pentland, 2003).

Several internal capabilities are especially relevant to organizations' sustainability activities. The first relates to information capacity. Public organizations with strong information capacity have created internal processes that institutionalize the collection of new data to analyze and address existing and emerging concerns more effectively (Mergel and Bretschneider, 2013; Tolbert et al., 2008; Chen et al., 2021). Information capacity is often seen in organizations that invest in information systems, such as e-procurement systems, to help manage their complex sustainability issues (Chen et al., 2021). These systems help employees perform complex tasks, such as handling large amounts of information and managing many simultaneous processes (Silver et al., 1995; Raj et al., 2020). Organizations with greater information capacity are better able to allocate resources towards sustainability planning and acting, with the objective of improving decision making. They also are in a better position to operationalize strategic objectives, develop programs and initiatives, and consider new policies that can achieve organizational missions (Hasselbalch et al., 2014; Huber, 1990).

Similarly, public organizations that have expertise with basic pollution prevention, energy conservation, recycling policies, innovations, potential substitute products and related research and technologies, have developed knowledge-based competencies that answer questions and solve problems about specific sustainability concerns. This knowledge involves acquiring and assembling information about how to manage and to reduce waste across different multiple departments and settings (Ambekar et al., 2019). Organizations that have expertise with complementary sustainability policies, practices, tools, and regulations for supporting SPP, coordinate employees around common issues and encourage them to share their tacit knowledge about the organization's internal operations in order to minimize impact to the natural environment (Hart, 1995). These organizations are more likely to have invested in training their employees and can more competently leverage their skills and expertise in a way that helps them fulfill the organization's strategic expectations. They are also more likely to have greater experience with measuring organizational progress towards achieving certain environmental and social objectives and, therefore, can apply their skills more effortlessly towards the adoption of other sustainability initiatives (Darnall and Edwards, 2006). Finally, public organizations that invest in training employees on issues related to sustainability are more likely to see how SPP may help achieve their broader sustainability goals and lead to sustainability innovations within the private sector (Darnall and Edwards, 2006).

For all these reasons, public sector organizations that have a greater capacity to address sustainability concerns are more likely to adopt SPP.

Proposition 1. *Public sector organizations with greater capacity (resources, internal capabilities) to address sustainability concerns are more likely to adopt SPP.*

4.2. Culture

An organization's culture arises from internal stakeholders who have a shared set of beliefs, values, activities, norms, mission, and understandings and who teach new organizational members about these shared beliefs and values as a means of thinking about different problems (Schein, 1990). The results of our content analysis reveal that three types of culture appear particularly important to SPP adoption: innovation culture, learning culture, and collaboration culture (Delmonico et al., 2018; Roman, 2017).

4.2.1. Innovation culture

Some organizational cultures support employee innovations more than others. Within the public sector, cultures of innovation enable employees to better respond to the citizens they serve and to whom they are held accountable (Kim, 2010). These cultures encourage innovativeness, risk taking, and proactiveness (Covin and Slevin, 1991; Kim, 2010; Raj et al., 2020). An organization that has a stronger innovation culture is more likely to experiment with new ideas that may result in improved technologies or services (Foo et al., 2019; Lumpkin and Dess, 1996). These organizations are also willing to accept the risk of failure associated with the experiments and recognize that, while entrepreneurial activities often involve uncertainty, they have the potential to radically improve the organization's existing processes and outcomes (Lumpkin and Dess, 1996). These cultures anticipate future needs and develop forward thinking strategies to address them (Lumpkin and Dess, 1996). Risk taking is fostered by empowering employees to create and share ideas, reimagine existing processes and structures, and break routines (Covin and Slevin, 1991; Moon and DeLeon, 2001). These organizations reward their employee's experimentation efforts and refrain from penalizing innovation failures. To further encourage entrepreneurial activity, organizations with innovation cultures grant employees with more decision-making discretion (Hambrick and Finkelstein, 1987).

Related to sustainability concerns, organizations that have developed their innovation cultures encourage employees to experiment with different types of sustainability strategies (Roman, 2017; Ji and Darnall, 2020). They grant employees discretion to stretch the organization's internal capacities with an eye towards finding solutions to emerging sustainability problems. For these reasons, innovation culture is critical to organizations and their willingness to adopt novel sustainability practices (AlNuaimi and Khan, 2019) such as SPP. For instance, a local government with a strong innovation culture related to pollution prevention may demonstrate a willingness to experiment with different ways (and with different partners) to reduce pollution throughout their region. As an example, some local governments are forming novel partnerships with other local governments in their region to reduce their collective air pollution. By virtue of their partnerships, these same local governments may be in a better position to draw on their innovative experiences to more fully assess the opportunities associated with, say, collaborative purchasing contracts. Collaborative purchasing contracts are innovative approaches for organizations to leverage their collective bargaining power to reduce their overall sustainability impacts, while simultaneously reducing their collective cost (Culver, 2016).

