The adoption and implementation of sustainable supply chain practices in Chinese private enterprises: A combined institutional and contingency perspective in a policy setting

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Abstract

Drivers and approaches to the development of sustainable supply chain can be different depending on the institutional context, especially in developing countries that have experienced fundamental institutional changes. A multiple case study method is employed to examine the role of policy initiatives in the adoption and implementation of sustainable supply chain practices (SSCPs) among private enterprises in China. Chinese government has applied various regulatory and influential policy instruments ("toolbox") to facilitate the adoption of SSCPs, but the effectiveness of policy intervention can be contingent on company size and industry.

Keywords: Sustainable Supply Chain Management, China, Institutional Theory

Introduction

The supply chain approach within sustainable development has gained increasing attention worldwide but is mainly adopted in developed countries. Today, sustainable supply chain management (SSCM) is also being promoted in developing countries but drivers and approaches can be different due to the unique economic, social and political context (Zhu et al., 2017; Silvestre, 2015). However, most extant studies on supply chain management have overlooked the significant role of institutional environment in which enterprises operate, especially those in developing countries (Zhou et al., 2016).

Like other large developing countries, China has been undergoing continuous and profound economic, social and political changes in its institutional environment (Zhou et al., 2016). Here the concept of sustainability has been institutionalised through numerous policy initiatives and, as a result, significantly influenced the "rules of the game" at both firm and supply chain levels (Yin and Zhang, 2012; Wu and Jia, 2018). In the light of the state guiding ideologies such as "Ecological Civilisation" and "Beautiful China", the concept and practices of sustainability are deeply embedded in national strategies, plans

and policies like the 13th Five-year Plan (FYP) (2016 - 2020) and China's Agenda 21. Enterprises in China are subject to strong government regulation and policies pressures to adopt and implement sustainable production (Zhu, 2016). Initially, the focus was on state-owned enterprises (SOEs) (Zhu and Zhang, 2015; Zhu and Geng, 2006), but in recent years, and reflecting their significant economic role, private enterprises are increasingly being relied upon to achieve sustainable development goals in China (Lardy, 2014). The key question is therefore how do governments (national and local) intervene in the adoption and implementation of SSCPs among private enterprises, and how effective are the policy interventions? Current and possible future role of policy and its implementation in promoting SSCM can be evaluated based on such information though, remarkably, little work has yet been done in this field. Adopting a combined institutional and contingency perspective, this study examines the increasing coercive role of policy in SSCM and the effectiveness of different policy instruments applied by Chinese central and local governments. The following research questions are proposed:

RQ1: How does the institutional environment influence the adoption and implementation of SSCPs among Chinese private enterprises?

RQ2: How do contingency factors moderate the effectiveness of institutional interventions?

Literature Review

Introducing Institutional and Contingency Perspectives

The importance of considering organisations and their environmental context is the core of an institutional perspective (Brown and Thompson, 2011). Scott (1987) and DiMaggio and Powell (1991) made seminal contributions identifying institutional isomorphic influences (i.e. coercive, mimetic and normative isomorphisms), which laid theoretical foundation for SSCM studies to explain the adoption of sustainable practices (e.g. Wang et al., 2016; Glover et al., 2014). The authors are aware of this and other scholars' contributions, however, King et al. (1994)'s policy specific institutional framework is employed here to examine the significant role of coercive isomorphism that stems from political influence and legitimacy exerted by governments in driving SSCM implementation. The framework was originally devised to analyse how policy initiatives such as standard setting, knowledge building and deployment, subsidy, mobilization and innovation directives, can be used as regulatory or influential instruments to encourage innovation in firms (e.g. Montealegre, 1999; Brown and Thompson, 2011). Institutions' regulatory interventions are used to force the conformity with the rules and standards, whereas influential interventions can affect the attitudes and behaviours of those governed without forcing them (Henriksen and Andersen, 2004).

