Chapter 1
Public Value and Private Organizations

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Abstract The first chapter of the book introduces our key question: how can private actors be incentivized to share their data in a way that promotes the public value of the information disclosed? We are interested in whether and how these different organizations can be encouraged by governments and other interested actors to share the information that they hold. The means by which this might be accomplished—particularly how these private actors might be encouraged to collaborate among themselves and with governments—is a major focus of the book. The chapter explores the concept of public value in the context of data disclosure by private organizations, using empirical evidence from the I-Choose project. We argue that while disclosing product information can enhance the public sphere, information disclosure alone is not enough to guarantee this. Disclosure must be supported by innovative governance mechanisms. The chapter explains why disclosing private product data is considered valuable by some policymakers and advocates and considers the barriers to disclosing product information.

Keywords I-Choose • Public value • Smart disclosure • Open data

1.1 Introduction: The Puzzle

As our ability to electronically collect, manipulate, and publish large amounts of data increases, making private information available to the public is increasingly a viable part of what governments can and should do to fulfill their mandates.

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There is much current interest in the power of information disclosure to improve our lives: calls for "open government" argue that the routine disclosure of information about how government works and what it is doing can support more effective public oversight. Discussions about the power of "big data"—very large datasets that require innovative methods of processing, curation, and dissemination—often focus on ways in which big data might be used to tackle intractable problems in our society such as crime or pollution. "Smart disclosure" policies, promoted by the Obama Administration in the United States, promise to deliver benefits for the society by disclosing information held on individual citizens or consumers back to the source.

These debates have implications for many areas of policy, including healthcare and public health, energy and the environment, and banking and finance. Governments have taken some important first steps by adopting open government strategies and policies; by fostering research on the management, dissemination, and interoperability of big data; and by applying the principles of "smart disclosure" to their own records.

But a great deal of valuable information that could be used to solve societal problems is not held by governments—it is held by private organizations. It is not publicly available and is often held in proprietary systems. It may, in fact, be a commercial secret. Collecting this information bears a cost, and revealing it to others may be perceived as costly as well. In the case of environmental sustainability, for example, governments hold information about emissions and pollution. They can disclose information such as which firms have broken the rules on emissions or pollution, which sites are polluted, and what funds have been dispersed as part of government-funded cleanup initiatives. But when it comes to individual consumer choices that affect the environment, businesses hold much of the information that consumers need in order to make decisions—particularly about factors that consumers cannot directly observe, such as how "green" a firm's production process is.

Many argue, therefore, that there are important benefits to disclosing privately held data. First, disclosure—if done correctly—should allow individual members of the public better access to, and control over, their own data. For instance, patients would be able to access their own health data, or the customers of energy companies would be able to review their energy consumption.

Second, it is argued that individuals will act on this new information, making their actions more efficient or valuable for either themselves, the public, or both (Sunstein, 2012). Upon viewing their health data, patients might have a better sense of their own health and choose to make positive changes in their lifestyle. Energy company customers might find ways to reduce their electricity consumption. Having access to production practices, consumers may choose to buy products that respond to their values related to health and economic or environmental sustainability.

Third, it is argued that better aggregate public awareness and scrutiny of what governments, businesses, and other organizations do, including public interest organizations and the media, will lead to demands for better behavior. On viewing their health data more regularly, patients might become aware of a need to reduce healthcare costs or to obtain more comprehensive health insurance coverage.

On monitoring their energy usage, customers might demand more information about renewable sources of electricity or regulation that makes it easier for them to switch providers. Public awareness of production practices in the food or fashion industries may promote more responsible corporate practices.

Finally, policymakers often argue that disclosure will lead to increased opportunities for innovation and economic growth based on the disclosed data—that new industries will emerge to filter and process the data on behalf of consumers. This can be seen in the many small online services created in 2013 promising to help individuals and families in the United States navigate new health insurance portals that present the users with large quantities of information about insurance plans. It can also be seen in new information intermediaries like GoodGuide, which offers consumers information about product impacts on health, the environment, or society.

This leads to our key question: how can we incentivize private actors to share their data in a way that promotes the public value of the information disclosed? This question needs unpacking a little. Our category of "private actors" involves not only businesses and industry but also nongovernmental organizations (NGOs). We are interested in whether and how these different organizations can be encouraged by governments to share the information that they hold. The means by which this might be accomplished—particularly how these private actors might be encouraged to collaborate among themselves and with governments—is a major focus of this book. Finally, although we choose to remain optimistic about the potential for information disclosure as a policy tool, we also point out weaknesses in the assumptions that lie behind such disclosure policies. Disclosure does not guarantee that public or firm behavior will change, and the effectiveness of disclosure policies is sensitive to the governance tools that are employed in parallel.

We argue in this book that disclosing privately held data can have a public value under certain conditions. In our definition, a policy outcome that has public value satisfies two criteria. It is (1) in line with what adds value to the public sphere, (2) as determined by a fair and transparent consultative process that aligns agency goals with democratic mandates. (This definition is unpacked further in Sect. 1.3.) Our book explores the necessary and desirable conditions under which information disclosure can produce public value—in particular, we discuss the governance conditions and mechanisms required to produce policy outcomes with public value. We then explore the potential for connecting this public value with the interests of private organizations, explain the roadblocks to doing so, and outline some first steps for overcoming them.

We approach our core question through a case study of coffee supply chains in North America. Coffee is a commonly traded product that seems relatively simple, yet has a number of complex supply chains. We focus on coffee that is grown in Mexico and sold in Canada and the United States, three countries that are governed by a shared trade regime but with very different regulatory environment, governance styles, levels of economic development, and patterns of information technology use. Importantly for our purposes, coffee is often connected to key, nonpecuniary values, such as environmental sustainability and worker and human rights. Coffee is available

in many different types—the bag of coffee you buy in the store might claim to be organically or shade-grown or might be certified as "fair trade." In practice, there is no feasible way for the consumer to verify these claims—they must rely on truthful reporting by producers, distributors, retailers, and certifiers.

We use our coffee case study to think about how private data disclosure might help make supply chains more sustainable. We explore to what extent disclosing information about how coffee was produced using emerging technologies can support green purchasing decisions by consumers and ultimately change the behavior of other actors in the supply chain. We find that governments cannot take a backseat in this process. In order for consumers to trust the data that is disclosed, we need to formulate new governance mechanisms that are a good fit with the age of big data. Disclosure alone will not suffice—creating more sustainable supply chains requires addressing classic questions of governance about the independence of organizations, accountability, and transparency.

The next sections in this chapter discuss these core concepts and debates in more detail. First, we introduce our case study—the I-Choose project—as an example of private data disclosure with the potential to create public benefits. Second, we explore the concept of public value in the context of a vibrant scholarly debate about its definition and uses. In particular, we focus on what public value means in the context of data disclosure and relate it to the use of new and emerging technologies. Third, we discuss reasons why private organizations in the supply chain might choose to disclose data, before discussing barriers to such disclosure. Finally, we summarize our argument and lay out the road map for the rest of the book.

