



**MICHELE MORAIS OLIVEIRA PEREIRA**

**GLOBAL SUPPLY CHAIN SUSTAINABILITY: AN  
EMERGING ECONOMY SUPPLIERS' PERSPECTIVE**

**LAVRAS – MG  
2021**

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Tese apresentada à Universidade Federal de Lavras, como parte das exigências do Programa de Pós-Graduação em Administração, área de concentração Gestão Estratégica, Marketing e Inovação, para obtenção do título de Doutor.

Prof. Dr. Luiz Marcelo Antonialli  
Orientador

Profa. Dra. Marília Bonzanini Bossle  
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## RESUMO

A sustentabilidade tem sido cada vez mais necessária à atuação de empresas e cadeias de suprimentos (em inglês *supply chain* - SC) em mercados globalizados para que estas reduzam impactos de suas operações, gerenciem melhor os riscos e melhorem em competitividade. Para o alcance de estratégias nesse sentido é fundamental uma melhor gestão sustentável da cadeia de suprimentos, o que consiste em gerenciar as relações interorganizacionais e os materiais, processos, capitais e informações em toda a SC com objetivos focados em sustentabilidade. Particularmente em SCs globais, a maioria dos fornecedores se encontra em países de economias emergentes e são responsáveis pela maioria das atividades das SCs. É necessário, portanto, compreender melhor a sustentabilidade destes fornecedores, visto que a maioria dos estudos abordam o ponto de vista dos compradores e de países desenvolvidos. Esta tese é um conjunto de quatro artigos e seu objetivo geral foi investigar como os fornecedores globais de países emergentes gerenciam a sustentabilidade e como suas iniciativas de sustentabilidade afetam a si próprios e a sustentabilidade da SC. A pesquisa aborda o ponto de vista dos próprios fornecedores. Adotou-se a abordagem qualitativa utilizando-se métodos de pesquisa mistos tais como revisão sistemática da literatura e estudos de casos múltiplos com a utilização de entrevistas e análise documental. O contexto empírico estudado foi a cafeicultura brasileira, relevante no contexto global visto que o Brasil é o maior produtor de café do mundo suprindo cerca de 32% do total de café consumido e fornecendo para importantes SCs globais. É importante destacar que a pesquisa foi conduzida antes e durante o contexto de pandemia do vírus COVID-19, que têm desafiado diversos atores e SCs em todo o mundo em termos de estratégias e adaptações de suas atividades operacionais. Os resultados indicaram as certificações de sustentabilidade e os relacionamentos interorganizacionais como relevantes fontes de conhecimento e aprendizado para esses fornecedores. Isso demonstra que, por meio dessas relações, a adoção de programas de certificação de sustentabilidade tem permitido aos fornecedores de economias emergentes melhorarem sua sustentabilidade bem como desenvolverem recursos, aprendizado e competências em sua operação em SCs globais, ainda que em uma situação de disrupção global. Especificamente, o primeiro estudo encontrou diferenças entre os contextos operacionais dos compradores e fornecedores como barreira para as iniciativas de sustentabilidade dos fornecedores, indicando que as empresas compradoras precisam aumentar sua consciência sobre o que tem sido feito pelos fornecedores e como isso afeta a gestão da sustentabilidade nas SCs. O segundo artigo apresentou as práticas colaborativas adotadas por estes fornecedores como base sólida para iniciativas de sustentabilidade, internacionalização e rendas relacionais para sua atuação no mercado global. O terceiro estudo mostrou melhoria da sustentabilidade nas operações dos fornecedores como parte da adoção de programas de certificação e, além disso, competências em nível individual, organizacional e SC foram desenvolvidas para além das tradicionais dimensões de sustentabilidade do *Triple Bottom Line*. Finalmente, o quarto estudo indicou que durante a pandemia os fornecedores tiveram aprendizado de sustentabilidade acelerado e mudanças em seu foco de sustentabilidade.

**Palavras-chave:** Gestão Sustentável de Cadeias de Suprimentos; Cadeia de Suprimento Global; Economias Emergentes; Fornecedor; Cafeicultura.

## ABSTRACT

Sustainability has been increasingly necessary for the performance of companies and supply chains (SC) in globalized markets in order to reduce the impacts of their operations, better manage risks and improve their competitiveness. To achieve strategies in this sense, improve the Sustainable Supply Chain Management (SSCM) is essential, which consists of managing interorganizational relations and materials, processes, capital and information throughout SC with objectives focused on sustainability. Particularly in global SCs, most suppliers are based in emerging countries being responsible for many parts of SC activities. Thus, it is necessary to better understand these suppliers' sustainability since most studies address the point of view of buyers from developed countries. This thesis is structured as a set of four scientific articles and its overall aim is to investigate how emerging economy global suppliers manage sustainability and how their sustainability initiatives affects themselves and global SC sustainability. This is achieved through the four studies by examining the subject from supplier own viewpoint. The study is a qualitative research using mixed research methods as a systematic literature review and a multiple cases studies with interviews and documental analysis as source of data collection. The studied empirical context was the Brazilian coffee industry that was explored due to its importance globally as Brazil is the largest coffee producer in the world that produces around 32% of the total coffee consumed supplying relevant global SCs. It is important highlight that this research was conducted before and during COVID-19 pandemic context which has challenged many different SC players worldwide in terms of strategies and adaptations of operational activities. The findings indicate sustainability certifications and interorganizational relationships as rich sources of knowledge and learning for these suppliers. It demonstrates that through these relationships, the adoption of sustainability certification programs has enabled emerging economy suppliers to improve their sustainability as well as develop resources, learning and competences in their operation in global SCs albeit in a global disruption. Specifically, the first study found differences between buyers and suppliers' operational contexts as barrier for suppliers' sustainability initiatives indicating that buyer companies need to increase their awareness about what has been done by suppliers and how it affects the management of SC sustainability. The second paper presented collaborative practices adopted by suppliers as a strong foundation for sustainability initiatives, internationalization and relational rents for operation in the global market. The third study showed the improvement of sustainability in suppliers' operations as part of the certification programs adoption, moreover competences at individual, organisational and SC level were developed beyond the traditional Triple Bottom Line sustainability dimensions. Finally, the fourth study's findings indicate that during the COVID-19 pandemic the emerging economy suppliers had an accelerated sustainability learning and changes on their sustainability focus.

**Keywords:** Sustainable Supply Chain Management; Global Supply Chain; Emerging Economies; Supplier; Coffee Production.



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## FIRST PART

### 1. INTRODUCTION

#### 1.1. Research contextualization and motivation

As sustainability has progressively been required to companies operate in globalized market, it has been pushed them to better manage risks and reduce impacts of their operations throughout the SCs (AWASTHI; GOVINDAN; GOLD, 2018; MANI; GUNASEKARAN; DELGADO, 2018; SILVESTRE, 2015). Thus, sustainability strategies and initiatives has been adopted by companies, mainly, due to increasingly strict regulations, scarcity of natural resources, greater awareness of consumers and pressure from communities and NGOs (MANI; GUNASEKARAN; DELGADO, 2018; TSENG et al., 2015). However, for sustainability strategies be achieved, it is relevant the adoption or improvement of sustainability throughout the entire SC, since organizations, individually, are unable to do much in this sense as they have been interconnected and their strategies need to be focused on SC aims (SILVESTRE, 2015). Therefore, it is crucial the improvement of Sustainable Supply Chain Management (SSCM) that embraces the management of flows of capitals, materials and information, as well as the interorganizational relationships among partners along the SC considering the requirements of customers and stakeholders focused on sustainability goals (SEURING; MÜLLER, 2008).

In particular, global SCs operate comprising companies from diverse countries with differences in size, resources, culture, language, profitability and bargaining power (AGYEMANG et al., 2018; AWASTHI et al., 2018). These differences also leading global SCs sustainability management to face more complex challenges than in local ones due to the countries' peculiarities and the greater number of stakeholders involved (CARTER; EASTON, 2011; KOBERG; LONGONI, 2019). The level of development of involved countries has also been considered as an important factor to explain sustainability of companies and SCs as well how these companies have operated in global SCs (SILVESTRE, 2015; JIA et al., 2018; LI et al., 2018). The studies on sustainability in Global SCs have therefore highlighted the importance of effective management of emerging economy suppliers mainly due to their high impact on global emissions as well their economic and social instability (JIA et al., 2018; LIU; ZHANG; YE, 2019). It has been argued that activities in these countries will soon be responsible for more than half of global emissions and thus there are specific market conditions that require special attention from scholars (LI et al., 2018). Therefore, when crossing country borders, global SCs need to effectively stimulate emerging economy suppliers to adopt their sustainability priorities

(MORAIS; SILVESTRE, 2018; MUÑOZ-TORRES et al., 2018) and for these suppliers, operate sustainably can be more challenger due to their uncertain operation context (LIU; ZHANG; YE, 2019; SILVESTRE, 2015).

Concerning sustainability concept, the most adopted definition in SSCM studies is the Triple Bottom Line (TBL) by Elkington (2004) that includes environmental, social and economic dimensions. However, to improve understanding of SC sustainability in emerging economies and specifically the Latin American context, it is relevant incorporate the cultural and institutional dimensions as sustainability management in these countries has approached relevant changes and developments related to these two further dimensions (FRITZ; SILVA, 2018).

It has been argued that the studies on suppliers' sustainability have been largely from a buyer's perspective (JIA et al., 2018; KOBERG; LONGONI, 2019) and the specific literature about it predominantly approach suppliers' selection and assessment by buyers (KELLNER; UTZ, 2019; KOBERG; LONGONI, 2019). This literature has therefore considered mainly western domestic problems and not global challenges/barriers (PARK et al., 2018), with little evidence regarding the emerging economy suppliers' sustainability-oriented context (KOBERG; LONGONI, 2019; LIU et al., 2019). Thus, to reveal ways to improvement and better understanding the SSCM on global SCs more research is needed to consider the supplier perspective (JIA et al., 2018; LIU; ZHANG; YE, 2019), as focal companies do not comprehend well why some suppliers adopt sustainable initiatives successfully while others do not (LIU; ZHANG; YE, 2019). This may be due to the operational context of these emerging country suppliers, which contrasts with that of their buyers in developed countries (AKBAR; AHSAN, 2019; KÖKSAL et al., 2018; KOSTER et al., 2019). These differences include: market instability; a lack of infrastructure; high social inequalities and informality; and high levels of corruption (FRITZ; SILVA, 2018; KOBERG; LONGONI, 2019; TANCO et al., 2018). In addition, these companies face barriers related to weak organisational culture, lack of top-level management commitment to sustainability and lack of knowledge on sustainability management (HAJJAR et al., 2019; SILVESTRE, 2015). These contextual differences rise the SC risks and uncertainties that also affect suppliers and SSCM what have done the certification programs a relevant governance mechanism to international buyers assess suppliers and to intermediate/improve the trust between them as well their interorganizational relationships (BUSTOS; MOORS, 2018; HAJJAR et al., 2019; LIU; ZHANG; YE, 2019). Certifications programs have been therefore spotted as a prerequisite to emerging economy suppliers have

access to developed country markets as their buyers pressure them requiring these programs adoption (MONTIEL et al., 2016).

During the certification programs adoption processes, emerging economy suppliers face additional barriers due to context they operate leading them do make strategies to reduce these obstacles effects (BUSSE et al., 2016; BUSTOS; MOORS, 2018; KÖKSAL et al., 2018). Thus, it has been argued that the knowledge and skills of SC stakeholders (e.g. buyers, concorrents, NGOs, local communities) and their sharing among these actors as well as the improvement on companies processes have been also considered essencial to improvement on SSCM (BLOOM, 2015; GOLD et al., 2013; HAJJAR et al., 2019). In this sense, the improvement on relationship between buyers and their suppliers through creation of long-term relationships and buyers' engagement on suppliers' development have been found as crucial to SC sustainability (BUSTOS; MOORS, 2018; GOLD et al., 2013; LI et al., 2017; MANI et al., 2018). Certification programs adoption by suppliers has been often linked to that of collaboration, as it is often the means by which suppliers have learned. Hence, collaboration that leads to successful accreditation has been an important mechanism for suppliers to ensure that their sustainability initiatives are acceptable to their buyers.

Although many studies have shown that SC sustainability adoption improves corporate performance, there is insufficient data about this in emerging economies context and how the SSCM has been in these countries. It has been found effectively working mainly in manufacturing companies in developed countries (PAKDEECHOHO; SUKHOTU, 2017). In this sense, recent literature indicates some suppliers benefits in terms of knowledge/technology transfer directly from international buyers (JIA et al., 2018; LIU; ZHANG; YE, 2019) and buyers have obtained knowledge regarding their suppliers' local context what also has facilitated the alignment of sustainability goals (KOBORG; LONGONI, 2019). In additional, some studies evidenced positive outcomes linked to improvement of operational practices and company reputation (ABKAR; AHSAN, 2019; BLOOM, 2015; BUSTOS; MOORS, 2018). Nonetheless, the outcomes from sustainability initiatives and certification programs adoption remain under-researched in the literature, particularly those obtained by emerging economy global suppliers (JIA et al., 2018; LIU; ZHANG; YE, 2019).

The situation surrounding the COVID-19 outbreak has affected global SCs challenging economic activities worldwide (IVANOV, 2020) in terms of both demand and supply (IVANOV, 2020; PANTANO et al., 2020) wich poses new challenges for many different SC players. It has been argued that sustainability has emerged as a key issue for achieving SC resilience during the outbreak context (QUEIROZ et al., 2020) which has led to the question of

whether organisational sustainability priorities have been impacted by the outbreak (BARREIRO-GEN et al., 2020; HAKOVIRTA; DENUWARA, 2020; JABBOUR et al., 2020), in turn having a direct impact on SC sustainability and learning. Since sustainability initiatives do not change overnight (SILVESTRE et al., 2020), it is important investigate how they have evolved as the global effects of the outbreak have unfolded. Thus, the impact of the outbreak on emerging economy global supplier learning as associated with sustainability initiatives also needs to be better understood in particularly how the initiatives of these suppliers have evolved as they tend to face additional barriers to sustainability (BUSSE et al., 2016), particularly when an unprecedented event unfolds (SMITH; WENGER, 2007).