4.2.2. Learning culture

Certain organizational cultures encourage organizational learning (Christmann, 2000). Organizational learning culture refers to "an organization that is skilled at creating, acquiring, and transferring knowledge, and modifying its behavior to reflect new knowledge and insights" (Garvin, 1993, p.80). Learning cultures are characterized by their ability to create continuous learning opportunities that promote inquiry and dialogue while encouraging collaboration and team learning (Marsick and Watkins, 1997; Confessore and Kops, 2006). These cultures also tend to establish systems to capture and share learning, while fostering a collective vision (Marsick and Watkins, 1997).

Related to sustainability, organizations with strong learning cultures seek to understand the complexity associated with addressing sustainability problems. They are more likely to assess their organization's sustainability and to learn more about their impacts. Additionally, these organizations tend to have structures in place that incentivize and reward sustainability learning and create access to professional development opportunities and networks to foster additional learning. Public sector organizations with strong learning cultures are more likely to give employees the discretion to learn about the potential benefits that SPP adoption may have towards achieving their sustainability goals (AlNuaimi and Khan, 2019). This learning may occur, for instance, as part of employees' engagement with professional associations, such as ICMA, which consists of a global network of local and regional governments seeking to improve their functions, including areas related to sustainability and procurement. These types of interactions may help public employees learn about SPP and its potential benefits and may provide the requisite knowledge for their organizations to later adopt SPP. Another example is the (regional) Sustainable Cities Network, which brings together cities in the Phoenix valley in partnership with Arizona State University to share knowledge and coordinate efforts to solve sustainability problems. Several cities that are part of this network have also sought to pursue sustainable purchasing (Sustainable Cities Network, 2019).

4.2.3. Collaboration culture

Collaborations involve different organizations coming together that have shared expectations for meeting a common goal. They involve the exchange, sharing, and co-development of knowledge, products, technologies, and services that meet a critical business need (Dacin et al., 2007; Gulati, 1998). Collaborative cultures promote processes governed by a set of norms and behaviors that maximize individual contribution while leveraging the collective intelligence of everyone involved (Kelly and Schaefer, 2014). Collaborative cultures value individual voices when fostering shared vision. This issue is important because when people have a voice, they understand how their contributions fit into their organization's strategy, and thus can contribute while feeling valued (Kelly and Schaefer, 2014).

Organizations with collaboration cultures are recognized by several structural arrangements. They tend to be more decentralized, which increases emphasis on individuals and their contributions (Bowen, 2015). Additionally, collaboration cultures have created norms that reward group communication and working in teams (Bowen, 2015). Collaboration occurs across other departments within the same organization and externally with other organizations (Amann et al., 2014). These cultures develop unique organizational skills to manage the collaborative process and communicate with diverse groups (Caldwell et al., 2005).

Related to public procurement, collaborative cultures are less prevalent because, as noted earlier, the procurement setting is highly regulated. Procurement regulations exist to reduce corruption related to vendor selection and accountability (Schotanus and Telgen, 2007). This setting introduces hierarchy and complexity to the public purchasing system (Stritch et al., 2018). The result is that the public sector, especially in the U.S., has traditionally avoided collaborations with vendors and contractors (Erridge and Nondi, 1994; Caldwell et al., 2005). One exception relates to vendor connection portals, which some local governments have created for vendors to share information about novel product developments. Restrictions on collaborations are generally different in the EU, where EU procurement directives encourage collaboration between public procurers and potential suppliers, using preliminary market consultation (European Union, 2014).

Collaboration with vendors can lead to innovative approaches to

reduce sustainability impacts in the supply chain (Erridge & Greer, 2002; Preuss, 2007; Darnall et al., 2017a). Collaboration provides valuable information about possible vendors and their capabilities that can influence the tendering process and influence vendor selection (Tátrai and Diófási-Kovács, 2021). Collaboration can also enhance the public organization's knowledge (Delmonico et al., 2018; Lin and Darnall, 2010) so that they are better able to examine emerging technologies and trends in product markets (Lin and Darnall, 2010). As an example, vendors may have capabilities that enable public organizations to identify opportunities for reducing downstream environmental impacts through material substitution, changes in packaging, increased recycling and reuse, and applications of new technologies to reduce emissions (Uttam and Le Lann Roos, 2015; Knoppen et al., 2021). All these factors may facilitate the adoption of SPP because they can help the public sector identify new alternatives for reducing sustainability impacts through purchasing.

Proposition 2. *Public sector organizations with stronger cultures (innovation, learning, collaboration) to address sustainability concerns are more likely to adopt SPP.*

4.3. Internal stakeholders

Internal stakeholders are collections of individuals within an organization who share a common mission and who affect or are affected by the organization's achievement of its objectives (Freeman, 1984). They include individuals who are typically located within (and work for) the organization (Freeman, 2010). Internal stakeholders exist in every part of an organization's internal hierarchy (Jones, 1995). In local governments, internal stakeholders include officials who are either elected or appointed, including city managers and mayors, city council, and department directors, in addition to staff (No et al., 2020).