1.2   The I-Choose Project

The findings and conclusions presented in this book are drawn from a National Science Foundation funded study that examined the coffee supply chain to better understand the requirements and impacts of information disclosure on firm and consumer behavior. Our interdisciplinary and international research team combined lessons from the disciplines of information science, management, political science, business, and computer science to address this question. Although this study focused on one consumer product, we believe that the lessons we draw from it are broadly applicable, with implications in areas such as environmental policy, healthcare, trade, finance, and food safety.

Our project focused on one commodity—coffee that is grown in Mexico and sold in Canada and the United States. Coffee itself seems like a simple product—because it is a commodity rather than a product with parts or ingredients sourced from many different countries. A bag of coffee beans bought in your local store has a relatively simple set of possible supply chains. Growers cultivate coffee plants, intermediary organizations process coffee cherries into green coffee beans (in Mexico, growers are often organized into coffee cooperatives), and exporters sell green beans to roasters (sometimes through brokers). Roasters—from large

multinational firms such as Nestle to small independent businesses—turn green beans into the coffee beans that we recognize, roasting and packaging them and selling them to retailers, from large supermarket chains to smaller independent stores. However, how coffee is cultivated, produced, distributed and sold raises important social and environmental questions, answers to which are often not visible to consumers buying coffee in stores.

Coffee is one of the main crops in Mexico. Given its production volume as well as the income derived from its export, coffee is a strategic crop for the country (SAGARPA, 2012). Mexico has over 280,000 coffee producers, of which over 200,000 are smallholders—small farms producing a mixture of crops for consumption and income (Fridell, 2007). The United States is the main market for green coffee grown in Mexico, with 70 % of coffee beans being grown for export. Ninety-eight percent of the coffee produced in Mexico is the higher-quality Arabica coffee, with the rest being robusta coffee (USDA Foreign Agriculture Service, 2011).

Production for export can be damaging, and variations in the world price of coffee can have serious social consequences. Some of the poorest areas of Mexico with some of the largest indigenous populations, such as Chiapas and Oaxaca, are Mexico's most significant coffee producers. Due to more industrialized farming methods and planting programs sponsored by major international companies, global coffee production is now often greater than global consumption, causing prices to drop. Not only that, but when global demand for cheaper robusta coffee increases, the price of the more expensive, better-quality Arabica beans grown by most Mexican producers drops. When the price of Arabica drops, Mexican coffee growers suffer. Coffee prices can be very volatile, but because of the time, investment, and labor involved in creating a coffee plantation, growers cannot easily switch to another source of income, at least not without losing their entire investment.

The result of this instability can be devastating for the communities where coffee is produced. Mexico's decision to sign the North American Free Trade Agreement in 1995 has had the effect of increasing the ability of large multinational businesses to establish themselves in Mexican markets. In agriculture, large international agribusiness and processed food retailers often displaced local growers in serving domestic consumers. Many coffee growers stopped producing mainly for domestic markets and now produce mainly for export. The migration caused by the reconfigured North American business environment—internal, from rural areas to cities, and external, from Mexico to the United States—has had disrupting effects on the labor supply that coffee growers rely on to harvest their crops.

Coffee cultivation raises environmental concerns, too. The creation of industrial coffee plantations can result in widespread deforestation with subsequent consequences for soil quality and the diversity of flora and fauna, threatening populations of insects and birds. But more traditional forms of growing coffee as part of the natural forest ecosystem, also called shade-grown, do not involve such deforestation and are seen as highly beneficial to biodiversity conservation in tropical forest ecosystems (Rice, Ward, Smithsonian Migratory Bird Center, & Natural Resources Defense Council, 1996). Industrial coffee plantations are also more likely to use large quantities of chemicals—such as pesticides and fertilizers—in growing their

coffee. These chemicals can contaminate the soil, further disrupt ecosystems, and find their way into the groundwater with real consequences for local communities.

Because of the social and environmental consequences of coffee production, alternative manufacturing procedures and trading systems have emerged that try to address these problems. Coffee can now be bought in several different varieties that signal that its production followed certain societal and/or environmental values. Coffee can be certified as "fair trade," meaning that in the least it guarantees a minimum price to producers that is above the price that a completely open market would provide, and at most the pledge that the coffee was produced in a way that was sustainable and ethical, and invests in the communities that created it. Coffee can also be labeled as "organic," indicating that it was produced without using harmful chemicals, or "shade-grown," meaning that it was produced via traditional methods that avoid deforestation rather than industrial farming methods. The stated purpose of many of these certification systems is to create a more sustainable coffee trade that protects the environment, provides sustainable incomes, and allows coffee-growing communities to flourish.

A significant proportion of Mexican coffee cooperatives produce coffee that falls under one or more of these categories. Mexico is the world's largest producer of organic coffee, using 10 % of the land to produce this category of coffee (SAGARPA, 2012). Eighty-five percent of organic coffee produced in Mexico is intended for export, with most of the organic coffee in Mexico produced in Oaxaca and Chiapas (USDA Foreign Agriculture Service, 2011). On the other hand, Mexico was instrumental in the creation of the first fair-trade seal, Max Havelaar, in 1988, and has played a key role in promoting these practices since then through large cooperatives such as UCIRI (Fridell, 2007). Additionally, there are currently about 37,500 acres of land producing Rainforest Alliance certified coffee (Rainforest Alliance, 2015). This amount is expected to increase in an important way by 2020 because of current partnerships between the Rainforest Alliance and Nestlé as part of the Nescafé plan (Nescafe n.d.; Rainforest Alliance n.d.).

These differences in how coffee can be produced, and how consumers perceive them, lie at the core of the I-Choose project. Customers can now go into most big grocery stores and buy coffee labeled as fair trade. But the "fairness" of that coffee, the criteria required for it to receive its fair-trade label, can vary a great deal. The customer may want to know information about how the coffee was produced and distributed, but cannot directly observe these product characteristics (see Chap. 2 in this volume and also Sayogo, Zhang, Pardo et al., 2014; Sayogo et al., 2015; Sayogo et al., Forthcoming; Sayogo, Zhang, Liu, Picazo-Vela, & Luna-Reyes, 2014). The consumer most likely ends up making a choice based on what they can observe—the price—and what they see on the packaging. However, a label stating that a coffee product is "ethical" or "green" in some way may just be an assertion made by the seller and need not come with any explanation as to what the label really means.

Coffee production and distribution in North America therefore gives us a relatively simple product to study, but one with enormous implications for the sustainability of the environment and communities. We use this case to explore our key question: how can we incentivize private actors to share their data in a way that promotes the public value of the information disclosed? In the context of our coffee

case study, this main question breaks down as follows: we explore the idea that the disclosure of information about how coffee is produced, distributed, and sold can influence the purchasing decisions of consumers and the behavior of producers, distributors, and retailers themselves. In this volume, we are most interested in the governance mechanisms that are necessary and desirable not only to promote disclosure but to produce trusted data that creates public value.