The motivation of this study therefore is better understanding the sustainability initiatives of emerging economy global suppliers which may enable to explain how these initiatives and certification programs adoption affect themselves and global SC sustainability. Thus, this study contributes to the debate and SSCM studies addressing the following gaps: (i) the need of studies focused on emerging economy global suppliers' activities as well as their sustainability initiatives, being crucial scan how literature presents what has been previously empirically studied in this sense from their own perspective (JIA et al., 2018; KOBERG; LONGONI, 2019); (ii) the scarcity of empirical studies on how collaborative practices influence the sustainability of SCs and their members, specifically the emerging economy global suppliers (HUQ et al., 2014; JIA et al., 2018; LIU; ZHANG; YE, 2019); (iii) despite some evidence that certifications bring positive outcomes to companies (BLOOM, 2015; HAJJAR et al., 2019; VANDERHAEGEN et al., 2018), there remains unclear how sustainability certification programs adoption affects emerging economy global suppliers (HAJJAR et al., 2019; JIA et al., 2018); (iv) the need of studies on how SC sustainability learning occurs (GONG et al., 2018; YANG et al., 2018) and how this learning and sustainability initiatives of emerging economy global suppliers is affected by an unprecedented outbreak such as the COVID-19 pandemic (i.e. worldwide crisis context).

Thus, the assumption of this research is: Through interorganizational relationships, the adoption of sustainability certification programs enables emerging economy suppliers to develop resources, learning and competences in their operation in global supply chains albeit in a global crisis context (i.e. the COVID-19 outbreak).

## 1.2. Research questions, aim and justifications

This thesis is structured as a set of four scientific articles and *its overall aim is to investigate how emerging economy global suppliers manage sustainability and how their sustainability initiatives affects themselves and global SC sustainability*. This is achieved through the four studies by examining the subject from supplier own viewpoint. In the context of global SCs, this research moves the spotlight from companies based in developed countries to those suppliers located in emerging economies' contexts, with different needs, institutional environments, cultures and social-economic approaches.

The research questions and the justifications of the first study are the following:

***RQ1.1:*** *How has sustainability initiatives of emerging country global suppliers been studied in the literature from their own perspective?*

***RQ1.2:*** *What are the main characteristics of sustainability operation of emerging country global suppliers on their own perspective?*

Once in GSCs buyers and suppliers operate in different contexts, the literature has not clarity on why sustainability management faces certain distance. Thus, following the suppliers' perspective and answering the Jia et al.'s (2018) call concerning the need for more studies with emerging country suppliers. To address this research gap, the first article investigates how global suppliers address sustainability management in emerging countries. Through a systematic literature review, empirical publications with global suppliers were scanned along 13 years. It was carried out to identify drivers, mechanisms, barriers, remedy strategies to face barriers or reduce their effects, outcomes and how have these results acted as new motivators for more sustainability initiatives. A theoretical framework on emerging country global suppliers' sustainability is also provided.

The research questions and the justifications of the second study are the following:

***RQ2:*** *How have collaborative practices influenced sustainability initiatives and the relational rents of emerging economy suppliers?*

Recent investigations by Bustos and Moors (2018) and Köksal et al. (2018) provide evidence that inter-organizational relational mechanisms, such as collaborative practices, have been key factors for emerging country suppliers operate sustainable and for value creation strategies. For these suppliers, operating within global SCs has been suggested to be a key driver

for the adoption of more sustainable initiatives (HUQ et al., 2014; KÖKSAL et al., 2018; KOSTER et al., 2019). Thus, the second study approached the relational rents that suppliers achieve through their sustainability initiatives as a consequence of collaborative practices involving national and international partners (e.g. inter-organisational cooperation and networks). This article therefore presents the findings of an empirical study on how collaborative practices influence sustainability initiatives and the relational rents of emerging country global suppliers. This study' analysis uses the precepts of the Relational View (DYER; SINGH, 1998), in particular, the sources of relational rents proposed by the theory are used to show how relational rents are generated and sustainability achieved (TOUBOULIC; WALKER, 2015).

The research questions and the justifications of the third study are the following:

***RQ3.1: How sustainability certification programs adoption impact emerging country global suppliers' operations?***

***RQ3.2: Which supply chain sustainability competences were developed by emerging country suppliers through certification programs?***

It has been argued that it is necessary better understand why only some emerging country suppliers effectively adopt sustainability in their operations and have positive outcomes from that while others not (LIU et al., 2019; JIA et al., 2018) what is crucial to reveal ways to improvement on global SC sustainability management (LIU et al., 2019). Despite some evidence that certifications bring positive outcomes to companies (BLOOM, 2015; HAJJAR et al., 2019; VANDERHAEGEN et al., 2018), there is unclear on how they occur and affect emerging country suppliers (HAJJAR et al., 2019; JIA et al., 2018). The third paper therefore investigated how sustainability certification programs adoption affects global suppliers' competences. It provides an understanding of the role of certification programs in the global suppliers' sustainability and competences development highlighting their perspective and expanding studies on suppliers' relevance to SC sustainability.

As the COVID-19 outbreak has started during the conduction of this thesis research and it has affected global economic activities and changing global and regional supply chains' processes and strategies (Ivanov, 2020; Pantano et al., 2020), this unexpected event was considered as the context of the fourth study. In contrast to other SC disruptions, such as Brexit related constitutional change (Hendry et al., 2019) or an extreme weather event (De Sá et al., 2019), the COVID-19 outbreak has unique characteristics (Craighead et al., 2020). This poses

new challenges for many different SC players worldwide in terms of their learning and the adaptation of their activities. In this context, the last paper aims to understand the impact of the outbreak on emerging country suppliers' learning as associated with sustainability initiatives.

The research questions and the justifications of the fourth study are the following:

***RQ4.1:*** *How are sustainability initiatives being impacted by the COVID-19 pandemic in export-oriented emerging economy suppliers?*

***RQ4.2:*** *Which levels of supply chain sustainability learning are being experienced by emerging economy suppliers during this unprecedented outbreak?*

SC sustainability research to date has included investigation into the complexity surrounding how sustainability initiatives evolve along trajectories (SILVESTRE, 2015; ROY et al., 2018). In this context, a trajectory represents a sequence of learning loops forming a path towards SC sustainability (SILVESTRE et al., 2020). However, there is unclear how SC sustainability learning occurs (GONG et al., 2018; YANG et al., 2018). In particular, the extant literature has been barely interested in how SC sustainability learning differs for various SC players, and there is no research to date that considers how this learning occurs when facing an unprecedented outbreak such as the COVID-19 pandemic. Thus, the fourth study focused on how sustainability-oriented supplier learning occurs at multiple levels (individual, organisational and SC). The last article addresses this research gap claiming that learning refers to changes in knowledge, behaviours and values (HUBER, 1991; SIEBENHÜNER; ARNOLD, 2007). The last paper therefore examined the impact of the COVID-19 pandemic on SC sustainability learning with focus on the learning associated with changes in the sustainability initiatives of emerging economy global suppliers.

The empirical field studied in second, third and fourth articles was the Brazilian coffee producers that operate as global suppliers. They produce specifically in the Cerrado Mineiro Region, state of Minas Gerais. The intensity of this activity in this region is representative of the Brazilian economy, and there are producer organizations participating in important global SCs such as Nespresso and Illy. Coffee is one of the top ten products exported by Brazil, which supplies 32% of the world market for fresh beans and, in recent years, Brazil has been the world's largest producer and exporter of coffee (EMBRAPA, 2018; CONAB, 2020). The state of Minas Gerais is the largest producer, responsible for 54% of Brazilian production (CONAB, 2020). Coffee production in the Cerrado Mineiro Region represents 25% of the total production



in Minas Gerais and its main destination is the international market (REGIÃO DO CERRADO MINEIRO, 2020).

In relation to the global context during this investigation conduction, it is important to highlight that the COVID-19 pandemic started and it is ongoing, therefore the analysis on how emerging economy suppliers in global SCs have operated and learned during this crisis was carried out during the event (i.e. before the outbreak began and then comparing these findings with their sustainability-related activities as the pandemic spread first to their buyer countries and then into Brazil).

Thus following the suppliers' perspective and answering the Jia et al.'s (2018) call concerning the need for more studies with emerging country suppliers, this thesis through its papers contributes theoretically in four main ways: (i) Based on a systematic literature review, in the first paper, it was proposed a framework summarizing and explaining how suppliers see their roles on global SCs sustainability and, at the same time, showing their difficulties and how they surpass them (JIA et al., 2018). The framework might be applied in empirical studies and guide scholars interested in understanding the empirical context of emerging countries in a clear way. (ii) Through the findings and discussions in the second paper, this study contributes to the extant literature by studying empirically how collaborative practices implemented by emerging country global suppliers have influenced their sustainability initiatives and relational rents – e.g. increased trust, repeated ties, customized assets (DYER et al., 2018). (iii) The third paper provides new empirical evidence on how SC sustainability has been managing and building through the suppliers competences and the role of certification programs in this context. The findings indicate that emerging country global suppliers' certifications have been implemented supported by interorganizational cooperation and collaboration what have improved companies' sustainability and supported them to surpass barriers in this process (BUSTOS; MOORS, 2018; MANI et al., 2018). (iv) The fourth paper improves understanding of how emerging economy global suppliers are coping with COVID-19 outbreak in regard to sustainability management. Moving the spotlight from buyers to suppliers, this study demonstrates that supplier learning is central to global SC sustainability (AZADEGAN et al., 2008).

### **1.3. Thesis structure**

This thesis consists of a set of four scientific articles as it is provided on the “Manual of standards and structure of academic works” by Federal University of Lavras (UFLA, 2016). In this sense, the components of this scientific text are:

This first part presents the Introduction that has the sections: ‘Research contextualization and motivation’; ‘Research question, aim and Justifications’, and this final subsection ‘Thesis structure’. In this part, the main theoretical contributions of each one of the four papers are also highlighted. The second part comprises of the four papers and their respective appendixes. The third part presents the general conclusions and research implications.

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## **SECOND PART**

### **Paper 1 – Global Supplier Management for Sustainability: a review using an emerging country perspective**

Preliminary version presented at 7th International EurOMA Sustainable Operations and Supply Chains Forum - Nottingham, UK, 10/02/2020.

To be submitted to Journal of Cleaner Production and it is formatted according to this journal guidelines.

## **Global Supplier Management for Sustainability: a review using an emerging country perspective**

### **Abstract**

While commonly global supply chains (GSCs) suppliers are located in emerging countries and buyers are in developed countries, sustainability management is still a challenge to be addressed by both theory and practice. Once in GSCs buyers and suppliers operate in different contexts, the literature has not clarity on why sustainability management faces certain distance. Thus, to address this research gap, this paper investigates how global suppliers address sustainability management in emerging countries. Through a systematic literature review, empirical publications with global suppliers (e.g., those using questionnaires or interviews) were scanned along 13 years. Through findings, social sustainability emerged as central to global supplier managers located in Asia, Africa and Latin America, and the distance between buyers and suppliers is explained by misalignment surrounding sustainability meaning and practice. It was found that cultural and institutional issues should be considered within GSCs mainly because suppliers may be also responsible to disseminating sustainability throughout supply chains. A framework emerged connecting the main drivers, mechanisms, barriers, remedies, outcomes and positive feedbacks to suppliers to act sustainably. This research is timely and contributively because it (i) analyses sustainability management of suppliers from their own viewpoint and (ii) it challenges the field to increase awareness about requirements imposed to suppliers beyond focusing only buyers' needs, which can help to reduce invisibility and distance in GSCs.

**Keywords:** Supplier Sustainability, Global Supply Chains, Sustainable Supply Chain Management, Emerging Countries, Systematic Literature Review.

### **1. Introduction**

Global supply chain (GSC) studies have indicated that the majority of suppliers within the market are based in emerging countries (Koberg and Longoni, 2019; Mani et al., 2018), with these suppliers being responsible for many parts of GSC activities such as extraction, production and manufacturing (Jia et al., 2018; Li et al., 2018; Liu, Zhang and Ye, 2019). This leads to specific Sustainable Supply Chain Management (SSCM) related challenges including: (i) that these suppliers have a high impact on global emissions given that this is linked to the activities of extraction, production and manufacturing (Li et al., 2018); (ii) the requirements of sustainability are commonly stipulated by buyers from developed countries (Chen and Chen, 2019); (iii) therefore the context where these suppliers operate contrasts with their buyers' context (Park et al., 2018; Sancha et al. 2015; Zhu and Sarkis 2007); and consequently (iv) focal companies in developed countries do not comprehend why some such suppliers adopt sustainability initiatives successfully while others do not (Liu et al., 2019). There is hence a need to better understand the role of these suppliers as well as their sustainability initiatives, and this continues to be under-researched in the literature from their perspective (Jia et al., 2018).