By adopting a contingency approach, organisations pursue a 'fit' between the organisation's managerial design and the environmental contingencies to achieve organisational effectiveness (Sousa and Voss, 2008; Voss, 2005). In SSCM studies, contingency theory provides an alternative explanation to the adoption of sustainable practices in enterprises (Morali and Searcy, 2013), by implying that a firm's sustainability decision-making is contingent upon firm's contextual conditions (Schneider et al., 2014; Walker and Jones, 2012). If this theoretical model is to be applied to the context of policy implementation, then one can assume that the effectiveness of policy instruments employed by governments lies dependent upon the situation, i.e. enterprises might adopt different attitudes and manners in response to sustainability policies depending on specific circumstances in which they find themselves. Organisational effectiveness within this context therefore could be linked to the ability of government to attain sustainability goals set by itself (Donaldson, 2001).

Sustainable Supply Chain Practices

The scope of SSCPs is broad covering from sustainable purchasing to integrated life-cycle management. Based on the focus on Triple Bottom Line, SSCPs can be categorised as either environmental or social practices. Environmental practices focus on resource use and impacts on the physical environment; while social practices focus on health and well-being of people in the supply chain and impacts on society (Marshall et al., 2015). In a systematic review conducted by Pimenta and Ball (2014), the authors found that the adoption of environmental practices has received much more attention in the SSCM studies than social practices. By distinguishing between activities limited to the corporate boundaries and actions extended to the supply chain level, SSCPs can also be classified into either internal or external practices (Formentini and Taticchi, 2016). Internal SSCPs focus on the functional operations within the firm, while external SSCPs are involved in a range of activities at the supply chain level, such as purchasing, supplier performance assessment and collaboration, and product end-of-life management (e.g. reverse logistics, product recovery and recycling) (Pimenta and Ball, 2015).

Policy Context

The policy context is an essential component of the institutional environment in China. Drawing upon the accumulated knowledge from Chinese open-access policy documents and governance literature (e.g. Ma and Ortolano, 2000; Jin et al., 2016), we investigate the institutional composition and dynamics of the Chinese administrative system as well as the channels through which policies and regulations are formulated and implemented in China (Figure 1). This is discussed further below in terms of the governmental structure, key regulative authorities, and institutional intervention approaches with regard to sustainability implementation.

Governmental Structure

Chinese government is strictly organised as a unitary hierarchy (Qi and Wu, 2013), including the national level ("the Centre") and four levels of local government (provincial, municipal, county, and township) under it. Within the administrative system, bureaucratic control is exercised in two distinct ways: by function and by geographical area (Ma and Ortolano, 2000). As shown in Figure 1, a local agency is a subordinate functional department of the local government within the jurisdiction area (slanted arrows), whereas it also formulates a line relationship with the functionally-related agency above or below it (vertical arrows). For instance, Guangdong provincial Environmental Protection Bureau (EPB) is under the jurisdiction of the Guangdong provincial government, but it also reports to the upper-level functional department – the Ministry of Ecology and Environment (MEE) – and supervises municipal EPBs within the province. As the lead agency, MEE has the power to coordinate national policy and to marshal the requisite forces, budget, and activities, while local EPBs are in charge of monitoring the local environmental performance by cooperating with other authorised agencies over relevant subject areas.

Relevant Regulative Authorities

At the national level, legislative and administrative power is centred in the National People's Congress and its Standing Committee (NPCSC) which formulates general principles for each sector's policy. The General Office of the State Council (GOSC) promulgates environmental and social administrative regulations. The ministries and commissions under the GOSC work out specific departmental rules and national standards. For instance, the National Development and Reform Committee (NDRC)

formulates and promotes the National FYP, providing guidelines for the formulation of the National Environmental FYP by the MEE as well as other FYPs for various industrial and business areas (e.g. National FYP for Textile Industry, FYP for Petrochemical Industry etc.) which guide the sustainable development for individual sectors during a certain Five-Year period. At the local level, each province and municipality can also formulate its own local regulations. The concrete tasks of enforcement and implementation of regulations and policies however are left to local agencies.