The evidence used in this book comes from multiple sources, including interviews and focus group feedback from key stakeholders, government documents, scholarly literature, and coffee certification and inspection data. More specifically, the project started with workshops involving a group of stakeholders in the coffee supply chain. We continued our exploration with a systematic review of some of the most important certification schemes for organic and fair-trade products, as well as with a series of interviews with many other supply chain participants in Mexico and the United States. Finally, our research included building a data architecture proof of concept and ontology development using semantic web technologies (see Methodological appendix).

Using the evidence gathered from the I-Choose project, we argue that disclosing privately held data can create public value—providing that the disclosure is supported by appropriate governance mechanisms. The next section unpacks the concept of public value and discusses what it means in the context of new and emerging web technologies.

1.3 Public Value

Public value is a term with many definitions. We take a broad approach to public value that is not just about direct public management of service provision but which emphasizes how governments might act to incentivize private actors. This goes against narrower definitions of public value that envision governments and individual consumers in a producer-customer relationship. Instead, we note the value of bringing information into the public sphere, where it can be scrutinized, assessed, and used to uphold the public interest. We emphasize a range of public, consensual "values" that are not just about delivering economic efficiency or the cheapest product (Jorgensen & Bozeman, 2007). And we recognize the potential for private organizations to uphold public values through their own actions.

The concept of "public value" was first put forward by Mark Moore in his book *Creating Public Value* (Moore, 1995). Designed as a practical toolbox for public managers, the book outlined an approach to public management that could be used to orient public bodies more firmly toward the needs and desires of citizens and stakeholders rather than just the agency's own needs or those of the government hierarchy.

Moore's book addresses a core problem that is commonly outlined in theories of public administration and public policy: government agencies have a tendency to want to deliver things to their own advantage (Dunleavy, 2002; Wilson, 1886), or to the advantage of key rent seekers (Niskanen, 1994), rather than to the advantage

of the public. In the first scenario, government bodies are viewed as competitive actors that seek autonomy, prestige, and resources, competing against other government agencies to get them. The second scenario, taken to its logical conclusion, results in government agencies that are captured by powerful interest groups, designing policies and regulations to serve these groups rather than the interests of the public as a whole. Underpinning this scenario is the idea that those who shout the loudest have the most influence—concentrated interests with access to resources are presumed to have a greater impact upon policy decision-making than the much more diffuse public interest (Olson, 1965; Schattschneider, 1935).

Subsequent scholarship has shown that the reality of preference formation and decision-making in government agencies is far more complex. Bureaucrats and public managers have their own preferences, while at the same time, many consider themselves public servants with a duty to support the public interest (Paige, 1997). Moore's discussion of public value supports this view. His book examines the ways through which public agencies might be incentivized to deliver on goals that represent the collective, public interest, as well as concrete ways to formulate what public value means in different settings and measure progress toward achieving policy outcomes that uphold public value as defined.

After the initial introduction of public value, however, the concept began to be more widely used—and sometimes abused—being narrowly interpreted as a kind of customer satisfaction criterion for governments. Some scholars raised questions about the usefulness of such a slippery concept. For example, perhaps the simplest definition of public value is "what the public values" (Benington & Moore, 2011). But finding out what the public values is not easy and what the public values is not always coherent. For example, public opinion polls demonstrate that we as citizens are capable of simultaneously valuing extensive public services and low taxation (Smith, 2015). Influenced by the media, public opinion can change rapidly, responding to headline issues rather than long-term problems. And so, following explicitly what the public wants at any one time does not necessarily make for stable policy or good government.

As the concept of public value became more narrowly defined in terms of customer service, Bennington and Moore (2011) and Moore (2013) attempted to reclaim it by exploring more fully its theoretical underpinnings. In particular, scholars such as Bozeman (2007) and Moore (2013) pushed back against the New Public Management (NPM) paradigm, stating that the core ideas behind the public value perspective, particularly public action in pursuit of collective social values, were in stark opposition to NPM. In NPM, the individual preferences of citizens are held to be very important, with public service improvements driven by the choices of citizen-consumers. Although both public value and NPM approaches claim to be more "customer facing" than previous public administration paradigms, the "customers" in each case are very different. From Moore's version of the public value perspective:

> …the relevant "customer" is a collective public (local, regional, or national) acting through the imperfect processes of representative democracy rather than an individual consumer making choices about what to buy for personal benefit. (Moore, 2013: 3, emphasis added)

By connecting public value more closely to representative democracy, Moore therefore envisions a balance for public managers in delivering upon democratic mandates and consulting with stakeholders. Finding a balance is complex given the diversity of values, which go well beyond the economic ones. Beck Jørgensen and Bozeman (2007), for example, identified seven constellations of public values emerging from the interactions among politicians, public managers, citizens, the environment, and the society at large. These constellations include values such as the protection of minorities, shareholder value, dialogue, governance, or citizen involvement, just to mention few of them (Abolafia, 2001; Bozeman, 2007; Michalos, 2008; Moore, 1995).

Current debates surrounding the definition of public value recognize this difficult balance and build upon this simple definition in order to provide a much more nuanced description of public value. Drawing from this literature, despite its diversity, we can discern some common elements:

- *Public value is a concept tied to an approach.* The process through which public value is sought is just as important as the definition of public value itself. In Moore's (1995) original terms, values constitute strategic outcomes that require the appropriate operational capabilities and the stakeholder engagement necessary for support and legitimacy of the policy mechanisms. Alignment between public goals and policy outcomes valued by the public is credited by some with increasing trust in government and therefore enhancing government legitimacy (Center for Technology in Government, 2011).
- *Public value approaches are strategic and longterm.* Benington and Moore's (2011) broader definition implies that the concept of public value goes beyond any one administration or set of institutions to provide value not just to the current public but to society as a whole and even future generations. A public value approach is frequently described as "strategic," meaning that it is a longer-term approach that is more than just a series of knee-jerk reactions to public or stakeholder demands.
- *Public value approaches should be participatory.* In a public value approach, what is valuable is agreed upon through a participatory and collaborative process as opposed to a one-way process where government is "informed" of stakeholder preferences. The idea is that public value should be "cocreated" through a two-way process (Benington & Moore, 2011, p. 50). This participatory process should satisfy key democratic criteria. It should be seen to be legitimate, transparent, and inclusive. Bennington, for example, argues that public value underpins an emerging paradigm of "networked community governance," a shift toward emphasizing the role of civil society over that of the state and markets. In networked community governance, the dominant form of control is not bureaucratic hierarchy or market forces but networks and the norms that they propagate (Benington, 2011; Stoker, 2006).
- *Public value approaches aim to enhance the public sphere.* The process of creating public value therefore focuses on policy outcomes that the public collectively values, takes a long-term view, and is participatory. These features, taken

together, account for the final characteristic of public value: public value approaches aim to enhance the public sphere. The public sphere can be defined as a conceptual space for public discussion and debate that allows political discourse, including critique of public authority (Calhoun, 1992; Habermas, 1989). The ideal public value approach, therefore, attempts to add value to the public sphere (Benington, 2011). It does this by creating a robust process for the deliberation of how governments should act upon democratic mandates—a process that encourages participation from nongovernmental organizations, aims to produce policy outcomes that the public collectively values, and takes a long-term approach to delivering on those goals.