To analyse SSCM from an emerging country suppliers' perspective it is necessary to reflect on what sustainability means in this context. Currently, it is centrally defined by the Triple Bottom Line (TBL) concept (Elkington, 2004), however debates emerge arguing that TBL is not sufficient to explain what happens in the emerging countries context (Fritz and Silva, 2018). For these authors, issues such as institutional and cultural may also be added to



understand supply chain sustainability, which is so-called TBL+. By understanding sustainability meaning and dynamic in emerging country suppliers, it may be possible to explain how their sustainability affects the GSC sustainability. Thus, to reflect about the literature and aware that little is known about suppliers' activities and sustainability initiatives in emerging countries, it is crucial to scan what has been previously empirically studied on suppliers perspective. Therefore, two main questions guided this study:

*RQ1: How has sustainability initiatives of emerging country global suppliers been studied in the literature from their own perspective?*

*RQ2: What are the main characteristics of sustainability operation of emerging country global suppliers on their own perspective?*

A systematic literature review was carried out to identify drivers, mechanisms, barriers, remedy strategies to face barriers or reduce their effects, outcomes and how have these results acted as new motivators for more sustainability initiatives. A theoretical framework on emerging country global suppliers' sustainability is provided. Differ from Koberg and Longoni (2019), who analyse sustainability in GSCs focused on governance mechanisms and supply chain configuration (i.e. they identified mostly the buyer's perspective) and Jia et al. (2018) who emphasize emerging countries with no specific focus to supplier sustainability-oriented dynamic, this paper is original in moving the spotlight from companies based in developed countries to those suppliers located in emerging countries' contexts, with different needs, institutional environments, cultures and social-economic approaches.

Following the suppliers' perspective and answering the Jia et al.'s (2018) call concerning the need for more studies with suppliers from emerging countries, this paper contributes to the literature in three different ways. First, it demonstrates that emerging country suppliers' sustainability has been also motivated by suppliers' strategic orientation and national legislation beyond global buyers' requirements. Secondly, this study reveals the relevance of collaboration and certifications to emerging country suppliers' sustainability as mechanisms to learning improvement in this sense. Thirdly, these analyses showed improvement mainly in relation to institutional aspect of suppliers' sustainability which indicates increasing of trust between buyers and suppliers. Additionally, the proposed framework summarizes and explains how suppliers see their roles on GSCs sustainability and, at the same time, shows their difficulties and how they surpass them. The framework could be applied in empirical studies and guide scholars interested in understanding the empirical context of emerging countries in a clear way. Researches using suppliers' perspective would help to evaluate buyer's sustainability initiatives and to propose mechanisms for an approach which strategies including the suppliers' participation (Jia et al., 2018). Despite the high number of reviews currently published, we add a new approach by showing the main elements that may be used to manage GSCs and reduce the distance between buyers in developed countries and suppliers in emerging countries which influences supply chain sustainability (Busse, 2016) and causes misunderstandings/operational difficulties (Jia and Zsidisin, 2014).

## **2. Theoretical Background**

Complex GSCs operate around the world comprising companies from diverse countries with differences in size, resources, profitability and bargaining power (Agyemang et al., 2018; Awasthi et al., 2018). Managing sustainability in these GSCs is more challenging than in local supply chains due to the peculiarities of countries and the greater number of stakeholders involved (Agyemang et al., 2018; Awasthi et al., 2018; Koberg and Longoni, 2019). Despite

the complexities of this context, companies still need to identify, assess and manage impacts and risks related to sustainability throughout the SC (Awasthi et al. 2018; Muñoz-Torres et al., 2018). This is essential in modern globalised markets given that sustainability is increasingly becoming an important competitive advantage (Agyemang et al., 2018; Morais and Silvestre, 2018). Therefore, when crossing country borders, GSCs need to effectively inspire suppliers from emerging countries to adopt their sustainability priorities (Morais and Silvestre, 2018; Muñoz-Torres et al., 2018).

The relationship between supply chain sustainability and countries' development has been raised as an important issue for conducting research and better understanding how sustainability initiatives take place in emerging countries (Awasthi et al., 2018; Fritz and Silva, 2018; Jia et al., 2018; Neutzling et al., 2018). The role of these suppliers is crucial to disseminate sustainability throughout GSCs (Azimifard et al., 2018; Guarnieri and Trojan, 2019) and, consequently, it is better to develop an understanding of their reality thereby avoiding an excessive focus on assessing them and instead aiming to develop strategic relationships with these key partners through collaboration (Koberg and Longoni, 2019). Yet, the previous literature on sustainability in GSCs that has focused on the mechanisms that lead to the adoption of sustainability practices in emerging countries indicates that the main driver for companies in this context are the pressures by key stakeholders, mainly buyers, that assess suppliers using national and international standards, as well as certification rules (Jia et al., 2018). Thus, collaboration is less common in the research to date (Jia et al., 2018). Where vertical/horizontal collaboration has been adopted as a mechanism for implementing SSCM initiatives, this has led to higher levels of sustainability-related performance (Jia et al., 2018; Koberg and Longoni, 2019). Therefore, collaboration among SC partners can be concluded to effectively facilitate important sustainability issues such as addressing the global problem of modern slavery in the supply chain (Benstead et al., 2018).

Research to understand the context of companies in these countries has indicated that acting sustainably in GSCs can be a challenge mainly because their operational context has more barriers compared to developed countries (Awasthi et al., 2018; Jia et al., 2018; Liu et al., 2019; Park et al., 2018). These obstacles include: a lack of infrastructure, market instability, social inequalities and informality, lack of strict national laws (Tanco et al., 2018). Internally, these companies also face barriers related to weak organizational culture, lack of knowledge and lack of top-level management commitment to sustainability (Agyemang et al., 2018). Despite these barriers, the prior literature has indicated that some suppliers in emerging countries have adopted sustainable practices and consequently buyer and supplier environmental, social and economic performance has improved (Jia et al., 2018; Koberg and Longoni, 2019). In particular, suppliers have benefited from knowledge/technology transfer directly from international buyers (Jia et al., 2018; Liu et al., 2019) and where buyers have obtained knowledge regarding their suppliers' local context, this has facilitated the alignment of sustainability goals (Koberg and Longoni, 2019). In addition, Jia et al. (2018) evidenced positive outcomes linked to improvement of operational practices and company reputation. Nonetheless, Jia et al. (2018) argue that outcomes from sustainability initiatives remain under-researched in the literature, particularly those obtained by suppliers from emerging countries.

Some scholars argue that the studies that do investigate supplier sustainability have been done so mainly from a buyer's perspective (Jia et al., 2018) and the specific literature about suppliers' sustainability predominantly relates to their selection and assessment by buyers (Kellner and Utz, 2019; Koberg and Longoni, 2019). This literature has therefore considered mainly western domestic problems and not global challenges/barriers (Park et al., 2018), with little evidence regarding the emerging countries suppliers' sustainability-oriented context (Liu et al., 2019; Neutzling et al., 2018). Further research into local information surrounding suppliers operating in a global context could help in making better decisions in the management

of sustainability in GSCs (Park et al., 2018). Research from the emerging country supplier perspective can support GSC managers and scholars to find mechanisms to reduce the distance between buyers and suppliers.

### 3. Method

As indicated above in the introduction, a systematic literature review method was employed to address the research questions. This method is appropriate to the research aims as it enables a state-of-the-art analysis of extant studies in the emerging research area being investigated here, by integrating the findings of all relevant articles collected in a specified manner (Jabbour, 2013; Seuring and Gold, 2012). This systematic review was undertaken using the following four step process proposed by Seuring and Gold (2012): (i) material collection; (ii) descriptive analysis; (iii) category identification; and (iv) material evaluation, as described in turn below.

*Material collection:* Three databases were used to search for relevant articles: the Web of Science (WoS), Scopus and Ebsco and thus these delimit the scope of this analysis. WoS was selected because it is one of the leading research databases in the international context and has a long standing reputation in business literature (Dahlander and Gann, 2010). Scopus was chosen because it contains many articles from engineering studies (Siva et al., 2016), and therefore has potential to identify articles relating to production and operation management. Additionally, Ebsco was used to further amplify the search. The searches within these databases were unrestricted in terms of academic discipline, journals or dates of publication. The only general criteria used as filters were that the papers were (i) classified as articles and (ii) written in English. Searches were thus performed between August and December 2019, using the keywords:

- (i) “supply chain” OR “supplier\*” AND
- (ii) “sustainab\*” AND
- (iii) “developing countr\*” OR “developing econom\*” OR “emerging econom\*” OR “emerging countr\*” OR “global” OR “international” OR “export-oriented”.

A total of 311 articles were identified initially, with 25 finally selected for detailed analysis. The criteria for exclusion at this point were: (i) duplicate papers (165 out of 311) and (ii) fit of the paper to the research focus (121 out of 311). To determine the fit, the abstract, introduction, research method and conclusion were evaluated to verify if the data from the studies were obtained from the point of view of suppliers from emerging countries acting in GSCs. Given that the research aim is to identify previous studies that gave voice to suppliers, we analysed how the data was collected (e.g. interviews or questionnaires) ensuring that the suppliers themselves had provided the data and that they had been asked about their sustainability-oriented dynamic. Thus, we excluded papers that considered supplier selection and evaluation using sustainability requirements where this was from the buyers’ perspective; buyers’ views about their suppliers’ sustainability initiatives; and papers using secondary data analysis. In addition, we excluded research that only considered local supply chains instead of GSCs and papers in which the suppliers of the GSCs were from a mix of developed and emerging countries. It was due to difficult to analyse the data of emerging county suppliers separately.

*Descriptive analysis:* To start the analysis, we first mapped the main characteristics of the articles such as the evolution of publications over time and the journals in which they were published (Seuring and Gold, 2012). The following information was also thus identified and described: (i) country of study (Jia et al., 2018), (ii) sector analysed (Zorzini et al., 2015), (iii) main contributions of study (Jia et al., 2018), (iv) data collection technique (Bossle et al., 2016); (v) type of sustainability dimension studied (Touboulic and Walker, 2015); and (vi) theory used

to support the study (Zorzini et al., 2015). In terms of the sustainability, at this stage, the TBL dimensions (Elkington, 2004) was adopted due to it has been the main approach adopted in SC sustainability literature (Touboulic and Walker, 2015).

*Category identification for thematic analysis:* The main analysis was developed through a deductive approach using content analysis (Mayring, 2004; Seuring and Gold, 2012). Initially, we used the categories identified in the conceptual model by Jia et al. (2018) that identified four themes related to sustainability in supply chains in emerging countries: drivers, barriers, mechanisms and outcomes. To better represent the main characteristics found in the papers analysed, we divided both drivers and barriers into two sub-categories: internal and external (Busse et al., 2016; Thong and Wong, 2018; Walker et al., 2008). The outcomes from sustainability initiatives were classified according to the TBL+ approach (Fritz and Silva, 2018), given that these additional categories (i.e. cultural and institutional) emerged during content analysis. The categories remedies and performance information emerged during the analysis process. The category remedies is based on Busse et al. (2016) – one of analysed papers. Performance information was added to show a more dynamic process as the analyses show that some suppliers have implemented more sustainability strategies pushed by their positive outcomes from sustainability (Bustos and Moors, 2018; Thong and Wong, 2018).

*Material evaluation:* The final list of papers analysed was organised in an Excel file, which facilitates the transparency of findings (Seuring and Gold, 2012). The detailed list is available upon request. The main findings within each category are defined as those that were evidenced at least three times in the sample of articles, thus providing triangulation of evidence. Concerning internal validation, several rounds of analysis and categorisation were undertaken, to ensure that all information presented in the selected articles was included. To ensure external validity, the results of the analysis were presented at an international conference so that other researchers and practitioners could both assess and comment on the review, as suggested by Seuring and Müller (2008).

## 4. Findings

Section 4.1 below first presents the descriptive analysis in answer to research question 1, whilst section 4.2 discusses the thematic analysts. Finally, section 4.3 proposes a framework based on the evidence in the articles.

### 4.1. Descriptive Analysis

Whilst the earliest article identified was published in 2007, more than half of the papers were published between 2018 and 2019 (Figure 1), which demonstrates the relevance and timeliness of this literature review.

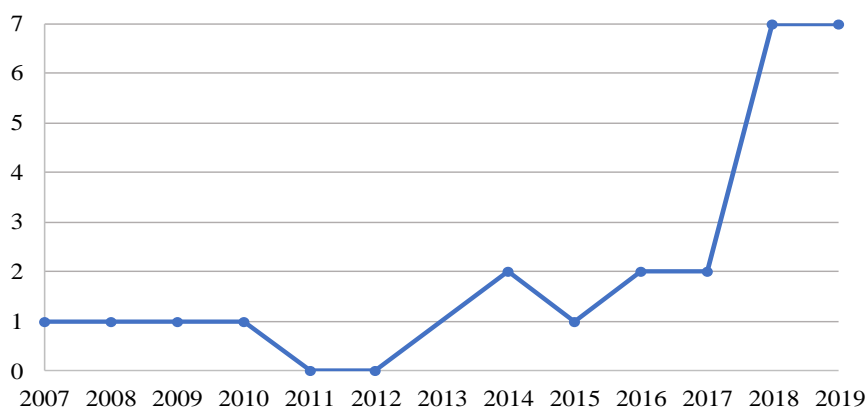


Figure 1 - Evolution of publications over time.

*Journals:* The articles were published in 16 different journals, with the highest number of articles published in the *Journal of Cleaner Production* (Table 1). For the majority of the journals listed in Table 1 (11 out of 16) there is only one publication related to the research focus, indicating that a wide variety of journals have published research with this perspective. The systematic reviews developed by Koberg and Longoni (2019) and Jia et al. (2018) also provided evidence that sustainability related SC articles are published in a large variety of journals, with the *Journal of Cleaner Production* as the most popular journal. As was the case in Koberg and Longoni's (2019) review, most of the articles were published in journals on sustainability in business or on production/ operations management; however, in our sample, we also found articles in journals from different areas, e.g., agro ecology and sociology. This review therefore demonstrates that the topic is not limited to specific areas and may have a multi-disciplinary approach.