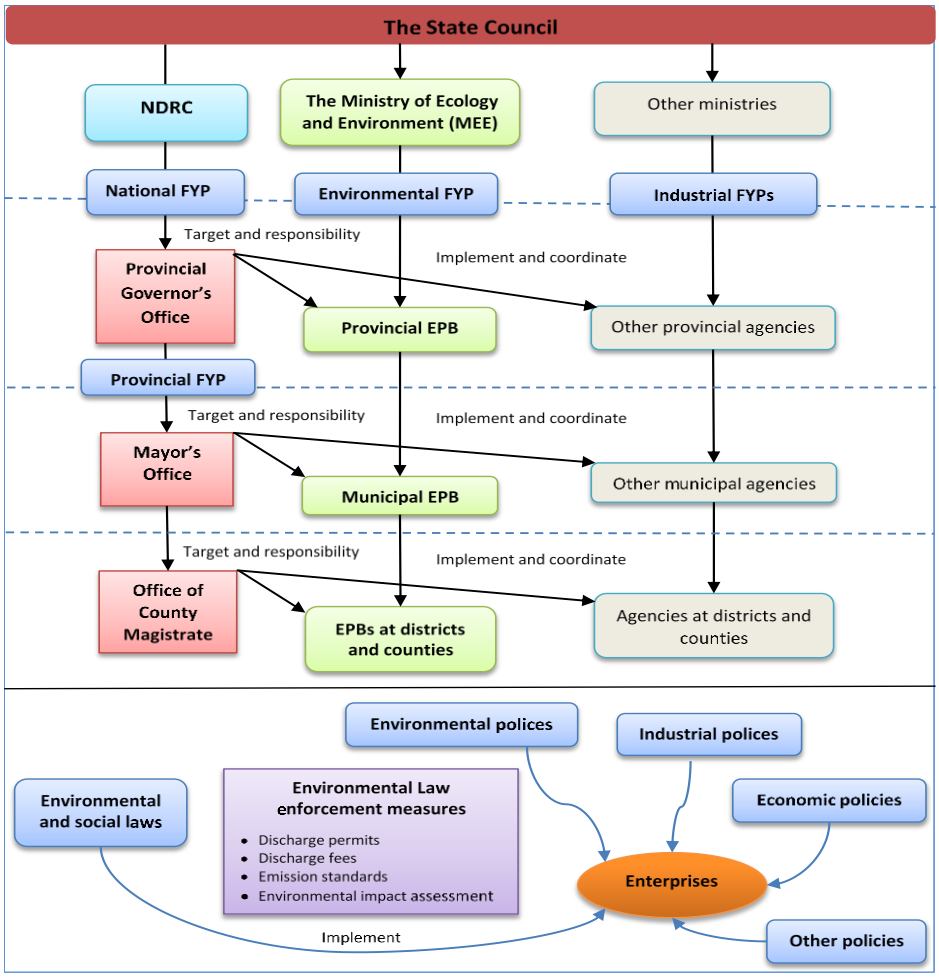

Figure 1 – Governmental Structure in China (Adapted from Ma and Ortolano, 2000)

Institutional Intervention Approaches

Chinese government has employed a mix of top-down command-and-control measures, market-based mechanisms and other persuasion and encouragement policy instruments to coordinate social, environmental and economic relations and promote supply chain sustainability in China (Wang, 2010; Wang and Chang, 2014). In terms of command-and-control approach, a broad range of environmental and labour legislation has been enacted, setting minimum standards for the respective markets and framing consistent expectations for companies across sectors to address social (e.g. labour conditions), environmental (e.g. emission standards), chain of custody, and workplace safety issues (EY, 2016). Market-based economic incentives are also introduced, like different modes of subsidies (Zhang et al., 2013) and green procurement practices (Zhu et al., 2013). In addition, innovative programmes are initiated by local authorities to deploy sustainability knowledge and motivate SSCPs adoption among enterprises, such as partnering with

informal institutions (e.g. local business associations and NGOs) to offer constructive advice and technical support for enterprises' sustainability initiatives.