By virtue of their formalized status, pressures from internal stakeholders have enormous influence on organizations, shaping their overall effectiveness and driving change (Chebbi et al., 2020). They have first-hand knowledge about an organization's internal capacity, resources, and constraints to carry out essential tasks (Freeman, 2010; Kotter and Sathe, 1978). They also make decisions that shape the organization's internal capabilities and are better able to deploy and coordinate their resources (Grant, 1991); Collis and Montgomery, 1995). Internal stakeholders also are important catalysts that can change an organization's sustainability planning, strategies, goal setting, and bureaucratic discretion (Roman, 2017; Brammer and Walker, 2011). Internal stakeholders, therefore, are closely related with an organization's overall capacity and ability to act.

Related to sustainability, internal stakeholders help champion an organization-wide capacity and commitment to environmental issues (Bansal and Roth, 2000). The support of these individuals is an important predictor for why organizations engage in sustainability activities (Stead and Stead, 2014). For instance, internal stakeholders who are committed to the organization's sustainability goals are more likely to endorse other sustainability initiatives (Zutshi and Sohal, 2004) and develop shared sets of beliefs, values, activities, norms, mission and understanding about the importance of sustainability to the organization. The reinforcing relationship among internal stakeholders shapes employee motivations and performance, commitment, job satisfaction, longevity in the organization, innovation, and productivity (Bowen, 2015). For this reason, in addition to being linked to organization capacity, internal stakeholders are also strongly connected to an organization's culture.

Related to organizations' sustainability action, at least two categories of internal stakeholders are salient to this discussion: leaders and champions and staff.

4.3.1. Leaders and champions

Leaders influence individuals and are an important form of "human capital" that fosters organizational change. Leadership from top level managers and mid-level managers is vital to ensuring an organization-wide understanding of and commitment to any issue (Boyne, 2010; Tilley, 1999; Zutshi and Sohal, 2004). Such commitment also is critical to maintaining and improving an organization's strategy over time. Additionally, leaders help create a culture that embraces the broader objectives of sustainability and play a fundamental role in institutionalizing sustainability practices such as SPP (Preuss and Walker, 2011; Walker and Phillips, 2009; Roman, 2017).

Transformational leaders, in particular, are capable of pursuing new initiatives under high levels of uncertainty and ambiguity and lead to innovative outcomes (Roman, 2017). They are often champions of new sustainability ideas that get diffused across the organization (Anderson and Bateman, 2000; Singh et al., 2020). For these reasons, pressures from leaders who support sustainability are more likely to also pressure organizations to adopt SPP (Roman, 2017; Islam et al., 2017; Brammer and Walker, 2011).

4.3.2. Staff

Staff include employees who are in non-leadership positions. They have a critical role in shaping an organization's direction towards adopting sustainability innovations since staff tend to have a strong understanding of organizational issues based on their daily interactions (Hasu et al., 2011). Staff may also have important contacts outside the organization, which may lead to potential sources of new knowledge and ideas (Kesting and Ulhøi, 2010). Thus, staff are important actors that pressure organizations to consider new opportunities or innovations (Chesbrough, 2011).

Related to sustainability, staff pressure often leads to an organization adopting proactive sustainability activities (Daily and Huang, 2001; Hanna et al., 2000; Sarkis, Gonzalez-Torre & Adenso-Diaz, 2010). Organizations that respond to these pressures tend to create a virtuous cycle that leads to additional sustainability pressures from internal stakeholders (Sarkis et al., 2010). For instance, organizations that respond to staff pressures for a stronger sustainability vision may be able to recruit talented applicants who have a strong preference for working in organizations with notable sustainability philosophies (Reinhardt, 1999). These new recruits are likely to further advance the organization's sustainability culture. These arguments suggest that organizations that experience staff pressures to address sustainability concerns are more likely to develop the capacities required to adopt an SPP.

Proposition 3. *Public sector organizations that receive greater pressures from internal stakeholders to address sustainability concerns are more likely to adopt SPP.*

External drivers exist outside the organization also motivate organizations to act. External drivers come in two forms: external stakeholders that pressure change, and the institutional arrangements in which organizations are embedded within. Both are described in the sections that follow.

4.4. External stakeholders

External stakeholders are collections of individuals outside the organization who affect or are affected by the organization's achievement of its objectives (Freeman, 1984; Engel and Orbach, 2008). Unlike internal stakeholders, whose relationship is formalized through their employment or another formal arrangement, external stakeholders' relationship is more varied. Although many lack a formalized relationship, external stakeholders have the capacity to shape organizational outcomes (Mintzberg, 1983). They can mobilize public sentiment, alter accepted norms, and pressure organizations to shift their operational priorities (Hoffman, 2000).

4.4.1. Supply chain stakeholders

Supply chain stakeholders have an economic stake in the organization's activities and thus seek to protect its financial interests. Supply

chain stakeholders consist of all entities that are involved in fulfilling a customer request, including the suppliers, transporters, warehouses, and vendors (Cox, 1999). Related to sustainability, some supply chain stakeholders exert pressure on public organizations to take stronger positions on sustainability concerns (Kim and Darnall, 2016). These stakeholders have typically invested in sustainability activities or product developments that would give them a stronger market position if the public sector organization were more proactive in addressing their sustainability concerns (Kim and Darnall, 2016). These pressures may encourage public organizations to adjust their internal orientation by prompting them to modify existing routines to give sustainability issues more prominence. Pressures from supply chain stakeholders also involve informal discussions and meetings with public officials that encourage SPP adoption. For example, small local suppliers, and minority- and women-owned suppliers may request meetings with government officials to encourage them to adopt SPP to create set-asides that would benefit these suppliers while promoting social equity (Darnall et al., 2018b).