Table 1 - Distribution of articles in journals

<b>Journal</b>	<b>Number of articles published</b>
Journal of Cleaner Production	5
International Journal of Physical Distribution & Logistics Management	3
Journal of Business Ethics	2
International Journal of Production Economics	2
Sustainability	2
Agroecology and sustainable food systems	1
Corporate Governance: The international journal of business in society	1
International Journal of Operations & Production Management	1
International Business Review	1
Journal of Agribusiness in Developing and Emerging Economies	1
Journal of Operations Management	1
Progress in Industrial Ecology: An International Journal	1
Rural Sociology	1
Social Responsibility Journal	1
Supply Chain Management: An International Journal	1
Sustainable Development	1

Table 2 below summarises further information for our sample with regard to: authors, countries, sectors, main contributions, data collection techniques, sustainability dimensions and theories/theoretical approaches employed.

Table 2 - Main findings of the articles (N=25)

	<b>Author</b>	<b>Country (empirical field)</b>	<b>Sector</b>	<b>Main contributions</b>	<b>Data Collection Technique</b>	<b>Aspects of TBL sustainability addressed</b>	<b>Theory/ Theoretical approach</b>
1	Ras et al. (2007)	South Africa	Food	They examined supplier-retailer-user cooperation in greening SCs and actions to address barriers.	Interviews and document analysis	TBL	-
2	Tencati et al. (2008)	Vietnam	Multiple	They investigated the influence of increasingly sustainable sourcing policies by multinational corporations on suppliers from developing countries. They found the main difficulties and benefits from sustainability adoption.	Interviews and questionnaires	Mix (Economic and social)	-
3	Ras and Vermeulen (2009)	South Africa	Food	They investigated whether suppliers have entrepreneurial qualities to enable successful responses to sustainability requirements based on the European market and whether these qualities relate to producers' environmental and economic performance.	Questionnaires	Mix (Economic and environmental)	-
4	Alvarez et al. (2010)	Costa Rica, Colombia, Guatemala, Mexico, and Brazil	Food	They studied network evolution and governance dynamics in a multi-stakeholder SC sustainability initiative.	Interviews and document analysis	TBL	-
5	Huq et al. (2014)	Bangladesh	Clothing	They studied the drivers, barriers and enablers of social sustainability in exporting garment industries.	Interviews	Social	Transaction Cost Theory
6	Diabat et al. (2014)	India	Clothing	They investigated facilitators for sustainability management in the supplying organizations.	Questionnaires	TBL	-
7	Bloom (2015)	Honduras	Food	This research evidenced the relevance of public-private partnerships as a vehicle by which corporations can influence agricultural production practices and sustainability.	Interviews	TBL	-
8	Busse et al. (2016)	China	Multiple	They studied contextual barriers to supplier development for sustainability in global SCs and management solutions to mitigate these barriers.	Interviews and document analysis	TBL	-
9	Montiel et al. (2016)	Mexico	Food	They evidenced that distinct sources of sustainability standard uncertainty exist and that all of them negatively impact the certification.	Interviews and questionnaires	Mix (Social and environmental)	Institutional theory
10	Li et al. (2017)	China	Electronics	They examined factors and processes that facilitate suppliers' environmental sustainability performance.	Interviews	Environmental	-
11	Rich et al. (2017)	India	Food	They assessed awareness and perceptions related to certified coffee and the conservation of the environment by coffee producers.	Interviews	TBL	-
12	Bustos and Moors (2018)	Colombia and Mexico	Food	They studied the structural inefficiencies that lead to postharvest losses and looked at how innovative collaboration can lead to more sustainable food suppliers and supply chains.	Interviews	TBL	-
13	Köksal et al. (2018)	Vietnam	Clothing	They investigated the role of intermediaries in the implementation of social management strategies.	Interviews	Social	-
14	Mani and Gunasekaran (2018)	India	Manufacturing	They studied how customer pressures, sustainability culture, government and external stakeholders act as determinants in the adoption of social sustainability.	Questionnaires	Social	Institutional theory, Stakeholder theory and Theory of legitimacy
15	Mani et al. (2018)	India	Multiple	They studied the benefits suppliers and buyers gain by effectively managing social sustainability issues.	Questionnaires	Social	-

16	Sjauw-Koen-Fa et al. (2018)	Indonesia and India	Food	They assessed the best way for food and agribusiness multinationals to include smallholder farmers in their supply strategies and to act sustainably.	Interviews and observations	Mix (Social and environmental)	-
17	Thong and Wong (2018)	Malaysia	Multiple	They evidenced that significant a linkage between social practices and social performance is a pathway for the former to also improve economic performance.	Questionnaires	TBL	Resource-based view, Institutional theory
18	Tong et al. (2018)	China	Multiple	They demonstrated situations when governmental supportive tactics can be more effective than punitive tactics.	Questionnaires	Social	-
19	Akbar and Ahsan (2019)	Bangladesh	Clothing	They investigated the challenges faced by suppliers in implementing safety-compliant workplaces.	Interviews	Social	-
20	Al-Esmael et al. (2019)	Qatar and Oman	Manufacturing	They examined the barriers to socially responsible behaviour by small and medium-sized suppliers.	Questionnaires	Social	-
21	Chen and Chen (2019)	China	Multiple	They studied how buyers' use of power may incite varying perceptions of justice from suppliers that affect sustainable supplier performance.	Questionnaires	TBL	Prospect theory
22	Fontana and Egels-Zanden (2019)	Bangladesh	Clothing	They applied the inter-organizational network approach to the global value chain literature to understand the influence of suppliers' collective behaviour on their corporate social responsibility engagement.	Interviews	Social	-
23	Hajjar et al. (2019)	Brazil	Food	They analysed how governance mechanisms are influenced by environmental, market and social geographies that differ from each other and across sectors.	Interviews	Mix (Social and environmental)	-
24	Koster et al. (2019)	India	Multiple	They researched the factors and barriers to the adoption of social responsibility.	Interviews and secondary sources	Social	Institutional theory
25	Nayak et al. (2019)	Vietnam	Clothing	They studied recent trends of sustainability in the fashion sector in Vietnam.	Interviews	TBL	-

*Countries:* The earliest publication in the sample was published by Ras et al. (2007), who studied the relevance of cooperation between actors of grape and wine SCs in South Africa for the greening of SCs, as well as actions to address barriers. Only one additional paper focused on South Africa (Ras and Vermeulen, 2009), the others are spread between Asia (18) and Latin America (5). According to Jia et al (2018), the high number of publications in Asia illustrates academic interest in this for studying sustainability in the supply chain. These authors also found studies which compared data from countries in different continents. However, in our sample, when articles used data from different countries they were always from the same continent. Therefore, there is potential for further research in a more diverse set of countries and continents.

*Sectors:* As indicated in Table 2, the articles analysed are based on studies of companies operating in a variety of sectors, but mainly in the food (9) and clothing industries (6). Some articles (7) analysed multiple industries in the same research project. Differences between sectors are important to consider because companies' sustainability initiatives and their associated challenges tend to be different according to industry (Jia et al., 2018).

*Sustainability dimensions:* Some of the extant literature has highlighted the scarcity of studies that investigate social sustainability in SC research (Silva et al., 2017; Allaoui et al., 2018); however, in this review, we have found that most of the articles studied social aspects either in isolation or linked to other TBL dimensions (Table 2). Thus our review shows a shift of emphasis compared to prior review that concluded that environmental and/or economic issues are more commonly studied (Seuring and Müller, 2008). This finding is significant given that these studies concern companies in emerging countries where social problems are more commonplace and there is a lack of qualified workers (Silvestre, 2015). It also highlights the importance of social sustainability in SCs involving emerging countries as evidenced in Latin American by Fritz and Silva (2018), who also concluded that SC sustainability is closely linked to local development. This result highlight one of the potential reasons to explain the distance between developed and emerging countries' sustainability dynamic, i.e. the difference in the sustainability meaning and understanding. For instance, Table 2 highlights multiple papers focusing on adoption and management issues which are particular when analysing emerging country suppliers' context.

*Theories/ theoretical approaches:* Only six of the studies used theory during their research. Thus we can conclude that this research is mostly a-theoretical to date, as also concluded by Touboulic and Walker's (2015) in their review of studies into SC sustainability. In our review, institutional theory was most commonly applied (Table 2). Given that all the studies are empirical, the theories were mainly used to determine constructs for categorising and analysing the data and provide explanatory power to the discussion. Further studies need to increase the use of theories (1) to better explain why the distance between buyers and suppliers exist, (2) to reveal how suppliers in emerging countries behave, and (3) highlight what they prioritise in developing strategies, processes and activities.

#### 4.2. Thematic Analysis

In answer to the second research question, the analysis below focuses on the following six main themes, with associated sub-themes: internal and external **drivers** (i.e. motivating factors), **mechanisms** of sustainable action, internal, external and market **barriers** evidenced in this context, **remedies** (i.e. strategies to address these barriers), the main **outcomes** of sustainable action and **performance information** (providing feedback loops for further



initiatives). Table 3 indicates which papers provide a contribution to each of the sub-themes. Sections 4.2.1 to 4.2.6 then discuss each of the themes in turn.

Table 3. Reviewed papers contributing to the themes.

	Author	ID	ED	M	IB	EB	MB	R	EO	SO	ENO	CO	IO	F
1	Ras et al. (2007)		x	x	x	x	x	x	x	x	X		x	
2	Tencati et al. (2008)			x	x	x	x	x	x	x			x	
3	Ras and Vermeulen (2009)			x			x		x		X			x
4	Alvarez et al. (2010)			x										
5	Huq et al. (2014)	x	x		x	x	x		x	x			x	
6	Diabat et al. (2014)			x						x				
7	Bloom (2015)	x	x	x	x	x	x	x	x		X	x	x	
8	Busse et al. (2016)					x		x						
9	Montiel et al. (2016)		x	x		x	x							
10	Li et al. (2017)	x		x		x		x				x	x	
11	Rich et al. (2017)			x		x	x						x	
12	Bustos & Moors (2018)			x	x	x	x	x	x		X		x	x
13	Köksal et al. (2018)	x	x	x	x	x				x		x	x	
14	Mani and Gunasekaran (2018)	x	x									x		
15	Mani et al. (2018)		x	x									x	
16	Sjauw-Koen-Fa et al. (2018)			x	x	x								
17	Thong and Wong (2018)	x	x											x
18	Tong et al. (2018)					x	x							
19	Akbar and Ahsan (2019)				x	x	x	x					x	
20	Al-Esmael et al. (2019)				x	x	x							
21	Chen and Chen (2019)		x			x								x
22	Fontana and Egels-Zanden (2019)		x	x		x		x					x	
23	Hajjar et al. (2019)	x	x	x	x		x		x				x	
24	Koster et al. (2019)		x		x	x	x							
25	Nayak et al. (2019)		x	x					x					

Key to Themes: ID: Internal Drivers, ED: External Drivers, M: Mechanisms, IB: Internal Barriers, EB: External Barriers, MB: Market Barriers, R: Remedies, EO: Economic Outcomes, SO: Social Outcomes, ENO: Environmental Outcomes, CO: Cultural Outcomes, IO: Institutional Outcomes, F: Feedback as a new driver.

#### 4.2.1. Internal and external drivers

The main **internal drivers** identified were: the organization's strategic orientation towards sustainability; the goal to improve competitiveness; and top management's commitment to sustainability goals (Table 4). For example, companies in the clothing industry in Vietnam experienced increased social sustainability awareness after the Rana Plaza incident in Bangladesh in 2013 (Köksal et al., 2018). Thus a new organizational strategic orientation emerged as a consequence of this social tragedy as it pushed them to act more sustainably. The importance of sustainability goals was also identified in the coffee producers' context, as in these organisations the internal aim to gain certifications has led to these certifications acting as a guide for their sustainability initiatives as well as a tool to achieve company learning (Hajjar et al., 2019).

The main **external drivers** identified were: buyers' requirements; pressure by the local community, NGOs/other stakeholders; and local government regulations (Table 4). Buyer's

requirements included certifications in 11 of the articles. In the further pursuit of buyers' requirements, some studies emphasised the importance of suppliers participating in the establishment of SC sustainability strategies (Chen and Chen, 2019; Fontana and Egels-Zanden, 2019). In particular their perception of justice being of importance to buyers motivates them to be more sustainable (Chen and Chen, 2019). Pressure by the local community, NGOs/other stakeholders was evidenced as a result of tragedies or instances of slave labour gaining prominence in the media (Huq et al., 2014; Köksal et al., 2018).

Table 4 – Drivers for sustainability adoption by suppliers from emerging countries

Drivers	Description	References
Internal	Organization's strategic orientation towards sustainability	Köksal et al., 2018; Li et al., 2017; Mani and Gunasekaran, 2018; Thong and Wong, 2018
	Goals to improve competitiveness	Bloom, 2015; Hajjar et al., 2019; Huq et al. al., 2014; Thong and Wong, 2018
	Top management's commitment to sustainability goals	Huq et al. al., 2014; Köksal et al., 2018; Li et al., 2017
External	Buyers' requirements	Bloom, 2015; Chen and Chen, 2019; Fontana and Egels-Zanden, 2019; Huq et al., 2014; Hajjar et al., 2019; Köksal et al., 2018; Koster et al., 2019; Mani and Gunasekaran, 2018; Montiel et al., 2016; Nayak et al. (2019); Ras et al., 2007
	Pressure by local community, NGOs and other stakeholders	Bloom, 2015; Fontana and Egels-Zanden, 2019; Huq et al., 2014; Köksal et al., 2018; Mani and Gunasekaran, 2018
	Local government regulations (regulatory pressure)	Fontana and Egels-Zanden, 2019; Köksal et al., 2018; Mani et al, 2018; Nayak et al., 2019; Thong and Wong, 2018

The drivers evidenced above are very similar to those found by Jia et al. (2018) in their literature review, however, our study contributes to the literature because we found national regulation acting as an additional driver. Some scholars (Jia et al., 2018; Koberg and Longoni, 2019; Morais and Silvestre, 2018) argue that in emerging countries the national government laws on environmental concerns and labour rights are less strict and lack regulatory enforcement. However, from the perspective of the suppliers studied in this context, it can be concluded that local government regulations nonetheless act as a regulatory pressure. Future research is therefore needed to understand how, when and why local regulation does act as a driver for emerging country suppliers to adopt more sustainable practices.