Methodology

A multiple in-depth case study approach was adopted to investigate the research questions. Semi-structured interviews were employed for the primary qualitative data collection. Seven private enterprises of small, medium and large size and in various industries from Q city of Guangdong province – the largest manufacturing industrial cluster in China – were selected (Table 1). The choice of a single province was deliberate and provided a consistent policy context. The selection of interviewees was based on their knowledge of sustainability and their proximity to sustainability decision-making process. Thus, senior management members of the companies were identified as primary key informants. In addition, informal interviews were conducted with three local government officials. Document analysis was used as a means of secondary data collection at national and local level, which provided neutral and independent analysis without affecting the results of the ongoing research (Eisenhardt, 1989). Multiple sources of secondary data like published official government documents, firms' profiles, audit reports, news articles and press release were used to triangulate and support opinions and comments obtained from the respondents (Kohlbacher, 2006; Bowen, 2009). The individual case data collected is in the process of being analysed and cross-case analysis has been undertaken to identify emerging themes. Spreadsheets have been constructed to support the process of searching for patterns in the data (Barratt et al., 2011).

Table 1 Overview of Interview Participants

Organisation	Industrial Sector	Approx. no. of employees	Size *	Found in	Interviewee Position
Company 1	Electronics (tablets, phone accessories)	1700	Large	1999	1) General Manager
					2) Sales Manager
					3) Production Manager
Company 2	Metal (rare metal)	1600	Large	2003	4) Production Manager
Company 3	Textile (cotton yarns)	1,500	Large	2001	5) Financial Manager
					6) HR
					7) Purchasing Manager
Company 4	Chemical (modified plastics and additives)	400	Medium	2007	8) Planning Manager
					9) Production Manager
					10) Sustainability Director
Company 5	Paper (household paper)	300	Medium	1997	11) Administration Chief
Company 6	Homeware	50	Small	2009	12) Owner
					13) Manager
					14) Sales Manager
Company 7	Plastics (PVC cooling tower fills)	15	Micro	2008	15) Owner (Manager)
					16) Vice Manager
					17) Worker1
					18) Worker2
Municipal government authorities	Environmental Protection Bureau (EPB)				19) Official
	Tax Bureau (TB)				20) Official
	Economy and Information Bureau (EIB)				21) Official

*Size is defined based on Chinese Ministry of Industry and Information Technology definition (National Bureau of Statistics, 2011)

Initial Findings

The empirical data gathered from each case reflects unique individual experience of SSCP adoption and implementation in the policy context. King et al. (1994)'s institutional model is employed to evaluate six types of policy instruments. We selected an example

case (Company 4) to demonstrate the institutional interventions to SSCP adoption in detail (Table 2), nonetheless the other six cases are presented in summaries with highlights only (Table 3). A contingency perspective is adopted to examine how company size and industry can moderate the effectiveness of different institutional interventions.

Table 2 Government Policy Interventions Applied in Company 4 (After King et al., 1994)

Regulatory and Influential Intervention	Evidence from the Case	Illustrative Quotes
Regulation	• Compliance with environmental and labour laws and local regulation on environmental and social issues • Acquiring EIA certificates for new construction projects • Implementing cleaner production under the requirement of local government • Paying discharge fees on time	*"Government has set sustainability development goals and environmental protection targets for us."* *"They (environmental laws) clearly state what is permitted and what is illegal."*
Economic incentive	• A total of RMB 45,917,000 direct government funds and special grants provided to the company (2013 – 2016) • The company enjoyed a 10% off tax offer during 2011-2016	"*We enjoyed a 10% tax discount within three years after obtaining the (hi-tech enterprise) qualification*."
Knowledge building	• Sustainability publicity and education programmes initiated by local government	"*Government has been cultivating the environmental and social awareness of enterprises and citizens through publicity campaigns"*
Knowledge deployment	• Collaborative green product R&D involving government research institutes and enterprises • Local EPB provided assistances to cleaner production implementation in the company	*"They even assigned experts to help us with the (clean production) implementation process."*
Innovative directive	• Enjoying priorities in local government procurement, incentivising the company to invest and innovate in eco-friendly and responsive products to meet the guaranteed long-term and high-volume government demand	-
Mobilisation	• Conducting sustainability education programme within the company under the state's call for "Ecological Civilisation" education and publicity • Being awarded the "12th Five-Year Manufacturing Industry Information Technology Project Pilot Enterprise" and "National Torch Plan Key High-tech Enterprise" in 2012, stimulating the company to expand its green innovative R&D. • Philanthropy encouraged by government and Chinese culture of "face" (Mianzi).	*"Our fast response and positive attitude towards the call (for clean production) have been appreciated by local government."* *"It is in the culture that you should return to the society what you have taken out."*