This discussion of the public sphere is especially interesting when we consider the role of new and emerging technologies, particularly web technologies. As many scholars have pointed out (Castells, 2007, 2012; Fernback & Thompson, 1995; Rheingold, 2008), the most utopian depictions of the web view it as extending the public sphere—allowing more people access to more information than ever before and creating virtual spaces through which we can debate and deliberate key issues. Proponents of this view argue that the web increases transparency regarding what governments, corporations, or other organizations do and how they do it. It allows previously secret information to be available to mass public, allowing greater public deliberation and participation in decision-making. Research has shown that the concept of public value is central to understanding how open government policies can support a range of desirable social, economic, or other policy goals but that policymakers attempting to maximize the public value of open government policies should collaborate in order to define what public value means in each context and how it might best be achieved (Center for Technology in Government, 2011).

Critics of this view point out that the reality of the web has turned out quite differently—they argue that the scrutiny and participation that web optimists hope for will not occur automatically. They raise concerns that the web has become a commercialized space where powerful actors can tightly control the messages that they send and misinformation abounds. Some argue[1] that the web actually weakens the public sphere, giving members of the public the impression that they are being consulted, while preserving existing inequities in power and resources (Boeder, 2005). Others point out that increased transparency works both ways, tempting governments and other organizations to conduct mass surveillance and collect large amounts of personal data as evidenced in the surveillance of US citizens' internet and phone records conducted by the US National Security Agency following 9/11 (RussiaToday, 2013). See also Fuchs, Boersma, Albrechtslund, and Sandoval (2012) as well as news and comments related to the collection of email communication gathered by NSA in the last years (see http://rt.com/usa/nsa-internet-terrorism-years-810/).

What should we learn from this debate for our definition of public value? The critiques of the web as a public sphere are important because they indicate that

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[1] Including Habermas himself.

disclosure alone is not enough to deliver public value by our definition. It is not enough to disclose information about what governments and businesses do. That information has to be distributed, filtered, analyzed, and ultimately shown to be trustworthy if it is to add value to the public sphere. In other words, information disclosure has to be supported by a trusted governance process.

The next sections explore the use of information disclosure as a policy tool, building on our definition of public value to consider the contribution of information disclosure to the public sphere. Focusing more tightly on our case study, we first explain why disclosing private product data is considered valuable by some policymakers, advocates, and firms, before discussing potential barriers to data disclosure.

1.4 Why Disclose Private Product Data?

The disclosure of private product data is argued to produce three distinct categories of benefit for the public:

- *Citizen empowerment*, allowing individuals better access to and control over their own data
- *Public scrutiny*, better public awareness and scrutiny of what governments and other organizations do, leading to demands for better policies
- *Innovation and growth*, increased opportunities for innovation and economic growth based on the disclosed data, with the assumption that this growth will be passed on in ways that benefit the wider public

Citizens empowered by information gained through disclosure might be incentivized not only to take steps to improve their individual situation, such as decreased energy usage, changes in health behavior or diet, or better financial planning, but might also be influenced to choose products and services that are better aligned with their ethical values. Likewise, better public scrutiny might boost corporate social responsibility, not just trust in public authorities. And for private companies, disclosure may enable them to differentiate their products within a crowded marketplace, earning them a price premium.

The disclosure of product data held by public, private, and nongovernmental organizations has the potential to benefit those organizations as well as consumers accessing the disclosed data. When thinking about product data disclosure, or private sector transparency more generally, it is equally important to think about the perceived commercial value of the data to be disclosed. The central goal of any policy or mechanism encouraging private sector transparency should be to facilitate this alignment. This means ensuring that brand value can be maintained or enhanced through product data disclosure initiatives and that any such scheme offers value to business in differentiating their products within crowded markets. The following considers these public and private benefits in turn.

1.4.1   Benefits to Public Agencies

In raising the issue of data disclosure, policymakers have three discrete but inter-connected goals: to promote greater consumer access to information which can influence the goods and services that they purchase; to promote innovative use of data in ways that can increase profitable economic activity, such as providing services to aid consumer choice; and to reduce regulatory burdens and costs through greater data transparency and public-private collaboration (Executive Office of the President, 2013).

Access to Information First, policymakers wish to increase consumers' access to information about the products that they buy. Consumers currently have far less access to product information than other actors in the supply chain such as producers and retailers. Outside of the observable characteristics of the product, consumers must rely heavily on producers to provide them with information to assist their decisions, resulting in suboptimal decision-making (Akerlof, 1970). Information asymmetries tend to decline over time as markets grow and mature and as information about product quality is acquired through repeated purchases (Wankhade & Dabade, 2006). Some products, however, such as tomatoes, coffee, or beef, are less likely to experience such dynamics because they are not frequently linked to information other than price.

To counteract this information asymmetry, a growing number of consumers are turning to new technologies to determine information about product characteristics that are not directly observable, such as the distance the item has traveled, the chemicals used in its production, or the labor conditions under which the product was manufactured. We already provide some assistance to consumers through mandatory product labeling which requires manufacturers to list ingredients and calorie counts, for example. But there is a growing pressure among consumers to expand the range of information that they can access regarding their purchases and increased recognition among companies that wish to be "socially responsible" that disclosing such information can be to their advantage.

Innovation and Growth Second, policymakers want to promote the creation of innovative consumer products as a means of increasing economic growth. It is envisioned that making more data public in reusable formats will promote its use in a range of new ways, including applications available to consumers about the products and services that they purchase. If the data disclosed is of high enough quality, it is likely that developers and entrepreneurs will be keen to use it in their future projects. Organizations and individuals may well be willing to pay a premium in order to access the information in a form that is convenient and relevant to their needs.

Reduce Costs Third, policymakers seek to reduce regulatory burdens and costs through greater data transparency and public-private collaborations. In an era when public attention is highly focused on budgetary constraints, governments are

looking for innovative ways to save money. One way to do this is to change how the costs of regulation are distributed among taxpayers, businesses, and individuals acting as consumers.

At its core, this strategy relies on increasing the transparency of information not just about products but about the private sector as a whole. Many authors have discussed requirements for opening data (Executive Office of the President, 2013; Kalampokis, Tambouris, & Tarabanis, 2011; Lourenço, 2015; Zuiderwijk, Jeffery, & Janssen, 2012). On the basis of this research, transparent data can be defined as data that is (1) publicly available, (2) easily understood by nonexperts, (3) published in an accessible format, (4) via accessible media, and (5) released on a timely schedule. The concept of private sector transparency, which can be linked back to more inclusive definitions of stakeholder, has been evolving over time, from the confrontational stakeholder tactics to partnerships and collaborative approaches where technology can play a key role (Baue & Murninghan, 2011). In this way, private sector transparency can be defined as the voluntary adoption of policies promoting the transparency of product data and production processes. This is an important distinction—private sector transparency is more than just the disclosure of product data. It requires that product data be aggregated across organizations, industries, sectors, or national boundaries in order to further key policy goals.