#### 4.2.2. Mechanisms

The mechanisms are the means by which suppliers start to act more sustainably (Table 5). The two mechanisms most commonly adopted by suppliers as identified in the papers were: (i) collaboration with SC members and other stakeholders such as universities, research centres and NGOs; and (ii) the adoption of sustainability related certifications. Certifications were spotted as a prerequisite to access developed country markets. For example, Montiel et al. (2016), studying Mexican suppliers, found evidence that exporter businesses were under strong pressure to certify and that lack of certification was a barrier to market entry. However, most the extant research suggests that suppliers believe that certifications enable the expansion of their markets and is the main tool by which buyers assess them (Alvarez et al., 2010; Hajjar et al., 2019; Huq et al., 2014; Köksal et al., 2018; Koster et al., 2019; Montiel et al., 2016). Research has also shown that this certification mechanism is often linked to that of collaboration, as collaboration is often the means by which suppliers learn. Hence, collaboration that leads to successful accreditation has been an important mechanism for suppliers to ensure that their sustainability initiatives are acceptable to their buyers (Bloom, 2015; Bustos and Moors, 2018), even they are not that clear by themselves. In addition, training and raising the awareness of employees towards sustainability has been shown by some authors to be a key

means of changing employee culture (Nayak et al., 2019) as well as being a requirement of certifications (Köksal et al., 2018). Sustainable innovations were also adopted as mechanisms. Formal governance mechanisms (e.g., program Nespresso AAA sustainable quality studied by Alvarez et al., 2010) were identified toward sustainability, once suppliers needed to follow buyer requirements to improve the SC relationship, and strength trust and transparency throughout the supply chain. Sometimes, the governance mechanisms start informally and later become formal to strengthen the relationships between organizations (Alvarez et al., 2010) and, in some cases, these mechanisms guided by certifications to improve management/efficiency (Hajjar et al., 2019).

Table 5 – Mechanisms to sustainability adopted by suppliers from emerging countries.

	Description	References
<b>Mechanisms</b>	Sustainability Certifications	Alvarez et al., 2010; Hajjar et al., 2019; Huq et al., 2014; Köksal et al., 2018; Koster et al., 2019; Montiel et al., 2016; Nayak et al. (2019); Ras and Vermeulen, 2009; Rich et al., 2017; Sjauw-Koen-Fa et al., 2018; Tencati et al., 2008
	Collaboration with SC members	Bustos and Moors, 2018; Li et al., 2017; Mani et al., 2018; Tencati et al., 2008; Alvarez et al., 2010; Hajjar et al., 2019; Bloom, 2015
	Collaboration with other suppliers	Bloom, 2015; Bustos and Moors, 2018; Fontana and Egels-Zanden, 2019
	Partnerships with universities, research centres, NGOs	Bloom, 2015; Bustos and Moors, 2018; Hajjar et al., 2019; Tencati et al., 2008;
	Sustainable innovations	Diabat et al., 2014; Ras and Vermeulen, 2009; Ras et al., 2007; Tencati et al., 2008
	Training/awareness of employees	Köksal et al., 2018; Nayak et al., 2019; Tencati et al., 2008
	Formal governance mechanisms	Alvarez et al., 2010; Bloom, 2015; Hajjar et al., 2019

A key research gap in these studies is that none of them have considered the assessment of sub-suppliers. Thus this review confirms the need to study sustainability beyond the first tier, and to include the adoption of sustainability in the second tier and so on. Therefore there is a need for future research to investigate when and how emerging country suppliers in turn assess their suppliers and how this affects sustainability in GSCs, thereby providing a multi-tier perspective on SC sustainability. This led us to recognise that when suppliers disseminate sustainability to sub-supplier a different approach is possible because they are closer and know needs and problems. This may create a new approach for GSC where buyers are not only concerned about for example certification, but how it really reach the sub-supplier and change their sustainability actions.

#### 4.2.3. Barriers

The barriers to supplier sustainability are listed in Table 6, categorised into internal, and external barriers, as discussed in the research method section above. Lack of knowledge of professionals/managers was the main *internal barrier* evidenced in the analysed studies. This barrier weakened buyer-supplier relationships and affected the suppliers' reputation regarding sustainability (Köksal et al., 2018). Non-monetary costs, as for example associated with changing mentalities and cultures, can also act as an internal barrier to change (Huq et al., 2014; Tencati et al., 2008). Financial constraints were the final sub-category of internal barriers, occurring when sustainability-related adaptations/improvements demand high investments and suppliers do not receive additional payment for making these changes (Huq et al., 2014; Rich et al., 2017). For example, the transition to organic production by grape and wine South African producers was costly due to a lack of knowledge leading to a gradual implementation through

trial and error (Ras et al., 2007), acting as a long term investment for which there was no immediate payback.

In terms of *external barriers*, the contextual differences between buyers and suppliers were evidenced in a significant number of studies. These differences included socioeconomic, linguistic and cultural differences which impact supplier operations. In particular, some studies suggest that suppliers have complained that lack of buyer understanding of these differences leads buyers to impose sustainability requirements that do not correspond to the suppliers' cultural and socioeconomic context. For example, supplier managers have been found to believe that their employees want to do overtime to gain additional payments, but this contravenes certification/buyer rules on the number of hours of overtime allowed per day (Huq et al., 2014). Huq et al. (2014) also indicated that some buyers require childcare provision in the supplier workplace, however, the workers did not make good use of these facilities because in Bangladesh infants are typically cared for by relatives when their guardian is at work. Thus, supplier managers described this provision as an unnecessary cost. In addition, Busse et al. (2016) and Köksal et al. (2018) signaled that linguistical, geographical and cultural differences between buyers and suppliers can disrupt the negotiation process and working practices. For example, Busse et al. (2016) suggest that linguistic distance affects communication leading to inefficiencies in transmitting messages and loss of meaning. Their evidence indicates that supplier managers often prefer to send emails rather than have calls due to difficulties using the buyers' languages. Sustainability efforts in SCs may be hampered by misunderstandings. In contrast, Köksal et al. (2018) indicated that geographical and cultural proximity enables the building of trust and long-term relationships and, consequently, improve SC sustainability.

The sustainability requirements imposed by buyers was identified in multiple articles. For example, Chen and Chen (2019) evidenced that when focal buyers simply issue codes of conduct for their suppliers, without give them the support or without have the suppliers' commit, the codes/standards can remain only like a wish list. They also evidenced the buyers' imposition of a code of conduct acting as obstacle to the suppliers' engagement on sustainability. That ratifies that some requirements can work as barrier because they are not connecting buyers and suppliers properly. Therefore, the suppliers' perception of justice would tend to motivate them to act more sustainably and their participation in the strategies of sustainability could become the goals more realistic (Chen and Chen, 2019; Fontana and Egels-Zanden, 2019). When suppliers act in uncertain scenery, they have the risk of suffering a greater loss negatively affecting them and the entire SC.

Weak national legislation/poor oversight in emerging economies acts as a barrier to suppliers' (Abkar and Ahsan, 2019) and affects the creation of country culture to sustainability and, in this sense, that managers and workers use previous experiences to improve sustainability. Lack of governmental support was also evidenced as a barrier in some studies with Tong et al. (2018) concluding that supportive government tactics are more effective than punitive tactics. Local corruption was evidenced as an additional barrier to supplier sustainability because the outcome of government inspections are commonly influenced by bribes (Huq et al., 2014). Hence suppliers have avoided the consequences of breaking the law through corruption (Köksal et al., 2018).

Table 6 – Barriers to sustainability adoption by suppliers from emerging countries.

<b>Barriers</b>	<b>Description</b>	<b>References</b>
Internal	Lack of knowledge of professionals and managers	Al-Esmael et al., 2019; Bloom, 2015; Bustos and Moors, 2018; Hajjar et al., 2019; Köksal et al., 2018; Ras et al., 2007; Sjaww-Koen-Fa et al., 2018; Tencati et al., 2008
	Non-monetary costs of changes, including training/monitoring	Hajjar et al., 2019; Huq et al., 2014; Tencati et al., 2008

	Financial constraints	Abkar and Ahsan, 2019; Koster et al., 2019; Tencati et al., 2008
External	Contextual differences between buyers and suppliers (socioeconomic/linguistic/cultural)	Abkar and Ahsan, 2019; Bloom, 2015; Busse et al., 2016; Bustos and Moors, 2018; Huq et al., 2014; Köksal et al., 2018; Koster et al., 2019; Li et al et al. 2016; Ras et al., 2007; Rich et al., 2017; Sjauw-Koen-Fa et al., 2018; Tencati et al., 2008; Tong et al., 2018;
	Sustainability requirements imposed by buyers	Chen and Chen, 2019; Fontana and Egels-Zanden, 2019; Koster et al., 2019; Ras et al., 2007; Rich et al., 2017; Tencati et al., 2008
	Weak legislation/poor oversight in the home country	Abkar and Ahsan, 2019; Huq et al., 2014; Koster et al., 2019; Tencati et al., 2008
	Local corruption	Abkar and Ahsan, 2019; Huq et al., 2014; Köksal et al., 2018
	Lack of governmental support	Al-Esmael et al., 2019; Huq et al., 2014; Ras et al., 2007

In comparison with previous literature reviews on emerging countries and GSCs (Jia et al., 2018; Koberg and Longoni, 2019), we found additional sub-categories for the barriers that suppliers have faced in emerging countries: (i) the contextual differences between buyers and suppliers; (ii) the sustainability requirements imposed by buyers; (iii) non-monetary costs of training/monitoring of changes. Our study therefore provides a fuller understanding the barriers faced by suppliers in these countries. Recognizing these barriers is important in enabling companies to develop strategies to overcome them and to consider the role of various stakeholders and other SC agents in improving SC sustainability (Jia et al., 2018). Thus, as the studied barriers were identified, future research should explore how buyers can support emerging country suppliers to face these barriers in the sense of improving sustainability in the entire SC.

#### 4.2.4. Remedies

Different from other reviews, we found relevant factors in suppliers' sustainability-oriented dynamic as strategies to face barriers. Busse et al. (2016) denominated these strategies as remedies and defined that as consciously planned management efforts to mitigate the obstructive effects associated with one or more barriers. Remedies differ from governance mechanisms since they are developed by suppliers without influence of buyers. It represents their own planning on how to surpass barriers and become more sustainable based on their needs and knowledge. Thus, by analysing the papers, we found that when emerging country suppliers face barriers, they fortify their inter-organizational relationships and communication among SC partners to support knowledge sharing and learning (Abkar and Ahsan, 2019; Bloom, 2015; Busse et al., 2016; Bustos and Moors, 2018; Fontana and Egels-Zanden, 2019; Li et al., 2017; Ras et al., 2007; Tencati et al., 2008). Such fortification refers to changes in the relationship that requires closer connections, but not necessarily led them to cooperate or collaborate. It seems more a local way to solve problems. Thus, this strategy improved their sustainability dynamic (Abkar and Ahsan, 2019), reduced their lack of knowledge related to sustainability, and improved their processes (Bustos and Moors, 2018; Fontana and Egels-Zanden, 2019). In this sense, the stronger relationship contributed to reduce structural inefficiencies along the SCs (Bustos and Moors, 2018) and protected the relationship-specific investments (Busse et al., 2016; Fontana and Egels-Zanden, 2019).

Analysing remedies in the literature on emerging countries suppliers' sustainability was another important contribution from our study. It demonstrates the need for further analysis of these remedies, to better understand how suppliers and sub-suppliers in emerging countries have faced barriers to have sustainability. This perspective demonstrates a clear recognition of bottom-up actions from suppliers to GSC activities. Future studies can address remedies in

specific sectors and relating barriers to specific strategies to face them worldwide. Giving more attention to these remedies, further studies can support understanding of them as a strategy to reduce the distance between buyers and suppliers and reduce institutional voids.

#### 4.2.5. Outcomes

The outcomes from the adoption of sustainability initiatives by suppliers are summarised in Table 7.