Institutional Intervention to the Adoption and Implementation of SSCPs (RQ1)

In Company 4, the direct governmental regulation on sustainability issues has been achieved by the enforcement of relevant laws and compliance monitoring. Increasingly stringent legislation and enforcement are felt by the interviewees. As stated by the Sustainability Director, "*Environmental protection requirements are stricter than ever before… the cost of non-compliance is huge due to the increased range of fines and penalties*". The Planning Manager added, "*You can easily get a notice of relocation or be forced to shut down if you fail to comply with the regulation*". Similar evidences of strong regulation influence are found in other cases. In terms of economic incentives, fiscal subsidy shows great potentials in Company 4 – the company has received enormous funding support from central and local government. Evidences show that some of the funding and special grants are directly linked to its sustainable production such as the implementation of cleaner production and green innovative products R&D. Other

persuasion and encouragement measures like knowledge deployment and mobilisation have also proven to be very effective in Company 4. The success of influential interventions – both economic incentives and encouragement measures – is largely contributed by the strong "government-enterprise" tie. The company's initiatives of maintaining a good relationship with the local government are illustrated by the Sustainability Directive: "*Establishing good, strong and lasting relationships with government agencies is critical... It's important to know which ministries or agencies govern your business and what regulations apply.*"

From the above within-case analysis, we have been able to confirm that Chinese government – central and local – have applied all six types of policy instruments to promote the adoption and implementation of SSCPs, though influences of some policies are more strongly felt by interviewees than others. Most prominently, classical central regulatory intervention by means of command-and-control have been employed by government who make it mandatory for enterprises to reach certain environmental and social standards in order to be legitimate. However, such regulatory intervention in the local area depends on strong hierarchical steering from the centre. For example, local government would strengthen the enforcement of regulations before and during inspections conducted by the upper-level functional department because environmental protection has become a key performance indicator for local officials. As mentioned by an official, "*Normally we might turn a blind eye to minor violations as long as the enterprise has great contribution to economic growth. However, it's all different when the central environmental inspection teams come. They are like the 'imperial envoys'... Mayor was so nervous about the inspection that we had to order some polluting factories to shut down before they (inspectors) arrived"*. In contrast, lesser roles have been played by influential interventions like knowledge development, mobilisation and other market-based instruments (e.g. green procurement). The six other cases produced similar results but there were also differences. These are explored in the cross-case analysis.

In terms of the influence of the policy intervention on different dimensions of SSCPs, the findings indicate that traditional command and control regulations primarily drive the adoption and implementation of internal sustainable practices, while influential interventions are more effective in promoting external sustainable practices. For instance, Company 4 not only ensures compliance of environmental regulations within the company, it also extends it to its upstream supply chain in response to government's call for enterprise green procurement. As the production manager stated, "*While selecting suppliers, environmental credit rating result (assessed and published by the local EPB) is a very important factor for qualification.*" However, it's worth to note that there is a certain level of interaction and integration between different policy instruments. Both traditional regulations and influential interventions can be applied jointly in pursuit of a common goal of sustainability. Some sustainability initiatives are a collective effect of different policy instruments. For example, Cleaner Production is mandatory for some enterprises under legislation (e.g. the Cleaner Production Promotion Law) but local government has also promoted it through knowledge deployment like providing talent and technological input to enterprises. Therefore, government authorities should not only pursue a rigid regulative enforcement strategy, instead, a mix of regulatory and influential interventions might better help enterprise achieve desired sustainability performance.