In other words, private sector transparency requires engagement with the public sphere. The availability of transparent data about the activities of private and non-profit organizations broadens the range of organizations and individuals that can potentially hold these organizations to account. This is not a new phenomenon. Instead of engaging in regulatory oversight on their own initiative, which is more resource intensive, government agencies often seek to rely more extensively on third parties to raise the alarm about cases of noncompliance. This decision is referred to in public administration scholarship as a choice between "police patrols" and "fire alarms" (McCubbins & Schwartz, 1984). New technologies, combined with appropriate data transparency, have the potential to increase the scope and scale of "fire alarm" strategies. In other words, smart disclosure strategies are just the beginning of a process that could culminate in the crowdsourcing of regulatory compliance.

1.4.2   Benefits to Private Companies

Many companies in the private sector already realize the benefits that product data disclosure and private sector transparency can bring. These benefits include opportunities for market differentiation: by building a brand, label, tool, or system around product data disclosure, companies can demonstrate that their products are greener, healthier, more local, or more ethical and differentiate them from other products in the market (Howard, 2012; Thaler & Sunstein, 2008). This can be very important in crowded markets where products and services can be very similar, particularly

in situations where consumers can observe little from the product packaging itself as to the product's content or quality.

A second, related opportunity for firms is to build brand identification through customer ownership of customer data. By giving consumers ownership of their own data, companies can build tools that increase consumer identification with their products (Thaler & Tucker, 2013). They can learn more about consumer preferences in this way.

For certain companies and entrepreneurs, the disclosure of non-price product information can present new commercial opportunities. One of the core benefits often attributed to online disclosure of data is that other organizations and individuals that use the existing data in innovative ways can emerge. In some cases, this might mean research opportunities, reducing the costs to a company in developing a new product. Releasing product data regarding pharmaceuticals, for example, could allow faster development of more effective medicines or cheaper generic medicines. In other cases, it might mean the development of secondary information filtering service or tool that makes use of the disclosed information. These tools would be targeted at companies as well as consumers who do not have the time or resources to process and filter through large amounts of publicly available data. This is certainly a key motivation of the US government's smart disclosure policies (Sunstein, 2012).

But amid all the optimism regarding the potential of information disclosure via new and emerging technologies as a policy tool, it is easy to forget that many existing regulations already rely on disclosure to deliver policy outcomes. Research on this topic finds that information disclosure alone—even mandatory disclosure—is not always enough to incentivize firms to behave in certain ways. Without additional governance structures, disclosure can easily fail to deliver expected policy outcomes (Kraft, Stephan, & Abel, 2011).

The following section discusses the barriers to making product data public and the governance challenges that these barriers pose. The rest of the volume then makes proposals as to how these challenges might be overcome.

1.5   Barriers to Making Product Data Public

Although current and developing technologies make the disclosure and productive use of private and public data seem more feasible than ever before, data interoperability and disclosure are not solely problems of technology. They are also problems of human interaction. The competing interests of organizations and individuals with a stake in the debate over product data disclosure must somehow be managed.

In promoting smart disclosure, however laudable that goal might be, policymakers are making several key assumptions, including that private sector organizations and public agencies will be willing and able to share their data and that consumers, stakeholder groups, and businesses will be able to use and interpret disclosed data in meaningful and profitable ways.

There are, therefore, several interconnected barriers facing anyone wishing to incentivize the disclosure of product data and promote its meaningful use: problems relating to the cost of disclosure, problems relating to commercial competition and the perceived commercial sensitivity of the data to be disclosed, problems relating to the preservation of privacy, problems relating to data quality and interoperability, and legal barriers to disclosure.

The Cost of Disclosure The first set of dilemmas relates to the organization's decision to disclose data. Data disclosure is not without cost. Organizations may not have access to data in a form that is usable or that makes disclosure viable. Data collection, translation, or reformatting may have to occur. Checking the data for errors also incurs costs, as does managing the disclosure process itself. The key question is—do the benefits of disclosing the data outweigh the costs to an organization? It is also important to ask, what is the necessary and desirable level of information that can be provided at a reasonable cost? The answers to these questions may be different for every organization, but they are also dependent upon what others decide to do. An organization's cost/benefit calculation might change, for example, based on the participation of a critical mass of similar actors or on likely consumer demand for the disclosed data (Ran et al., 2016).

Competition and Commercial Sensitivity "Commercially sensitive information" is a rubric that allows organizations to withhold information of many different kinds. Some companies, particularly those that compete on price, may see their supply chain data as commercially sensitive or as a trade secret and may be wary of revealing it to competitors.

Legal Related to this dilemma is the fact that laws and regulations are often barriers to information disclosure. These legal barriers may be real (enacted to protect consumers or ensure fair competition) or they can be imagined (an excuse not to disclose data).

Data Quality Policymakers must consider not just how to promote the disclosure of more information, but how to improve the quality of the information disclosed. We know that government data often suffers from missing or incomplete information. The complexity of regulatory procedures means that there is considerable scope for errors and omissions. Government inspections of products might be patchy or inaccurately recorded. Compliance reports held by product certifiers may be submitted in hard copy only or in a format (such as PDF) that makes it hard to repurpose the information they contain.

This problem affects the private sphere, too. Large corporations who outsource work to other organizations may not have complete records of the supply chains in which they operate. In fact, it can be to a company's advantage to obfuscate supply chain data, hiding any efficiency advantages (legitimate or questionable) from competitors. Businesses may therefore be unwilling to disclose if they have incomplete records. No matter what the provenance of the data, there is a chance that it could be fraudulent.

Missing, incomplete, or poorly trusted data are problematic and undermine the fundamental goals of smart disclosure, open government, and private sector transparency. The poorer the quality of the data, the higher the cost of utilizing it for other purposes. Private actors or consumers might be uninterested in product data of poor quality. Broker organizations looking to develop consumer tools may well pass on the opportunity to use certain datasets if they calculate that the up-front cost of making the information usable is too high.

Interoperability Data may also be held in a format or structure that allows data from different organizations to be made interoperable. This choice, too, can be deliberate. Disclosing data is really only the first step. Policymakers must also think about how to make the disclosed data interoperable, in order to promote its meaningful use and reuse in ways that promote public value. This is an enormous technical challenge, and any attempt to solve it must rest on cooperation among the various stakeholders. Interoperability requires extensive collaboration between organizations and individuals, something that ultimately rests on establishing trusted relationships among them.