Table 7 – Outcomes of sustainability adoption by suppliers from emerging countries

Outcomes	Description	References
Economics	Reduction of production costs	Bloom, 2015; Bustos and Moors, 2018; Hajjar et al., 2019; Tencati et al., 2008
	Increased productivity	Bustos and Moors, 2018; Hajjar et al., 2019; Huq et al., 2014; Tencati et al., 2008
	Improvement in the quality of products	Bloom, 2015; Ras et al., 2007; Nayak et al. (2019); Tencati et al., 2008
	Better sales price for products	Alvarez et al., 2010; Hajjar et al., 2019; Ras et al., 2007
Social	Employees' improved well-being	Diabat et al., 2014; Huq et al., 2014; Köksal et al., 2018; Ras et al., 2007; Tencati et al., 2008;
Environmental	Reduction of operational environmental impacts	Bloom, 2015; Bustos and Moors, 2018; Ras and Vermeulen, 2009; Ras et al., 2007
Cultural	Changes to companies' culture/traditions for sustainability	Bloom, 2015; Köksal et al., 2018; Li et al., 2017; Mani and Gunasekaran, 2018
Institutional	Better company reputation	Abkar and Ahsan, 2019; Bloom, 2015; Bustos and Moors, 2018; Hajjar et al., 2019; Huq et al., 2014; Köksal et al., 2018; Li et al., 2017; Mani et al., 2018; Ras et al., 2007; Tencati et al., 2008
	Organizational learning	Fontana and Egels-Zanden, 2019; Hajjar et al., 2019; Köksal et al., 2018; Li et al., 2017; Mani et al., 2018; Tencati et al., 2008
	Better organizational processes	Bloom, 2015; Bustos and Moors, 2018; Hajjar et al., 2019; Li et al., 2017; Mani et al., 2018; Rich et al., 2017; Tencati et al., 2008

Considering sustainability *economic* dimension, there are some specificities that need to be mentioned. In terms of certification there are differences on how economic issues emerge. For instance, the suppliers' power of decision about products prices was evidenced only when products were differentiated - e.g. organics (Hajjar et al., 2019; Ras et al., 2007). As previously mentioned in the topic on barriers, most suppliers can not take this decision as buyers require certifications/standards and themselves stipulate the value to pay for products. The outcomes for the *social* dimension that were associated with employees improved well-being included reduced absenteeism and employee turnover, which in turn, lead to reductions in workforce related costs (Tencati et al., 2008). In terms of reduction of *environmental* impacts from their operations, some suppliers applied sustainability practices to their production processes thereby reducing the use of natural resources (Bustos and Moors, 2018). In agriculture, this improved the management of water and soil use (Bustos and Moors, 2018; Ras and Vermeulen, 2009). The *cultural* aspects refer to the influence of sustainability in companies' daily operations (Fritz and Silva, 2018). For example, Köksal et al. (2018) evidenced changes on workplace culture to better understanding the relevance of quality and on their skills resulted by sustainability trainings. They also found improvements on communication and reduction of cultural tension between buyers and suppliers. In addition, Bloom (2015) found improvement on workers' awareness/perception linking the relevance of food safety and sustainability, which was a result from organisational cultural changes. The outcomes related to *institutional* dimension were discussed in a considerable number of articles in terms of improvements in company reputation,

organizational learning and better organization of business processes. Particularly, reputation was improved when suppliers gained visibility due to certifications that also provided legitimacy and indicated reliability for doing business (Hajjar et al., 2019; Köksal et al., 2018). This is because buyers feel more secure regarding supplier performance and quality of processes and products (Bloom, 2015; Huq et al., 2014). Thus learning about new practices through the certification process leads to improved competitiveness (Bloom, 2015; Hajjar et al., 2019).

The findings increase the reflection of SC sustainability since it does not focus on economic, social and environmental dimensions but also includes cultural and institutional outcomes (Fritz and Silva, 2018). Thus the extant literature suggests that within an emerging country context, institutional outcomes include improved supplier organisational processes leading to improved reputation in the international market/GSC. For example, the recognition of organizational culture outcomes is relevant in the emerging countries suppliers' context mainly due to companies, despite the faced barriers, changed their daily operations toward managers/employees' sustainability awareness and, consequently, of their values, strategies, practices and traditions. Therefore, future research can further explore institutional and cultural dimensions on suppliers and sub-suppliers' sustainability aiming to better understanding how they act sustainably according to these dimensions and the outcomes from that.

#### *4.2.6. Performance information: outcomes as new drivers*

The findings indicate feedback of suppliers' sustainability performance acting as motivating factors for continuity of sustainability practices. When suppliers obtained positive outcomes from their sustainability initiatives, they used to implement more strategies in that direction. Thus, we evidenced outcomes feedback reinforcing the motivators for sustainability initiatives when the improvements in processes acted as new drivers for more sustainability initiatives (Bustos and Moors, 2018; Thong and Wong, 2018). Additionally, Chen and Chen (2019) found buyers recompenses to suppliers acting as new drivers for suppliers' sustainability what consequently improve sustainability in the entire SC. They also found positive suppliers' perception about justice and awards in relationship with buyers also motivating them in this way. Projects of continuous improvement also acted as new driver to sustainability because companies have aimed better scores on certifications programs (Hajjar et al., 2019).

This study found the feedback acting as new drivers to sustainability initiatives what provide a more dynamic interaction between factors related to sustainability in emerging countries. Further studies might break the one-way flow of information to understand a more dynamic interaction between factors found in our framework. Further research therefore should investigate it empirically to better explain how performance information influences in specifics internal and external motivators to sustainability.

### 4.3 Framework on sustainability-oriented dynamic of emerging countries suppliers in GSCs

According to the literature findings and discussions presented in the previous topics, a framework was proposed aiming to explain the emerging country global suppliers' sustainability (Figure 4). The analysed studies highlighted the importance of sustainability strategic orientation and goals to improve competitiveness as drivers to sustainability initiatives of suppliers (internal drivers) as well as the pressure by buyers, stakeholders and government rules (external drivers). Thus, the findings suggest the suppliers' operation in the international market has pressurised them to act more sustainably, making appropriate strategies to remain competitive and learn by that (Fontana and Egels-Zanden, 2019; Jia et al., 2018). In addition, local government regulations as driver to sustainability was a novelty in this analysis as

previous literature indicated they are not strict in developing countries (Tanco et al., 2018). This evidence leads, therefore, to the first proposition:

*P1: Internal factors such as strategic orientation, goal to improve competitiveness, manager's commitment and external factors such as buyers' requirements, pressure by stakeholders and national regulations can boost emerging countries suppliers' sustainability initiatives.*

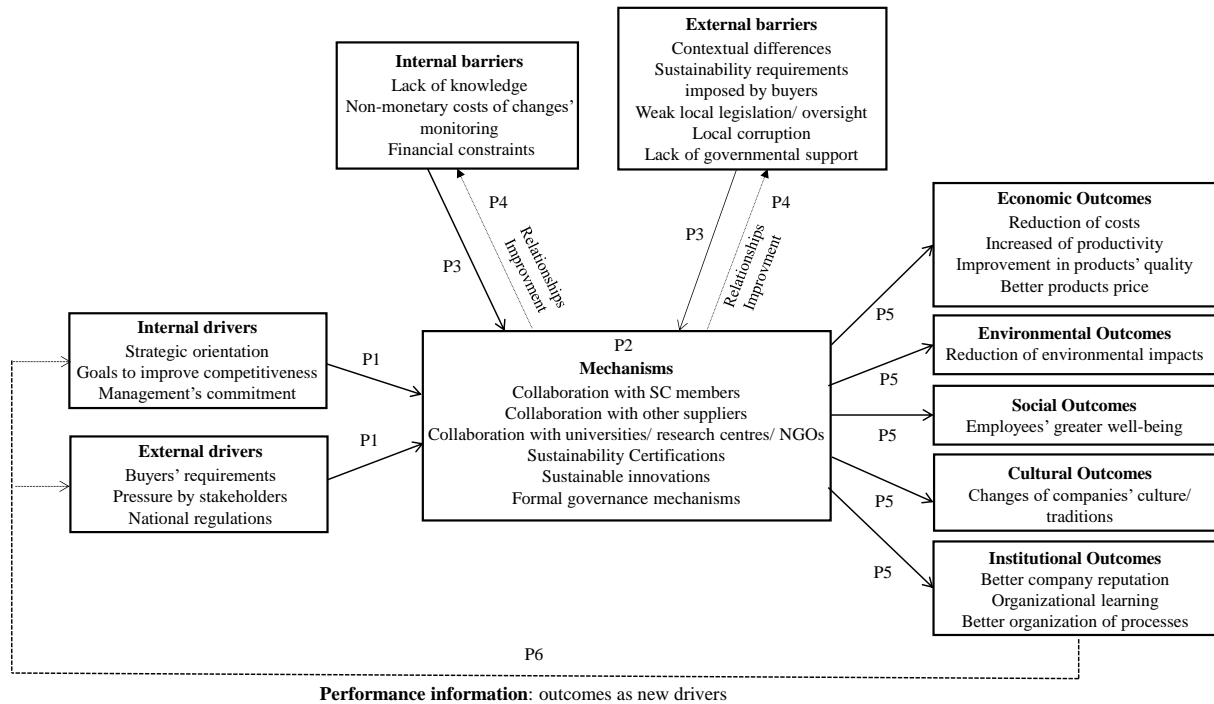


Figure 4. Theoretical framework on emerging countries suppliers' sustainability in global supply chains.

In terms of mechanisms, emerging countries suppliers have mainly adopted collaboration and certifications as guide and tools to create value and more sustainability. It corroborates the previous literature showing these tools have supported their sustainability dynamic to operate and be competitive in GSCs (Benstead et al., 2018; Jia et al., 2018). Thus, our second proposition is:

*P2: The adoption of collaboration and certifications are mechanisms that can improve the emerging countries global suppliers' sustainability.*

The findings indicated a long list of emerging countries suppliers' barriers faced during their sustainability initiatives (Koberg and Longoni, 2019; Tanco et al., 2018). As previous literature suggested, the sample of analysed papers indicate these companies have faced barriers mainly related to lack of knowledge (Agyemang et al., 2018) and to differences between buyers' and suppliers' context (Awasthi et al., 2018; Jia et al., 2018; Liu et al., 2019; Park et al., 2018). Thus, recognize these barriers is important to organizations base their strategies to face them to achieve sustainability learning (Hajjar et al., 2019) and positive outcomes (Jia et al., 2018) as well focal companies rethink their strategies and to support their suppliers in these obstacles. Therefore, we present our third proposition:

*P3: The reduction of contextual distance between buyers in developed countries and emerging country global suppliers could improves supply chain sustainability.*



The analysed studies suggest the emerging country global suppliers have improved their interorganizational relationships aiming to eliminate/reduce effects of faced barriers in their sustainability strategies/operations. As they are aware of their difficulties to operate sustainably, based on their needs and knowledge, they improve these relationships to surpass barriers and become more sustainable. Thus, the relationships improvement has been an important remedy for them to promote organizational learning/capabilities improvement for they act more sustainably. These relationships therefore have acted as enabler to suppliers' sustainability as also evidenced by some scholars (Benstead et al., 2018; Jia et al., 2018; Koberg and Longoni, 2019). Thus, the fourth proposition is:

*P4: The improvement of inter-organizational relationships could support emerging country global suppliers surpassing barriers in their sustainability initiatives.*

The findings suggest these suppliers have obtained positive outcomes from their sustainability initiatives, most related to institutional aspects of sustainability. As they improved their production processes, organizational learning and reputation, the analyses indicate they gained visibility and buyers trust from certifications (Hajjar et al., 2019; Köksal et al., 2018) as well their better performance and the quality of processes and products (Bloom, 2015; Huq et al., 2014). Learning on new practices through the certification processes leads also improved their competitiveness (Bloom, 2015; Hajjar et al., 2019). These outcomes revealed the relevance of the institutional dimension of sustainability (Fritz and Silva, 2018) in emerging country global suppliers' context which also demonstrated the strengthen of their operations management and legitimacy/reliability for doing business (Hajjar et al., 2019; Köksal et al., 2018). Thus, the fifth proposition states:

*P5: Beyond TBL dimensions outcomes, emerging country global suppliers strengthen mainly their sustainability institutional aspects through operation in the international market.*

We also found positive outcomes obtained from sustainability initiatives motivating emerging country global suppliers to continue operating sustainably. These outcomes therefore have acted as new drivers strengthening strategies/actions in this sense what indicate that knowledge accumulated from experiences in sustainability initiatives tend to support and motivate new strategies/initiatives to sustainability in SCs (Liu et al., 2019). Thus, these findings demonstrate benefits from sustainability feedbacking continuous improvements on sustainability.

*P6: Positive outcomes from emerging country global suppliers' sustainability initiatives can boost more strategies in this direction.*

Therefore, the proposed framework presents the relationship between the factors that motivate suppliers' sustainability initiatives (internal and external drivers), their mechanisms of action, the barriers (internal and external ones) to the adoption of sustainable strategies and practices, the remedies (strategies to cope with barriers) and their benefits from sustainability operation and, consequently, for the entire GSC, considering these suppliers as participants and involved in these systems. It also presents performance information feedbacking to new drivers for sustainability initiatives. Thus, the structure demonstrates, in a schematic way, the conjunction of the theoretical elements found in the analysed studies on emerging country global suppliers' sustainability from their perspective. These elements can improve the understanding on how these suppliers act sustainability in GSCs context supporting empirical studies and basing sustainability strategies as the suppliers' perspective is clearer.

## 5. Conclusions

In this study we studied an emerging countries supplier perspective to sustainability management in GSCs. During this research, theoretical contributions already detailed in the findings section were identified and deserve further explanation because of its significant contributions:

We found national laws act as a driver to suppliers' sustainability management. It demonstrates the importance of increasing rules/inspection on sustainability, including environmental (e.g. waste management), social (e.g. labour rights) and institutional issues (e.g. corruption) in emerging countries to improve the competitiveness and companies' sustainability beyond the improvement of those conditions in these countries as well boosting GSC sustainability.

We identified that suppliers' contexts can act as barrier to sustainability implementation and management. Thus, this paper contributes by demonstrating the need to reduce the institutional distance between buyers and suppliers. It means that buyer companies need to increase their awareness about what has been done by suppliers, how they learn, which kind of barriers they face and how the contextual difference affects the management of sustainability.

Findings have showed that the improvement of inter-organizational relationships has been used as a remedy by suppliers to fight/mitigate barriers which contribute to emphasize the SC collaboration. It is necessary to increase research on SC collaboration as one of the main issues to manage suppliers' sustainability. This evidence also ratify that suppliers need to be heard from their own practices and expectations, which can contribute to reduce institutional distance.