4.4.2. Other government organizations

External stakeholders also include other government organizations or different levels of government, such as local governments, subnational governments, national agencies, and international governing organizations with a legitimate interest in the relevant organization (Amaral and Magalhães, 2002). Government stakeholders create requirements that pressure organizations to conform using both formal and informal means. Formal approaches involve legal expectations and frameworks. Failure to respond to these expectations can lead to penalties, fines, and decreased goodwill (Potoski and Prakash, 2006). For instance, a local government may receive pressure by its subnational government to adhere to specific sustainability expectations to reduce climate impacts. In response, the local government may expand its internal capacities in a way that leads to SPP adoption (Raj et al., 2020; Walker et al., 2008). Other ways in which government stakeholders exert pressure include expectations to adhere to informal non-regulatory approaches and agreements (Hsueh and Darnall, 2017). For instance, at the international level, the OECD and the EU are exerting pressure on member governments to reduce their sustainability impacts by way of SPP (OECD, 2008; European Union, 2014). In response, subnational or national governments may shift their cultures to reprioritize sustainability concerns, adjust performance requirements, and encourage greater bureaucratic discretion to address these international expectations. These changes can improve opportunities for public sector organizations to develop capacities that facilitate SPP adoption.

4.4.3. Professional associations and networks

Professional associations include nonprofits whose missions are to enhance professionalization within the public sector by improving leadership, management, innovation, and ethics. Similarly, professional networks, although less formalized, provide educational opportunities through sharing learning experiences. Both entities develop guidance, provide networking opportunities, and identify best practices within the profession. By following the recommended practices and behaviors of these professional associations and networks, public sector organizations can increase their legitimacy within their broader peer community (Guler et al., 2002; Zhu et al., 2013). Examples of a relevant professional association include the International City/County Management Association. Similarly, networks that are promoting sustainability include ICLEI, UNEP's One World Network. For instance, ICLEI shapes the social norms of local governments by encouraging them to become more sustainable. Local governments that are networked with ICLEI, therefore, are more likely than non-members to respond by shifting their sustainability goals or by increasing the salience of sustainability concerns to align with ICLEI expectations. By doing so, these local governments are more strongly poised to shift their cultures and develop capacities to improve their sustainability and adopt SPP.

4.4.4. Political interest groups

Political interest groups include environmental groups and other political organizations such as trade associations and other business associations, such as the Chambers of Commerce. These organizations exert pressure by way of lobbying, letter writing, and media campaigns (Hoffman, 2000; Walker et al., 2008) to influence the organizations' sustainability strategies both directly and indirectly through political institutions. Responding to these concerns can increase the public organization's overall legitimacy. For instance, a business association representing the solar industry may exert pressure on a local to increase its purchases of energy from renewable resources and environmental groups may be doing the same. In response, the local government may shift its organizational strategy in a way that increases the salience of sustainability concerns and encourages SPP adoption.

4.4.5. Citizens and the wider public

Citizens and the wider public benefit from the services which public organizations deliver and that are funded by taxpayer money. Citizens therefore ascribe importance to the outcomes of public policies and public service experiences by assessing governments' ability to deliver outcomes that correspond to their expectations (Scott et al., 2016). These assessments become important motivators for citizens and the wider public to voice their approval *or disapproval* (Freeman, 2010) of government services. Related to sustainability, increasingly, citizens and the wider public have expressed concern about sustainability and the government's role in protecting it (Raj et al., 2020; Roman, 2017). As these preferences amplify, citizens and the wider public have considerable influence on public organizations' sustainability strategies (Raj et al., 2020). Consequently, public sector organizations that receive pressures from citizens regarding sustainability are more likely to respond by adopting SPP (Raj et al., 2020; Sanderford et al., 2015).

Proposition 4. *Public sector organizations that receive greater pressures from external stakeholders to address sustainability concerns are more likely to adopt SPP.*

4.5. Institutional setting

The institutional setting often drives organizations' adoption of new practices (Foo et al., 2019). The previously mentioned themes (capacity, culture, stakeholders) are all influenced by and nested within this institutional arrangement. This setting includes the macroeconomic context, socio-political forces, and market forces, all of which have significant influence on whether public organizations adopt different sustainability practices (Smith et al., 2016; Keulemans and Van de Walle, 2017; Raj et al., 2020; Foo et al., 2019). This context affects public organizations differently than the private sector because public sector purchasing is significantly more regulated and subject to greater political oversight which leads to higher levels of accountability and uncertainty due to agenda shifts that come with changes in election outcomes (Rainey, Backoff and Levine,1976; Bozeman & Bretschneider, 1986; Bozeman, 1989, Bretschneider, 1990; Bozeman and Bretschneider, 1994; Moulton, 2009).