Underpinning these dilemmas is the fact that policymakers have to make some significant predictions about how individual consumers will behave. Smart disclosure policies imply that better data disclosure will lead to an improved information environment for consumers and will impact consumer choice. Producers and retailers are interested in disclosing product data because of the potential to differentiate their products within crowded markets, making them more visible to consumers. Providing trusted information about the origins of a product to consumers can enhance a company's sustainable credentials against its competitors. But this only works if consumer behavior is truly altered by the disclosure of product data.

Therefore, consumer demand for disclosure of privately held product data is central to efforts to encourage private sector transparency. This "demanded disclosure," driven primarily by consumer demand for product data and supplemented by government mandates or companies' attempts to influence markets, is facilitated by new forms of technology that reduce the costs of exerting social pressure on organizations and governments (Sayogo, 2013; van der Laan, 2009).

We do know that consumers' trust in the data provided plays an important role in whether or not they use a particular system (Luna-Reyes et al., 2013, 2014; Sayogo, Zhang, Liu et al., 2014; Sayogo, Zhang, Pardo et al., 2014; Sayogo et al., 2015). Consumers should be protected from fraudulent use of disclosed product data. Any governance system promoting product data disclosure should consider the relationship between collaborative standards for governing product data disclosure and hard law remedies against fraudulent use of product data, certifications, or labels.

Access Versus Privacy An additional key challenge relating to consumer trust is how to protect consumer privacy in an open and accessible system. The difficulties associated with protecting individuals' privacy can form a barrier to disclosure. How should individual and commercial privacy be balanced with appropriate, and broadly applicable, access to information? In order for them to trust the system, consumers should have the right to expect that important personal information

will be kept private and the right to be protected from organizations that want to use disclosed information for direct marketing and scams. It is important to avoid disclosing identifiable information—and with multiple organizations disclosing, this requires strong consensus on how to handle and process the data before it is disclosed, as well as an agreement on enforcement mechanisms.

1.6 Concluding Remarks

Technology is facilitating a revolution in the way we access information about markets, lowering dramatically the opportunity costs of learning about the provenance of the things that we make and buy. Meanwhile, policymakers have stated that they wish to encourage the disclosure of product data for a number of reasons, including facilitation of consumer choice, product innovation and research, and creation of more efficient ways to regulate markets.

We argue that in many areas, particularly those relating to sustainability, this process of disclosure can enhance public value by adding value to the public sphere through a fair and transparent process. Introducing new information about production processes into the public sphere, and creating a space whereby the public and other organizations can enter into a dialogue around that information on equal terms with firms and governments, is something that we believe will enhance public value.

This is an ambitious, long-term goal, well suited to the public value approach, which emphasizes long-term, strategic action to align actors toward key policy goals. It cannot be achieved without collaboration among a range of disparate actors—the participatory elements of the public value approach. Collaboration between government agencies, private actors, and consumer advocates is necessary in order to promote the disclosure of product data and to move toward the long-term goals of greater private sector transparency and, ultimately, a more sustainable world.

To answer our research question, we used a variety of methods and approaches. A detailed description of such approaches is included in the methodological appendix to this book, and the results of our inquiry are reported in the following seven chapters of the book.

Chapter 2 introduces the challenges and issues in developing a platform supporting interoperability in sustainable supply chains of food products from the point of view of key stakeholders in the coffee supply chain. The chapter is based on data from a workshop and a series of interviews with stakeholders in the coffee industry. The analysis reveals that to build an interoperable data architecture to support a sustainable supply chain, the five most salient issues/challenges are to build trust in the data, to develop semantic capabilities as well as standards and protocols for data sharing, to design an information policy that balances commercial interest and openness, to establish a collaborative governance model, and to develop a sustainable business model to push forward the vision of the system.

Chapter 3 explores the existing relationships among supply chain participants to better understand current forms of collaboration and the role that trust plays in each supply chain configuration inside the coffee supply chain. The chapter results are grounded on interviews with supply chain participants in Mexico, including small and medium producers, cooperative representatives, large intermediaries, and large corporations. We explore the role and evolution of three different types of trust-producing mechanisms (institutional, calculative, and relational) in the three most common supply chains identified in our field work (large cooperatives, small specialty coffee roasters, and large corporations). Our results suggest that relational trust is more important to facilitate collaboration in both cooperatives and specialty coffee types of supply chains, especially at the beginning of the relationship. Large corporations, like Nestle, rely much more in institutional trust to start collaboration. The main source of such institutional trust is brand reputation and contracts. Relational trust in this type of supply chain is built over time through collaboration. Finally calculative trust plays a role at the start of the collaboration, but loses importance over time in all cases. We conclude the chapter with a reflection on how these types of trust could play a role in building a network of stakeholders around an architecture of shared product information.

Although consumer trust is solicited through the enactment of certification and labeling practices, the rapid growth of certifications and labels has decreased the amount of trust generated from certifications mainly due to the difficulties faced by consumers in observing information behind the labels or certificates. Chapter 4 explores the sufficiency of existing certification and label as part of private regulation for enhancing consumer trust. We evaluate the strengths and weaknesses of the six major coffee certification initiatives by conducting a rigorous document review as well as content analysis of the certification website. Our evaluation found that certification and labeling schemes use different strategies to emphasize the legitimacy and accountability of their practice to assert their trustworthiness, such as openly publishing their standards and principles or getting accreditations from reputable national or international organizations. Our evaluation also demonstrates the complexities of certification and inspection process in the sustainable supply chain. Such complexities challenge the effort to encourage private sector transparency to support interoperable platform such as I-Choose.

Chapter 5 includes one of the key components of our research program, which is a concrete proposal for the creation of a technical architecture and platform to share trusted information about sustainability of products among supply chain stakeholders and consumers. We propose the use of semantic web applications and ontologies to create such an architecture. In this chapter, we outline what we are calling a Certification and Inspection Data Infrastructure Building Block (CIDIBB). CIDIBB involves the interaction of at least three interrelated ontologies. The first of them is a Certification and Inspection Ontology (CerTIN) that defines at a high level of abstraction the main components of any certification system. This high level ontology interconnects more specific ontologies developed for each certification standard. The second ontology (CiTruST) defines the quality of the certification process using the main definitions included in the certification ontology as mechanisms for trust

creation. Finally, we include in our proposal the FLO ontology as an example of a local ontology. This ontology was created with the purpose of testing ways in which CerTIN could be mapped to specific certification schemes. Beyond describing the ontologies, the chapter also includes an evaluation of the ontology in their capacity to assess the levels of trustworthiness of different certification schemes and provides examples of ways in which the architecture can be used to create networks of stakeholders around four different business models.