Moderating Effects of Contingency Factors on the Effectiveness of Intervention (RQ2)

All seven cases share some similar traits, but the influence of different policy instruments can still be diverse depending on the situation. Here, we examine two broad types of factors, i.e. firm size and industry, and their influence on enterprises' responses to either

regulatory or influential intervention. Cross-case analysis shows that the same police instruments can be more effective for some companies than others. More specifically, micro-small and low-tech enterprises are still largely driven by traditional command-and-control regulations and thus they appear to have passive responses to the adoption and implementation of SSCPs, while medium-large and high-tech enterprises tend to be more conscious of the policy environment and they can actively seek for and take advantage of the suitable policies to foster their sustainability performance.

Table 3 Overview of the Effectiveness of Governmental Intervention

	Contingency Factor		**Effectiveness of Intervention**					
	Size	**Industry**	**Regulation**	**Economic Incentive**	**Knowledge Building**	**Knowledge Deployment**	**Innovative Directive**	**Mobilisation**
Company 1	Large	High-tech	Strong	Moderate	Weak	No evidence	Weak	Moderate
Company 2	Large	High-tech	Strong	Moderate	Weak	Weak	Moderate	Moderate
Company 3	Large	Low-tech	Strong	Weak	No evidence	Weak	Weak	Weak
Company 4	Medium	High-tech	Strong	Strong	Moderate	Strong	Moderate	Moderate
Company 5	Medium	Moderate	Strong	Weak	No evidence	Weak	Strong	Moderate
Company 6	Small	Low-tech	Strong	No evidence	Weak	Weak	No evidence	Weak
Company 7	Micro	Low-tech	Strong	No evidence	Weak	No evidence	No evidence	No evidence

Weak - No explicit evidence but may have implicit indications **Moderate** - Some evidence about behaviour change **Strong** - Direct evidence connects to behaviour change

In terms of size, larger firms have more financial and human resources and more experience in implementation which allow them to efficiently communicate with the government regarding polices and regulations. All five medium-large firms studied either have specific functions or personnel that are dedicated to managing environmental and social issues in the company. For example, in Company 4 the Sustainability Development Director is responsible for public relationships coordination. As aforementioned, the company established good relationships with important government authorities like local EPB, which leads to a high level of sustainability awareness and better understanding of government policies. Senior management in larger enterprises also shows better vision for long-term development and higher sustainability commitment than micro-small firms. On contrast, the lack of resources and knowledge has been observed in micro-small firms, which can help explain why they are not enthusiastic about sustainability related influential policies and the inaction by these enterprises. As complained by the owner of Company 7, "*Cost is the largest concern. Small firms like us can hardly survive in the market, the best we can do is to comply with the legislation...Government funds are for big enterprises. We haven't heard any (preferential policies) applicable for us*".

In terms of industry, there is a higher level of sustainability capacity in enterprises from high-end industries which allows them to seek more active sustainable production practices. Most of the influential policies like knowledge development and innovative directive are innovation-oriented and set a relatively high bar for enterprises' technology and innovation capability. For example, in Company 4, the huge benefits gained from the preferential policies applied such as subsidies, collaborative R&D programmes and government procurement priority are to a large extent attributed to the innovative and high-tech nature of its products. Within current policy context, due to their influence, capability and will to act, larger firms in high-tech sectors are more propelled by the influential policies and have emerged as key players in the SSCM movement in China.

Conclusion

SSCM is a relatively new endeavour in China, and the related regulation and policy have been low-profile. Chinese government continues to rely primarily on traditional policy instruments to promote the adoption and implementation of SSCPs, whereas market-based mechanisms take up merely a very limited portion of the existing policy system. Especially, there are very few sustainability policies directly and explicitly targeting sustainable issues along the supply chain and they are still in their infancy. This is not surprising considering China is still in the pilot stage of SSCM implementation.

The findings have important implications for policy making and implementation. Policy makers, both nationally and locally, will need to adopt an innovative strategy in policy design, particularly from the perspective of marketisation. They also need to take into account the moderating effects of contingency factors on both mandatory and advisory policies as well as the nature of the initiatives put in place to reinforce policy adoption. Local agencies will need to adopt a more aptly pragmatic approach in policy implementation. Given the complex institutional composition and dynamics in China, government should not just be satisfied with which approach is more effective, as any approach requires a certain level of institutional guarantees.

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