4.5.1. Macroeconomic context

The macroeconomic setting consists of broader economic conditions, including recessions and periods of expansion. It influences an organization's capacity, culture, and stakeholder pressures. For instance, related to capacity, during periods of economic recession, a public organization's resources may become constrained while facing growing demand for services due to increasing social dislocation, which affects its ability to adopt an SPP. However, periods of economic recession may also encourage an organization to emphasize resource efficiencies that come from pollution prevention (Delmas and Pekovic, 2014; Barnett et al., 2015). Organizations that have stronger sustainability capacities may, therefore, adopt SPP to achieve these efficiency goals (Raj et al.,

2020).

Similarly, the macroeconomic context can affect an organization's culture. For instance, recessions may cause some organizations to temper their willingness to take risks or break routines, especially towards sustainability concerns in light of declining resources and growing demand (Barnett et al., 2015). Such a culture may constrain an organization's capacity to adopt an SPP. However, for other organizations, a period of recession may cause them to become more willing to innovate to increase efficiencies (Barnett et al., 2015). Recessions may also encourage collaboration (Paquin et al., 2014) across units to increase efficiencies and address common problems, thus enhancing capacities that facilitate SPP adoption (Foo et al., 2019). Finally, the macroeconomic context may cause external stakeholders to shift the pressures they exert on public sector organizations depending on the macroeconomic setting (Rodriguez-Plesa et al., 2022). For instance, during periods of recession, citizens and the wider public may be more reluctant to pressure their local government to address a new issue. Other external stakeholders, such as local politicians, may amplify their calls for fiscal conservatism. Both outcomes can shape an organization's culture in a way that affects their capacity to adopt SPP.

4.5.2. Socio-political forces

Socio-political forces relate to social and political pressures that are exerted on organizations and their decision makers. Organizations are increasingly under pressure to comply with regulations which are embedded in the socio-political system (Walker et al., 2008). Regulatory forces refer to legislation, standards, rules including the obligations and incentives set by governments that influence sustainability initiatives (Foo et al., 2019). These regulatory forces are a major driver of organizational sustainability efforts and can further encourage the adoption of sustainability practices (Roman, 2017; Walker et al., 2008). Related to compliance in the public sector, local governments must attend to pressures from subnational governments, subnational governments must comply with national-level regulations, and national governments endure pressures from international governance organizations. Coercive directives for sustainability activities also encourage other governments to mimic these actions, thus diffusing sustainability practices more widely (Grob and Benn, 2014). Public organizations that anticipate stricter regulatory requirements may also preempt these regulations, by reducing their sustainability impacts below reporting thresholds (Darnall et al., 2008). Doing so can make new regulations less relevant, reduce mandated reporting requirements and enhance autonomy in their decisions to respond. Regulations (or potential regulations) therefore create important incentives for public sector organizations to advance sustainability initiatives that may include SPP (Grob and Benn, 2014; Min and Galle, 2001).

In other situations, socio-political forces may offer a positive influence on SPP adoption. For instance, when the U.S. withdrew from the Paris Climate Agreement, many local governments believed this federal action undermined their local climate action efforts that were supported by constituent communities. As a consequence, more than 450 U.S. mayors responded by voluntarily pledging their commitment with the agreement's goals, even in the absence of federal leadership.

4.5.3. Market forces

Market forces relate to conditions in the market that either accelerate or deter the exchange of goods and services (Canon et al., 2013). Two types of market forces are particularly relevant to public purchasing: product/service availability and market information. Availability relates to whether the market provides products and services with specific desired attributes (Wittek et al., 2013). When these desired items are available, market forces facilitate exchange (Wittek et al., 2013). In instances when they are not available, the market deters exchange or facilitates suboptimal exchange, where purchasers purchase products with less desirable alternatives to fulfill their needs. Both situations are highly relevant to the case of sustainable products and services, where there is often a lack of sustainable product/service options. In such situations, organizations must either forego purchasing or follow-through with the purchase, even if it is suboptimal. Both situations create ambiguity about whether a public sector organization can adopt SPP successfully.

The second type of market force that is particularly relevant to public purchasing relates to market information. Market information typically comes in the way of a "signal," which conveys information that is designed to alter the beliefs of, or inform, market participants (Spence, 1973). Credible signals refer to the extent to which purchasers perceive market information to be trustworthy and reputable (Joshi et al., 2007). When these signals are lacking or perceived to be uncredible, the normal market for the exchange of goods and services is disrupted (Spence, 1973). For instance, purchasing managers may perceive a lack of product/service options when in fact these options exist.