Chapter 6 outlines the privacy, confidentiality, and security issues that are inherent in the design and implementation of IT-enabled platforms such as I-Choose, which was described in detail in Chap. 5. I-Choose enables the implementation of smart data disclosure that requires integration of data from diverse stakeholders in a complex sustainable certified coffee supply chain. Importantly, we discuss these issues from an organizational perspective along three dimensions: ownership, access rights, and data quality. To support the arguments we make in this chapter, we extensively use data from in-depth interviews with the supply chain stakeholders including producers, roasters, exporters, inspectors, certifiers, and consumer advocates. The challenge to protecting the confidentiality and privacy of the data and information lies in developing effective and transparent security policies and protocols that govern the access and integrity to both proprietary and public information. Our findings highlight that these challenges stem from the complexity of the information chain and the value propositions of the various stakeholders in the sustainable coffee supply chain. As a result, addressing these issues necessitates both business practices and governance and not solely technological fixes. Therefore, we propose five management and policy strategies for mitigating the privacy, confidentiality, and security challenges that confront successful implementation of platforms such as I-Choose.

Concluding remarks of most of the first six chapters of the book point out to the importance of finding the proper incentives for supply chain participants, as well as the key role of governance mechanisms. Chapter 7 concentrates on the discussion of incentives and governance. As discussed in Chap.2, it is possible to identify five different configurations in the coffee supply chain in the NAFTA region. As we describe in Chap. 7, stakeholders in each configuration hold different frameworks of reference guiding decisions on quality, means, and ends. We use in the chapter Convention Theory to categorize these reference frameworks as domestic, civic, market, and industrial worlds. The coexistence of those frameworks represents sources of conflict, in addition to power imbalances in each supply chain governance mode, posing specific challenges when introducing a platform like I-Choose into an existing supply chain. Our empirical work shows that in practice, supply chain participants can be characterized by a combination of at least two of such views and that participants in a single supply chain configuration tend to share those views. We also specify the conditions that make different supply chain configurations and set of values more or less amenable to the changes implied in the disclosure of private information that the I-Choose platform requires.

Our concluding chapter draws on the concepts and theories discussed in the book, particularly the concept of public value creation, the conflicts between different

types of stakeholders, and the role of trust. The chapter focuses on the practicalities of information disclosure by asking: how must this process be governed? A definition of governance as the process of steering a society toward a set of predefined goals is introduced. It discusses the benefits and difficulties of creating collaborative governance in the context of our project and presents our findings regarding governance from the I-Choose project. It evaluates existing experiments in collaborative governance that aim to extract public value from data disclosure, drawing on examples from multiple countries and cross-border contexts, including the I-Choose project. We find that information disclosure alone is not enough to enhance the public sphere. It must be supported by innovative governance mechanisms that address classic problems such as establishing independence among producing and regulating organizations and creating procedural transparency.

We hope that, through this book, we are contributing to a better theoretical and practical understanding of the different technical, organizational, and policy components needed to create public value through the disclosure of private information inside supply chains.

References

Abolafia, M. Y. (2001). *Making markets: opportunism and restraint on Wall Street* (2. print). Cambridge, MA: Harvard Univ. Press.

Akerlof, G. A. (1970). The market for "lemons": Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics, 84*(3), 488–500.

Baue, B., & Murninghan, M. (2011). The accountability web: Weaving corporate accountability and interactive technology. *Journal of Corporate Citizenship, 41*, 27–49.

Benington, J. (2011). From private choice to public value? In J. Benington & M. H. Moore (Eds.), *Public value: theory and practice* (pp. 31–51). New York: Palgrave Macmillan.

Benington, J., & Moore, M. H. (Eds.). (2011). *Public value: theory and practice*. New York: Palgrave Macmillan.

Boeder, P. (2005). Habermas' heritage: The future of the public sphere in the network society. *First Monday*, *10*(9). Retrieved from http://firstmonday.org/ojs/index.php/fm/article/view/1280/1200

Bozeman, B. (2007). *Public values and public interest: counterbalancing economic individualism*. Washington, D.C: Georgetown University Press.

Calhoun, C. J. (Ed.). (1992). *Habermas and the public sphere*. Cambridge, MA: MIT Press.

Castells, M. (Ed.). (2007). *Mobile communication and society: A global perspective: A project of the Annenberg Research Network on international communication*. Cambridge, MA: MIT Press.

Castells, M. (2012). *Networks of outrage and hope: social movements in the internet age*. Cambridge, UK/Malden, MA: Polity Press.

Center for Technology in Government. (2011). *Open government and public value: conceptualizing a portfolio assessment tool*. Retrieved from http://www.ctg.albany.edu/publications/online/pvat/PVAT_ConceptualizingtheTool.pdf

Dunleavy, P. (2002). *Democracy, bureaucracy and public choice: Economic explanations in political science* (Nachdr.). London: Prentice Hall.

Executive Office of the President. (2013). *Smart disclosure and consumer decision making: report of the task force on smart disclosure*. National Science and Technology Council. Retrieved from https://www.whitehouse.gov/sites/default/files/microsites/ostp/report_of_the_task_force_on_smart_disclosure.pdf

Fernback, J., & Thompson, B. (1995). *Computer-mediated communication and the American collectivity: The dimensions of community within cyberspace report as virtual communities: Abort, retry, failure?* Presented at the International Communication Association, Albuquerque, New Mexico. Retrieved from http://www.well.com/user/hlr/texts/VCcivil.html

Fridell, G. (2007). Coffee and the "double movement" (Chapter 4). In *Fair trade coffee: The prospects and pitfalls of market-driven social justice* (Reprinted, pp. 135–172). Toronto: Univ. of Toronto Press.

Fuchs, C., Boersma, K., Albrechtslund, A., & Sandoval, M. (2012). *Internet and surveillance: The challenges of Web 2. 0 and Social Media*. New York: Routledge.

Habermas, J. (1989). *The structural transformation of the public sphere: An inquiry into a category of bourgeois society*. Cambridge, MA: MIT Press.

Howard, A. (2012, April 1). What is smart disclosure? Retrieved from http://radar.oreilly.com/2012/04/what-is-smart-disclosure.html

Jorgensen, T. B., & Bozeman, B. (2007). Public values: An inventory. *Administration & Society, 39*(3), 354–381. http://doi.org/10.1177/0095399707300703.

Kalampokis, E., Tambouris, E., & Tarabanis, K. (2011). A classification scheme for open government data: Towards linking decentralised data. *International Journal of Web Engineering and Technology, 6*(3), 266. http://doi.org/10.1504/IJWET.2011.040725.

Kraft, M. E., Stephan, M., & Abel, T. D. (2011). *Coming clean: Information disclosure and environmental performance*. Cambridge, MA: MIT Press.

Lourenço, R. P. (2015). An analysis of open government portals: A perspective of transparency for accountability. *Government Information Quarterly, 32*(3), 323–332. http://doi.org/10.1016/j.giq.2015.05.006.

Luna-Reyes, L. F., Zhang, J., Roy, R., Andersen, D. F., Whitmore, A., & Andersen, D. L. (2013). Information strategies to support full information product pricing: The role of trust. *Information Polity, 18*(1), 75–91.