The strengthening of institutional sustainability indicates how suppliers' sustainability management is crucial to GSC sustainability but requires further attention by buyers. It demonstrates how important is that focal companies have a better understanding of suppliers' contexts/needs and improve buyer-supplier relationship to reduce/share risks and improve all aspects of SC sustainability. Sustainability requirements cannot be limited to pressures and requisites, it is necessary an extra work in the relationship.

In a complementary way to including institutional aspects to analyse sustainability, the TBL+ approach also requires more attention to cultural outcomes. During this research, we noted that there is a need for looking beyond environmental and social impact of GSCs, to also consider why and how influences are produced and reproduced from buyers to suppliers. In addition, we found that local culture/traditions can be also part of supplier sustainability management.

Finally, the evidence of feedback loop as necessary to improve and drive sustainability performance contributes to a more dynamic analysis of sustainability in GSCs mainly considering the information have flowed in two directions. This information also can support the sustainability management and its dissemination to sub-suppliers since new insights emerge during the relationship.

Managerial implications we also identified from this research. At first, we highlight the relevance of outcomes according to sustainability-orientation of suppliers. Despite existing barriers, emerging country suppliers have used remedies to overcome them and improve their sustainability performance. Managers need to explore more these remedies strategies in their sustainability management and ensure closer connections between buyers and suppliers. The existence of positive feedback outcomes as motivators for more sustainability initiatives was another relevant finding to manage GSCs. It demonstrates the importance of sustainability assessment, but also ratifies the need for better communication and information sharing to reinforce the feedback loops. Thus, managers need to think about the new strategies' making

for them and for the SC based on real information. It will additionally support the dissemination of sustainability to sub-suppliers.

For suppliers' and focal companies' managers, this research is relevant because it systematizes the literature information showing how it has been for suppliers in various sectors and in different emerging countries the reality of adopting sustainability. As originality, we believe that this is the first literature review that addresses these suppliers' sustainability-oriented dynamic from their own perspective and it evidenced the relevance of consider and reduce the difference between buyers and suppliers' context to sustainability in GSCs. Despite not addressing other factors, this paper provides a great start point to discussions following the suppliers' perspective in GSCs. Further studies may include databases using other languages, which can offer additional insights. In addition, new studies can clearly address the theoretical contributions presented in this paper and study empirically different GSCs, especially to better understand the contextual distance between GSC's actors and their effects on supply chain sustainability.

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**Paper 2 - Sustainability initiatives and collaborative practices: a study of emerging economy suppliers**

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## **Sustainability initiatives and collaborative practices: a study of emerging economy suppliers**

**Abstract:** This paper analyses how collaborative practices influence sustainability initiatives and the relational rents of Brazilian coffee companies supplying global supply chains (GSC)s. Multi-case study data was collected via interviews and documentary analysis and examined using the relational view theoretical lens. The results indicate that collaborative practices lead to significant improvements within the supplier's sustainability initiatives and consequently within their processes related to the exportation of goods. Thus this study suggests that collaborative practices generate important relational rents in GSCs (for example through relationship specific assets) and are important facilitators of sustainability for emerging economy suppliers.

**Keywords:** Collaborative Practices. Sustainability initiatives. Emerging Country Supplier. Global Supply Chain. Sustainable Supply Chain Management.

### **1. Introduction**

Sustainability has progressively become necessary for companies to operate in increasingly competitive and globalized markets (Mani et al., 2018; Morais & Silvestre, 2018). Thus, businesses have been pressurised into seeking, in addition to better economic performance, better results in the social and environmental dimensions of sustainability (Mani et al., 2018). For the subsequent socio-environmental strategies to be achieved, the adoption of sustainability throughout the supply chain (SC) is needed (Silvestre, 2016). These supply chains, when crossing country borders, extend their reach by integrating organizations from emerging countries (Morais & Silvestre, 2018). For suppliers in these countries, acting sustainably in global supply chains (GSC) can be a challenge (Liu et al., 2019). When supplying to multinational companies or those from developed nations, these suppliers are charged by the legislation and consumers of these countries, which tend to be more rigid and demanding than those of their national counterparts (Seuring & Gold, 2013; Silvestre, 2015).

Thus, operating within GSCs has been suggested to be a key driver for the adoption of more sustainable initiatives by companies in developing countries (Huq et al., 2014; Köksal et al., 2018; Koster et al., 2019). This has aroused the interest of researchers such as Bustos and Moors (2018), Hajjar et al. (2019), Li et al. (2017), Mani et al. (2018) and Tencati et al. (2008). These researchers have aimed to better understand, empirically, the role of suppliers in GSCs,

especially in relation to the mechanisms used in strategies and sustainable practices such as, for example, eco-innovations and sustainable certifications. Despite the aforementioned research findings, other authors such as Huq et al. (2014), Jia et al. (2018) and Liu et al. (2019) point out that there is still little evidence in the literature about these mechanisms. Therefore, it is necessary to carry out further empirical studies from the perspective of the suppliers themselves, so that a voice is given to these agents. In addition, recent investigations by Bustos and Moors (2018), Köksal et al. (2018), Hajjar et al. (2019) and Koberg and Longoni (2019) also provide evidence that inter-organizational relational mechanisms, such as collaborative practices, have been key factors for suppliers in emerging countries in sustainability and value creation strategies. However, as highlighted by Jia et. al (2018) and Koberg and Longoni (2019), it is important to understand the specifics of each context in which the suppliers operate. This will aid in the sustainability development of suppliers and the entire GSC. It is therefore argued here that more specific research is needed on how collaborative practices influence the sustainability of SCs and their members (Azevedo et al., 2018); particularly given that prior research has concluded that such practices involving multiple institutions are crucial for Sustainable Supply Chain Management (Lu et al., 2014). Thus, in this study we are interested in the relational rents that suppliers achieve through their sustainability initiatives as a consequence of collaborative practices involving national and international partners (e.g. inter-organisational cooperation and networks).

Thus this paper aims to answer the following research question: *how have collaborative practices influenced sustainability initiatives and the relational rents of emerging economy suppliers?* It is argued that an appropriate context in which to answer this question is the sustainability initiatives of coffee growing organizations in Brazil, specifically in the Cerrado Mineiro Region, state of Minas Gerais. The intensity of this activity in this region is representative of the Brazilian economy, and there are producer organizations participating in



important GSCs such as Nespresso and Illy. Coffee is one of the top ten products exported by Brazil, which supplies 32% of the world market for fresh beans and, in recent years, Brazil has been the world's largest producer and exporter of coffee (Embrapa, 2018; Conab, 2020). The state of Minas Gerais is the largest producer, responsible for 54% of Brazilian production (Conab, 2020). Coffee production in the Cerrado Mineiro Region represents 25% of the total production in Minas Gerais and its main destination is the international market (Região do Cerrado Mineiro, 2020).

It is important to note that the analysis uses the precepts of the Relational View (Dyer & Singh, 1998), in particular, the sources of relational rents proposed by the theory are used to show how relational rents are generated and sustainability achieved (Touboulic & Walker, 2015).

This paper makes a unique contribution, since, although many studies have shown that the adoption of sustainability initiatives of companies improves corporate performance, there is still no conclusive data on this in the context of suppliers from developing countries (Pakdeechoho & Sukhotu, 2018; Liu et al., 2019). Moreover, studies on sustainability in agrifood chains have received insufficient attention in the literature (Allaoui et al., 2018), and only a few studies have addressed it from the perspective of the suppliers themselves. These studies have considered other contexts, such as those of Bustos and Moors (2018), on the avocado SC in Mexico; Ras and Vermeulen (2009) with grape growers in South Africa; and that of Sjauw-Koen-Fa et al. (2018) on suppliers of soy in Indonesia and tomatoes in India. Therefore, this study contributes to the extant literature by studying empirically how collaborative practices implemented by emerging country suppliers have influenced their sustainability initiatives and relational rents – e.g. increased trust, repeated ties, customized assets (Dyer et al., 2018). The adoption of the relational view in this context is also unique and appropriate in supporting the discussions regarding horizontal relationships (Touboulic &

Walker, 2015) between suppliers working in cooperatives, as well as the relationships between these suppliers and federations who have influenced their sustainability initiatives.

The remainder of this article is structured in a further five sections. First, a theoretical framework is developed, using the extant literature around sustainability and the relational view. Then the research method is described and justified, illustrating how the theoretical framework has guided the research. The findings are then analysed, followed by a discussion that generates propositions from the empirical data. Finally, conclusions are drawn in which both the theoretical contributions and managerial implications are described.

## **2. Theoretical framework**

This section reviews the extant literature regarding the sustainability initiatives of suppliers from emerging countries in GSCs and the collaborative practices for generation of relational rents in this context using the lenses of the Relational View (Dyer & Singh, 1998). Then, a theoretical framework is developed that reconciles these two bodies of literature and provides direction for empirical investigations.

### ***2.1. Sustainability initiatives of suppliers from emerging countries in global supply chains***

Managing sustainability in GSCs can be considered even more complex than local and national SCs because it includes dynamic elements and greater challenges, mainly due to the particularities and greater number of stakeholders in these systems (Carter & Easton, 2011). In this context, the sustainability and level of development of the countries involved have also been considered to be important factors that explain how companies in developing countries have acted in these GSCs (Silvestre, 2015; Jia et al., 2018; Li et al., 2018). In particular, it has been argued that activities in these countries will soon be responsible for more than half of global emissions and thus there are specific market conditions that require special attention from scholars (Li et al., 2018). Therefore, a better understanding of emerging suppliers' sustainability is needed because it greatly influences the sustainability of the entire SC (Koberg

& Longoni, 2019), given that much of the operations of these GSCs related to extraction, production and manufacturing are carried out in developing countries (Jia et al., 2018; Liu et al., 2019).

Sustainability initiatives are planned and implemented to enhance sustainability in the entire SC (Silvestre et al., 2020; Walker & Jones, 2012) and they may impact also multiple SC stakeholders (Tura et al., 2019). Thus, one of the key benefits of the internationalization of supply chains is that companies from emerging nations have developed knowledge of best environmental practices and sustainable innovations. Given the desire of these organisations to interact with customers, competitors and international partners from developed countries, they are pressurised into acting sustainably to remain competitive (Köksal et al., 2018; Koster et al., 2019; Li et al., 2018; Li et al., 2017; Seuring & Müller, 2008). However, studies have also identified that these suppliers face barriers in their operation (Akbar & Ahsan, 2019; Busse et al., 2016). These have been both internal to their organisation and external i.e. derived from the environment in which they operate (Busse et al., 2016).

Research has shown that internal barriers are related to: low qualifications of employees (Sjauw-Koen-Fa et al., 2018) and managers (Bustos & Moors, 2018; Köksal et al., 2018); lack of financial resources for investments in sustainable innovations (Akbar & Ahsan, 2019; Koster et al., 2019); and differences in managers' understanding of the concept of sustainability (Busse et al., 2016; Köksal et al., 2018; Koster et al., 2019). On the other hand, external barriers are associated with insufficient local community pressure (Koster et al., 2019); socio-economic, cultural and linguistic differences between the operational contexts of buyers and suppliers (Busse et al., 2016; Huq et al., 2014; Koster et al., 2019); non-loyalty of organizational customers (Akbar & Ahsan, 2019; Bustos & Moors, 2018); and weak legislation and poor oversight in the country of origin (Akbar & Ahsan, 2019; Huq et al., 2014; Koster et al., 2019).

In addition, studies have shown that these suppliers, in order to act sustainably and gain competitive advantage, have adopted strategies and practices mainly related to sustainable innovations (Ras & Vermeulen, 2009; Silvestre, 2015); cooperation with other SC members and/or universities, research centres (Bustos & Moors, 2018; Li et al., 2017; Li et al., 2018); and sustainability certifications (Hajjar et al., 2019; Köksal et al., 2018; Sjauw-Koen-Fa et al., 2018).

It can therefore be surmised that, for sustainable innovations to occur, companies need a good knowledge base, and that emerging country suppliers need help in acquiring the knowledge and resources needed to act sustainably (Dou et al., 2015). This underscores the importance of improving relationships and communication between SC partners for knowledge sharing (Busse et al., 2016; Li et al., 2017; Bustos & Moors, 2018); greater cooperation among SC members (Bustos & Moors, 2018; Koberg & Longoni, 2019); and a common understanding of the concepts, processes and objectives of each SC member's sustainability adoption (Busse et al., 2016).

Inter-organizational cooperation can therefore be argued to be an important facilitator for the adoption and improvement of sustainability related practices by emerging country suppliers. For example, these strategies have led to the adoption of certifications related to sustainability, which have increasingly become one of the tools to address the challenges related to transparency in the relationship between supplier and focal company (Koster et al., 2019; Sjauw-Koen-Fa et al., 2018). In the cultivation of *commodities*, specifically, certifications have emerged as a significant governance mechanism (Hajjar et al., 2019) enabled by collaborative practices. This study by Hajjar et al. (2019) identified that in the Brazilian coffee sector there is a large organization of cooperative producers, which facilitates the visibility of market signals. If the export market requires coffee certificates, for example, cooperatives that sell directly to international markets transmit this information to farmers and help them to obtain

certification through training. Thus, collaborative practices among institutions of this type can be argued to play a key role in developing emerging supplier sustainability initiatives, as further discussed in section 2.2.