Related to sustainability, market information and signals help reduce market uncertainty about the sustainability attributes of a product or service. For instance, ecolabels, which are product/service certifications, provide market information to purchasers about a product's or firm's sustainability attributes (Cashore, 2002; Darnall and Aragon-Correa, 2014; Darnall et al., 2019). Ecolabels attempt to reduce purchasers' uncertainty about the validity of product claims sustainability (Darnall et al., 2017c, 2018c). While there are more than 450 in existence (Ecolabel Index, 2021); Darnall et al., 2018c), ecolabels are not prevalent across all product or service categories (Darnall and Aragon-Correa, 2014), creating uncertainty about whether an organization can consistently purchase sustainable products. Additionally, ecolabels are not all designed in a way to sufficiently improve sustainability outcomes (Darnall et al., 2017c). These market uncertainties may deter organizations from adopting SPP.

Combined, the macroeconomic context, socio-political forces, and market forces, all have significant influence on whether public organizations adopt different sustainability practices (Smith et al., 2016; Keulemans and Van de Walle, 2017; Raj et al., 2020; Foo et al., 2019). As policy adoption is nested within this context (Lynn et al., 2002), we anticipate that these factors also affect SPP adoption.

Proposition 5. *The institutional setting affects public sector organizations' likelihood of adopting SPP*.

5. SPP adoption framework example – the city of Tempe

We illustrate the SPP adoption framework by applying it to the example of the City of Tempe's (Arizona, USA) decision to adopt SPP. In fall of 2019, the City's Director of Purchasing wondered whether sustainable purchasing might help advance the City's climate action goals, while meeting its other sustainability objectives, such as: supporting local businesses, reducing solid waste, and delivering greater value for money (ASU GIOS, 2019).

5.1. Internal organizational setting

5.1.1. Capacity

At the time, the City's existing capacity served as an important foundation for its SPP adoption decision. The City had a "value for purchasing" clause that allowed purchasing officers to consider a product's full range of benefits (monetary and non-monetary). This clause provided a mechanism, in the absence of a formal SPP, for purchasing staff to consider issues such as reduced wastes and emissions, improved efficiencies, reduced risks to human health, and more equitable societal outcomes. Related to its complementary sustainability policies, Tempe had a long-standing recycling policy, in addition to water and energy conservation policies. In more recent years, Tempe began promoting higher urban density, mixed-use buildings, walkability, bicycle lanes, and public transit (Dogar et al., 2019). In 2019, Tempe extended its sustainability scope by creating its first Climate

Action Plan, becoming the second city in Arizona to do so and the first in the region (Dogar et al., 2019). These experiences facilitated Tempe's efforts to acquire and assemble information about how to manage and to reduce its waste across multiple departments and settings (Ambekar et al., 2019). They also provided a basis for the City of Tempe to develop tacit knowledge required to coordinate employees around sustainability issues (Hart, 1995) and measure their progress towards achieving their sustainability objectives (Darnall and Edwards, 2006). Each of these complementary internal capabilities helped the City of Tempe imagine how they could serve as a foundation to adopt SPP. Related to its internal resources, the City was in a period of expansion, with record numbers of new residents moving to the area. This provided a solid tax base to fund the City's sustainability initiatives.

5.1.2. Culture

The city's motivation to lead within the state and its region around issues of sustainability was indicative of its strong culture of proactiveness and innovation. To build on this culture, the City's Director of Purchasing asked whether SPP might be a means by which the City could meet its climate action goals. In his role, the director had discretionary authority to consider how Tempe's existing purchasing processes and structures could be shifted to offer broader sustainability value. However, the City needed to stretch its internal capacities further to determine whether adopting a novel sustainability practice (AlNuaimi and Khan, 2019), such as SPP was an appropriate choice. The City of Tempe's culture was one that encouraged exploration. To learn more about the complexity associated with SPP, and with the encouragement of the City's Sustainability Director, the Purchasing Director formed a partnership with Arizona State University. Teams of students worked with the City over the course of four months to identify the organizational structures needed to adopt SPP (ASU GIOS, 2019). By examining best practices related to other cities' SPP efforts, the university collaboration helped the City of Tempe imagine how SPP could be adopted successfully, and understand the opportunities that might come with their adoption decision. The City's involvement in professional networks, such as the Sustainable Cities Network further reinforced these possibilities. Additionally, in 2017, City of Tempe joined 322 other US Mayors who agreed to adopt, honor, and uphold the commitments to the goals enshrined in the Paris Agreement, despite athe lack of a federal pledge (Climate Mayors, 2017).

5.1.3. Internal stakeholders

At the helm of all these discussions was the City's Director of Purchasing, who was the central champion for exploring SPP. He had a fundamental interest and commitment to sustainability. This positionality made him more likely to endorse sustainability initiatives (Zutshi and Sohal, 2004) and develop shared sets of beliefs, values, and activities within his department to do the same. His ideas were reinforced by the City's Director of Sustainability and Resilience and its Deputy Mayor, both of whom were strong advocates for sustainability across the City. Related to the City's procurement staff, the Director of Procurement stated, *"I think that the vast majority of our employees would like to do the right thing when it comes to purchasing sustainable products. However, price tradeoff is an issue to many of our employees,"* (Dogar et al., 2019). This was true even though the City had already implemented "value for purchasing." Although tepid staff support created a less favorable setting for SPP adoption, the Director of Procurement noted that he felt SPP opportunities would be greater "*when the price is equal to or less than a non-sustainable product"* (Dogar et al., 2019).