Luna-Reyes, L. F., Zhang, J., Whitmore, A., Jarman, H., Picazo-Vela, S., Andersen, D. L., et al. (2014). Full information product pricing: An information strategy for harnessing consumer choice to create a more sustainable world. *Communications of the Association for Information Systems, 34*(1), 637–654.

McCubbins, M. D., & Schwartz, T. (1984). Congressional oversight overlooked: Police patrols versus fire alarms. *American Journal of Political Science, 28*(1), 165. http://doi.org/10.2307/2110792.

Michalos, A. C. (2008). *Trade barriers to the public good: Free trade and environmental protection*. Montreal: McGill-Queen's University Press.

Moore, M. H. (1995). *Creating public value: Strategic management in government*. Cambridge, MA: Harvard Univ. Press.

Moore, M. H. (2013). *Recognizing public value*. Cambridge, MA: Harvard University Press. Retrieved from http://www.hup.harvard.edu/catalog.php?isbn=9780674066953.

Nescafe. (n.d.). The Rainforest Alliance – working together for sustainable agriculture. Retrieved from http://www.nescafe.com/rainforest_alliance_sus_en_com.axcms

Niskanen, W. A. (1994). *Bureaucracy and public economics*. Aldershot, Hants, England; Brookfield, VT: E. Elgar.

Olson, M. (1965). *The logic of collective action: Public goods and the theory of groups*. Cambridge, MA: Harvard Univ. Press.

Paige, J. M. (1997). *Coffee and power: revolution and the rise of democracy in Central America* (1. Harvard Univ. Press paperback ed., 3. printing). Cambridge, MA: Harvard University Press.

Rainforest Alliance. (2015). *Our global impact: Agriculture*. Retrieved from http://www.rainforest-alliance.org/work/impact/map/agriculture

Rainforest Alliance. (n.d.). *Our work with Nescafé*. Retrieved from http://www.rainforest-alliance.org/about/company-commitments/nescafe

Ran, W., Jarman, H., Luna-Reyes, L. F., Zhang, J., Andersen, D. L., Tayi, G. K., et al. (2016). Supply-chain transparency and governance systems: Market penetration of the I-choose system.

In J. Zhang, L. F. Luna-Reyes, T. A. Pardo, & D. S. Sayogo (Eds.), *Information, models, and sustainability: Policy informatics in the age of big data and open government*. Basel, Switzerland: Springer.

Rheingold, H. (2008). Using participatory media and public voice to encourage civic engagement. In W. Lance Bennett (Ed.), *Civic life online: Learning how digital media can engage youth* (pp. 97–118). Cambridge, MA: The MIT Press.

Rice, R. A., Ward, J. R., Smithsonian Migratory Bird Center, & Natural Resources Defense Council. (1996). *Coffee, conservation, and commerce in the Western Hemisphere: How individuals and institutions can promote ecologically sound farming and forest management in northern Latin America*. Washington, D.C.; New York: Smithsonian Migratory Bird Center; Natural Resources Defense Council.

RussiaToday. (2013, August 21). NSA collected thousands of US internet communications "with no terror connection" [News]. Retrieved from http://on.rt.com/icwoby

SAGARPA. (2012). *Impactos del Café en México*. Secretaría de Agricultura, Ganadería, Desarrollo Rural, Pesca y Alimentación. México, D. F.

Sayogo, D. (2013). *Incentives to disclose: Private sector transparency to support smart disclosure policy (Unpublished doctoral dissertation)*. University at Albany, SUNY, Albany, NY.

Sayogo, D. S., Zhang, J., Liu, H., Picazo-Vela, S., & Luna-Reyes, L. (2014). *Examining trust as key drivers in smart disclosure for sustainable consumption: The case of I-choose*, In Proceedings of the 15th Annual International Digital Government Research Conference on Open Innovations and Sustainable Development in Government: Experiences from around the World, Digital Government Society of North America (pp. 137–146). Aguascalientes, Mexico: ACM.

Sayogo, D. S., Zhang, J., Pardo, T. A., Tayi, G. K., Hrdinova, J., Andersen, D. F., et al. (2014). Going beyond open data: Challenges and motivations for smart disclosure in ethical consumption. *Journal of Theoretical and Applied Electronic Commerce Research, 9*(2), 3–4. http://doi.org/10.4067/S0718-18762014000200002.

Sayogo, D. S., Zhang, J., Luna-Reyes, L., Jarman, H., Tayi, G., Andersen, D. L., et al. (2015). Challenges and requirements for developing data architecture supporting integration of sustainable supply chains. *Information Technology and Management, 16*(1), 5–18. http://doi.org/10.1007/s10799-014-0203-3.

Sayogo, D. S., Ran, W., Tayi, G. K., Luciano, J. S., Luna-Reyes, L. F., Depaula, D., et al. (Forthcoming). Ontological modeling of certification and inspection process to support smart disclosure of product information. *International Journal of Public Administration in the Digital Age*.

Schattschneider, E. E. (1935). *Politics, pressures and the tariff: A study of free private enterprise in pressure politics, as shown in 1929–1930 revision of the tariff*. New York: Prentice-Hall.

Smith, T. W. (2015). *Trends in national spending priorities, 1973–2014* (General Social Survey). Chicago: NORC at the University of Chicago. Retrieved from http://www.norc.org/PDFs/GSS%20Reports/GSS_Trends%20in%20Spending_1973-2014.pdf

Stoker, G. (2006). Public value management: A new narrative for networked governance? *The American Review ofPublic Administration, 36*(1), 41–57. http://doi.org/10.1177/0275074005282583.

Sunstein, C. (2012, March 30). Informing consumers through smart disclosure. Retrieved from http://www.whitehouse.gov/blog/2012/03/30/informing-consumers-through-smart-disclosure

Thaler, R. H., & Sunstein, C. R. (2008). *Nudge: Improving decisions about health, wealth, and happiness*. New Haven: Yale University Press.

Thaler, R. H., & Tucker, W. (2013, February). Smarter information, smarter consumers. *Harvard Business Review*. Retrieved from http://hbr.org/2013/01/smarter-information-smarter-consumers

USDA Foreign Agriculture Service. (2011). *Coffee consumption growing and producer inventories building* (Required Report – public distribution No. MX1039). Mexico City: US Department of Agriculture.

van der Laan, S. (2009). The role of theory in explaining motivation for corporate social disclosures: Voluntary disclosures vs "solicited" disclosures. *Australasian Accounting, Business and Finance Journal*, *3*(4). Retrieved from http://ro.uow.edu.au/aabfj/vol3/iss4/2

Wankhade, L., & Dabade, B. M. (2006). Analysis of quality uncertainty due to information asymmetry. *International Journal of Quality & Reliability Management, 23*(2), 230–241. http://doi.org/10.1108/02656710610640961.

Wilson, W. (1886). The study of administration. *Political Science Quarterly, 2*(2), 197–222.

Zuiderwijk, A., Jeffery, K., & Janssen, M. (2012). The potential of metadata for linked open data and its value for users and publishers. *Journal of E-Democracy and Open Government, 4*(2), 222–244.