5.2. External stakeholders

Discussions with the City's vendors helped change the inclination of the staff. The city traditionally kept an arm's length distance with its vendors, which ultimately inhibited its understanding of how SPP could be adopted. However, after discussions with one of its local vendors, the City learned that numerous sustainable product options already existed, which were also price competitive. These options had not been obvious within the City's existing purchasing system. Vendor discussions, coupled with leveraging the city's e-procurement system, helped purchasing officials discover sustainable, price competitive alternatives more easily. These discussions increased the City's confidence that SPP adoption could be successful.

Another important external stakeholder was Arizona State University, which worked with the City of Tempe to imagine how adopting an SPP may benefit the city's strategic goals. The City also drew strength from area environmental and community groups, voters and residents, who were largely supportive of the City's long-standing focus on sustainability. The City adopting an SPP, therefore, would be congruent with these views.

5.3. Institutional setting

Related to the broader macro-economic setting, the area was experiencing significant growth and expansion, which placed increasing pressure on the City of Tempe to address its sustainability concerns. Socio-politically, in 2017, when the U.S. pulled out of the Paris Climate Agreement, the City of Tempe chose to commit to meeting the agreement's goals. Tempe's 2019 Climate Action Plan was its roadmap to meet these goals. Nested within this broader socio-political setting, Tempe's Purchasing Director considered whether SPP might be an important mechanism to assist. Finally, while the City of Tempe recognizes the market uncertainty around sustainable products, through its vendor discussions about sustainable products, it learned of opportunities that reduced its initial concerns.

In sum, the factors leading up to the City of Tempe's adoption of its SPP are congruent with most of the themes in our SPP adoption framework. Table 2 lists each of these factors. Given this enabling setting, in 2020, the City of Tempe formally codified its SPP by way of a City Council vote.

5.4. Discussion

While SPP can mitigate sustainability impacts throughout the supply chain and encourage businesses to produce more sustainable products, extant organizational research has offered a limited theoretical understanding of the factors related to SPP adoption. Developing a conceptual framework for understanding SPP is important because of increased focus on SPP within local, subnational, national governments (Darnall et al., 2017b) and within international governance organizations (UNEP, 2017; 2021; OECD, 2021). Yet existing research has tended to either focus on sustainable purchasing in the private sector (Ambekar et al., 2019; Chicksand et al., 2012; Hoejmose and Adrien-Kirby, 2012; Kim et al., 2018; Tiwari et al., 2019) or on traditional public management purchasing topics such as contracting (Brown et al., 2015; Smith and Fernandez, 2010) and tendering (Bovaird, 2006). Within SPP literature, while more than 140 scholarly papers have been published on aspects of sustainable purchasing, we have limited understanding of the conceptual factors related to SPP adoption (Preuss, 2009; Walker and Brammer, 2009; Amann et al., 2014).

Our research offers at least two contributions to theory and our understanding of SPP. First, this research builds on prior organization scholarship, which is widely dispersed across a variety of journals and characterized by its disconnected discussions, to offer a parsimonious theoretical model for understanding SPP adoption. It elaborates on four constructs that are related to the public sector's decisions to adopt SPP – capacity, culture, stakeholders, and the institutional setting. Across these constructs is an inherent complexity that we cannot depict because of practical considerations related to article length.

Additionally, some themes may be more important than others, depending on the context. For instance, capacity and culture were primary themes of importance for the City of Tempe. The degree to which

Table 2
City of Tempe's SPP framework alignment.

Theme	Sub-theme	Presence?	City of Tempe's SPP Adoption
Internal Environment			
Organization Capacity	- Internal capabilities	✓	● *City had a "Value for purchasing" clause* ● *City had a complementary recycling policy* ● *City had complementary water and energy conservation policies* ● *Urban density initiatives* ● *City's Climate Action Plan facilitated information collection and measurement*
	- Resources	✓	● *Tax revenue provided a strong base for the City to fund its sustainability initiatives*
Organizational Culture	- Innovation culture	✓	● *City was recognized as a sustainability leader in the state of Arizona* ● *City encouraged exploration and proactiveness* ● *City's Director of Purchasing had discretionary authority to consider how sustainability could be imbedded into purchasing*
	- Learning culture	✓	● *Engagement with local University to learn about SPP adoption*
	- Collaboration culture	✓	● *Collaboration within Sustainable Cities Network*
Internal Stakeholders	- Leaders and champions	✓	● *Director of Purchasing was a central champion for SPP* ● *Director of Sustainability & Resilience was a strong advocate for sustainability* ● *Mayor was a sustainability advocate*
	- Staff	X	● *Staff worried about potential price tradeoffs associated with purchasing sustainable products. Subsequent engagement with supply chain stakeholders helped reduce these concerns*
External Environment			
External Stakeholders	- Supply chain stakeholders	✓	● *Local suppliers were eager to discuss and identify sustainable purchasing options that helped the City imagine how SPP may be feasible*
	- Other government organizations	X	● *While the City was connected to other government organizations, these governments were not a reason for its sustainability focus*
	- Professional Associations and Networks	✓	● *Engagement with the Sustainable Cities Network* ● *Climate Mayors pledge to meet Paris Climate Agreement goals*
	- Political interest groups	✓	● *City of Tempe received support from environmental and community groups*

Table 2 (*continued*)

Theme	Sub-theme	Presence?	City of Tempe's SPP Adoption
Internal Environment			
			regarding sustainability more broadly
	- Citizens and the wider public	✓	● *Voters and residents were supportive of sustainability*
Institutional Setting	- Macroeconomic Context	✓	● *The city was experiencing significant growth, which was creating pressure on the City of Tempe to more proactively address its sustainability concerns*
	- Socio-political Forces	✓	● *The City of Tempe adopted its 2019 Climate Action Plan adopted in spite of lack of federal support*
	- Market forces	✓	● *Availability of local suppliers alleviated supply-chain uncertainties*

these themes were more important than, say, external stakeholders is less known.

A second contribution of this research is that our framework expands significantly on existing public management research on procurement, which has tended to focus on issues related to contracting (Brown et al., 2015; Potoski, 2008; Bovaird, 2006; Schotanus et al., 2011), tendering (Bovaird, 2006; Gelderman and Semeijn, 2006), implementation, and noncompliance (Kauppi and Van Raaij, 2015). It considers how public purchasing can serve as a policy lever to improve sustainability outcomes and encourage private sector innovations of more sustainable products and services. This issue is especially important given the public sector's significant sustainability impact and purchasing power (Cheng et al., 2018; Hafsa, 2021a).

5.5. Future research

Future research should consider inherent complexity across the SPP adoption constructs. For instance, an organization's capacity may influence its internal stakeholders and culture (Sun and Wang, 2017). For example, through the continued adoption of different sustainability policies, an organization may acquire significant information about how to manage its waste across multiple departments and settings (Ambekar et al., 2019), coordinate employees around sustainability issues (Hart, 1995), and measure their progress towards achieving their sustainability objectives (Darnall and Edwards, 2006). Each of these factors may enhance the commitment of internal stakeholders to addressing sustainability concerns, which leads to or reinforces an organization-wide set of beliefs (Schein, 1990) around sustainability concerns. While we have not explored these extended or indirect relationships, we acknowledge that they exist and encourage prospective research to consider them.

Another issue for further exploration would be determining the relative salience of the different motivators. Some motivators can be influenced by public organizations, while others cannot (e.g., external environment) or they are more difficult to change (e.g., culture). Moreover, the presence of *all* factors within the framework may not be required to encourage organizations to adopt SPP. As an example, while the City of Tempe's internal staff were not important motivators for its SPP adoption, they may be for other organizations, especially if other factors are less present. In still other instances, it could be that some motivators are vital to SPP adoption. Future assessments of the relative importance of these motivators would be able to answer these important questions.

Other promising areas for future scholarship relate to examining questions about relative thematic importance. Related research should also consider how thematic importance may change over time during the course of an adoption decision. It could be that some themes are more important at the early stages of SPP adoption decisions and that other themes become more important later in the process. Our SPP framework provides an important foundation and starting point for such investigations.

Finally, our knowledge of SPP would benefit significantly by considering how the relationships developed in our theoretical framework relate to the SPP implementation processes and outcomes. Our belief is that public organization capacity, culture, stakeholders, and institutional setting are likely related to how SPPs are implemented and how they perform over time. Our framework may also provide a basis for understanding these relationships further.

6. Conclusion

In sum, our framework for understanding SPP adoption offers important contributions to existing scholarship and responds to the expressed need for more theoretical investigations of SPP (e.g., Preuss, 2009; Walker and Brammer, 2009; Amann et al., 2014; Cheng et al., 2018; Roman, 2017). It extends existing SPP research, by revealing the critical factors that facilitate and impede the public sectors' pursuit of SPP adoption, while offering critical insights about specific approaches relevant for advancing SPP adoption more broadly, in addition to specific approaches for advancing SPP in public organizations. By developing a conceptual framework and a set of research propositions for future theoretical elaborations and empirical testing, this paper offers a much-needed foundation that helps scholars and practitioners to advance their knowledge of the overarching factors that are related to SPP adoption. It adds value to discussions related to SPP adoption and provides a basis for understanding how public organizations' adoption decisions relate to SPP implementation outcomes, as the two concerns are unquestionably related.

On a practical level, this framework may help inform fundamental discussions as to why some public organizations still have not adopted SPP, despite widespread international support. The presence of these factors can significantly encourage the adoption of SPP within public organizations, as demonstrated by the City of Tempe. Likewise, the absence of pertinent factors may present obstacles to successful adoption. Our hope is that the SPP framework can set the stage for public organizations, which have not yet assessed their internal or external settings, to do so and gain the confidence to launch an SPP program. In instances where a public organization's internal or external settings do not align with SPP adoption, the framework offers a basis to consider what changes might be needed (such as acquiring more internal capacity) prior to SPP adoption.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

No data was used for the research described in the article.

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