## ***2.2. Collaborative practices and the Relational View***

Collaborative practices comprise the exchange of information, joint decision-making and the alignment of incentives (Simatupang & Sridharan, 2005). The engagement in collaborative practices with other firms in their supply chain/networks is important to improve sustainability (Gimenez & Tachizawa, 2012) and, in addition, partnerships with external stakeholders/non-business actors can also act as key facilitators (Bäckstrand, 2006). As pointed out by Ebers and Jarillo (1988), a company, through collaborative actions and strategies, is able to achieve and sustain competitive advantages such as: i) mutual learning; ii) co-speciality; iii) better information flow; and iv) economies of scale. The central tenet of collaborative strategies lies in the idea that the competitive advantage of a company is not only located within its internal borders, that is, in the acquisition and use of exclusive resources, as postulated by the Resource Based View (Barney, 1991), but competitive advantage also emanates from inter-organizational relations.

Based on these precepts of collaboration and collectivity, the Relational View (Dyer & Singh, 1998) has been developed as a theory to understand the potential of collaborative practices. According to the Relational View, participation in inter-organizational relationships is able to expand the knowledge and resources of companies, providing them with a source of relational rents that would not be reached if each mobilized independently (Capaldo & Petruzzelli, 2011; Dyer & Singh, 1998; Li et al., 2012; Touboulic & Walker, 2015). Therefore, from a relational perspective, the firm's competitive advantage is not restricted to internal resources, but also consists of those resources accessed by it, which come from its relationships (Dyer & Sing, 1998; Lavie, 2007). In the relational view, the competitiveness of a company is

associated with the generation of relational rents, that is, “gains above normal, resulting from the joint idiosyncratic contributions of alliance partners” (Dyer & Singh, 1998, p.662).

Dyer and Singh (1998) suggest four potential sources of relational rent, namely: (i) specific relationship assets; (ii) knowledge sharing routines; (iii) complementary resources and skills, and (iv) effective governance. Asset specificity, in the Relational View, occurs from exclusive investments directed to the relationship partner, with expectations of mutual gains and the development of competencies that depend on governance mechanisms (Dyer & Singh, 1998; Tescari & Brito, 2018). Williamson (1985) identifies three types of asset specificity: (1) location specificity, (2) physical asset specificity and (3) human asset specificity. Knowledge sharing, on the other hand, concerns the exchange of information and knowledge in inter-organizational relationships and is considered a relevant factor for the success of organizational learning (Dyer & Singh, 1998; Kale & Singh, 2007). The complementarity of resources and competences refers to the complementarity between companies that provides partners with a synergy of resources capable of reducing costs and protecting their competitiveness (Dyer & Singh, 1998; Tescari & Brito, 2018). Finally, governance refers to coordination mechanisms, which can reduce transaction costs and leverage relational gains (Dyer & Singh, 1998; Tescari & Brito, 2018). Therefore, relational rents are a product of the combination, exchange or investment of partners in idiosyncratic assets, knowledge and resources, and the use of effective governance mechanisms, capable of reducing transaction costs or enhancing relational rents through synergy in the combination of resources, capabilities or knowledge (Dyer & Singh, 1998).

In the context of studies on sustainability in supply chains, the relational view has been little used to date and has been argued to mainly be applied to research regarding collaboration between large companies with a focus on environmental activities (Touboulic & Walker, 2015). However, some authors have also used it to discuss research questions regarding suppliers and

their relationships (Benstead, Hendry & Stevenson, 2018; Touboulic & Walker, 2015). It is therefore argued here that the relational view is an adequate theoretical lens to analyse the sustainability initiatives of suppliers from emerging countries in GSCs.

In the specific GSC context, Kaplinsky and Farooki (2010) suggested that suppliers from emerging economies learn about quality and sustainability standards from the demands of their foreign organizational clients. Most of the time, they learn from the GSC's focal company (when it has such knowledge), or from NGOs, customers, business associations (Liu et al., 2019) or from universities and/or research centres (Koberg & Longoni, 2019). Thus, participation in inter-organizational relationships has the potential to increase the knowledge and resources of companies, providing them with a source of relational rents that would not be reached if each mobilized independently (Capaldo & Petruzzelli, 2011; Dyer & Singh, 1998; Li et al., 2012). In particular, Tencati et al. (2008), referring to the context of companies from developing countries, highlight that the relationship management in GSC should involve collaborative forms of governance, as these forms help companies to meet supply demands as well as to leverage the company's reputation in global markets.

Providing recent further details on the effectiveness of collaborative practices, Bustos and Moors (2018), in a study with avocado producers from Colombia and Mexico working in global chains, identified that collaborative practices aligned with innovation contributed positively to the environmental, economic and social dimensions of sustainability. Thus these strategies led to a reduction in the unnecessary use of valuable resources and environmental impacts, a decrease in the uncertainty of supply and demand, an increase in profits and in the reliability of contracts between SC participants, as well as improvements in the working and learning conditions of small producers. Thus, as inter-organizational relationships evolved, structural inefficiencies were gradually reduced due to changes in behaviour and new practices becoming embedded into the organizational culture of companies. They therefore identified partnerships

as the backbone of innovation, acting as a catalyst for positive behaviours that stimulated the exchange of information, the alignment of incentives and appropriate uses of technology (Bustos & Moors, 2018).

### ***2.3. Proposing a framework***

In view of the discussions above, it can be said that the literature shows that suppliers from emerging countries have used partnerships in the adoption and development of their sustainability initiatives in GSCs, which has driven them to advance their sustainable behaviours as well as enabling the generation of relational rents for the companies. Thus, these relationships allow supplier companies to obtain resources and new knowledge and to combine them in a unique and collaborative way, realizing competitive advantages and superior performance (Li et al., 2017). It is therefore believed that, according to Dyer and Singh (1998), Vachon and Klassen (2006) and Benstead et al. (2018), partnership-based relationships in GSCs facilitate the transfer of knowledge capabilities, which can be a critical source of relational rents and sustainability.

Thus, from the evidence in the literature presented and discussed in the previous parts of this paper, a framework was developed (Figure 1) that illustrates the theoretical aspects for this research. This framework illustrates that these organizations working in GSCs seek to meet international demands and their requirements and therefore form partnerships so that they can meet sustainability requirements, improve their sustainability initiatives and create relational rents. Thus, the adoption of collaborative practices has been argued to be a key source of relational rents for these suppliers. The partnerships arise when customers, exporters, distributors and other institutions require enhanced sustainability initiatives from these suppliers. These companies, often, to acquire knowledge and act in a sustainable way, need partnerships with other members of the SC, including competitors, research bodies and/or universities. These partnerships, according to the literature, occur through joint research and



exchange of information for the development of technologies, processes and/or sustainably innovative products. In this sense, the literature discussions presented also suggests a positive feedback loop, whereby involvement in GSCs then leads to a greater understanding of international market demands, which in turn leads to more involvement in collaborative practices in the same or additional GSCs, further improving their sustainability initiatives and the generation of relational rents. This positive feedback loop is included in the theoretical framework in Figure 1.

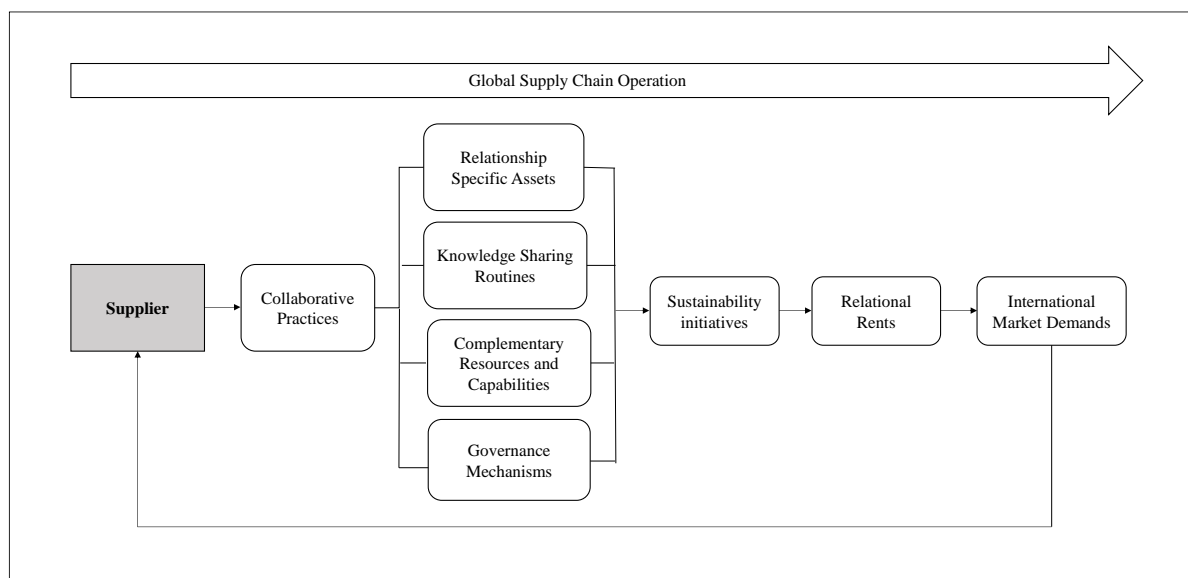


Figure 1. Framework explaining the operation of suppliers from emerging countries in global supply chains using collective practices.

This framework was used to provide theoretical-analytical guidance for the empirical study of the Brazilian coffee industry, specifically focusing on companies operating as emerging country suppliers in GSCs, as further described in the method section below. The study adds to the extant literature by adding greater detail on *how* collaborative practices affect the improvement of sustainability initiatives and the creation of relational rents in this context.

### 3. Method

In accordance with the research question for this study, to investigate how collaborative practices influence sustainability initiatives and the relational rents of emerging country

companies operating as GSC suppliers, this research adopted a qualitative approach using multiple case studies (Yin, 2017). Thus, Brazilian coffee farmers from the coffee producing region called the Cerrado Mineiro Region, which operate as suppliers of important GSCs, participated in the research. Most coffee grown in that region is certified according to its origin (Coffee from the Cerrado Mineiro Region) and the Rainforest Alliance and UTZ, both of which focus on sustainable agriculture.

The specific coffee growers selected for the research were members of associations and cooperatives participating in the Federation of Coffee Growers of the Cerrado. This institution is the main governance entity working with coffee farmers in the region. It acts to assist producers in complying with legal requirements, certifications (socio-environmental and designation of origin) and product quality. In the Cerrado Region, 4500 producers operate in 55 municipalities. As a criterion for choosing participants, it was established that they should: (i) be medium or large coffee producers; (ii) carry out export activities directly and / or indirectly; (iii) be willing to participate in the research (accessibility). As a justification for the first criteria, the size of the company tends to influence its sustainable practices (Antonioli et al., 2013). Large organizations tend to have more resources for research and development and for socio-environmental activities (De Marchi, 2012). Small companies are more limited in terms of qualified human resources, technical and financial resources, which leads to less adoption of sustainable practices (Del Río et al, 2009). For classification as to size, hectares planted with the crop were considered. This is the criterion adopted by the Federation of Coffee Growers of the Cerrado, based on the classification of rural properties and the legislation regarding the Tax on Rural Territorial Property (ITR). Thus, producers who had at least four modules participated in the research (each module, in Cerrado Mineiro Region, is equivalent to 40 hectares), that is, 160 hectares of coffee plantation area. Four modules, according to the ITR, is the minimum size for a rural property to be classified as medium-sized.

To access the participants, the “snowball” technique was applied (Teddlie & Yu, 2007). For the operationalization of the technique, a coffee producer already known by the researchers and who is classified as a medium producer was invited to participate in the research. This participant suggested other participants who suggested others and so on. Thus, ten coffee farmers were interviewed. As a criterion for ceasing data collection, the saturation point was used, thus, we stopped the interviews when no more significantly new data was being collected (Eisenhardt, 1989; Teddlie & Yu, 2007). Table 1 indicates the characteristics of the participants. The mnemonics E1 to E10 are used to refer to them hereafter.

Table 1: Characteristics of participants

<b>Participant</b>	<b>Years managing the company</b>	<b>Expertise</b>	<b>Size</b>	<b>Position in the company</b>
E1	20	Agronomist Engineer	Medium	Owner and manager
E2	33	Agronomist Engineer	Large	Owner and manager
E3	35	Mechanical Engineer	Large	Owner and manager
E4	7	Economist	Medium	Owner and manager
E5	6	Agronomist Engineer	Large	Manager
E6	23	Agronomist Engineer	Large	Owner and manager
E7	27	Civil engineer	Large	Owner and manager
E8	23	Agronomist Engineer	Large	Owner and manager
E9	17	Administration	Large	Owner and manager
E10	16	Publicity	Large	Sustainability manager

For data collection, semi-structured interviews were used. The interviews were carried out in three steps: planning, execution and transcription. In the first stage of planning, the interview script was developed and coffee farmers were contacted by phone. The script was developed according to the aspects evidenced in the literature and presented in the theoretical model, comprising 5 questions on sustainability, 4 on internationalization and 6 on collaborative practices (cooperation/ partnerships). The execution of each interview started with explaining the research objectives, clarifying any doubts from the participants and requesting the recording of interview. The interviews were then conducted in person or by telephone, depending on the availability of the participants. They took place from June to August 2018 and lasted from twenty-five minutes to one hour each. The last stage included the full

transcription of the narratives. In addition, secondary data were collected to triangulate the interview data with other information about the coffee culture in the region, including: the organisations websites; news about coffee culture companies and their certification rules.

The data analysis was carried out using a thematic content analysis approach, as developed according to the precepts of Bardin (2011). Therefore, the analysis involved three stages: pre-analysis, exploration of the material and treatment of the results obtained and interpretation. In the first stage, the material was prepared and organized, read and coded. Subsequently, in the exploration and treatment stages, the most relevant narrative excerpts were found, according to the categories established a priori. These categories were established according to deductive logic (Mayring, 2004) based on the four potential sources of relational rents proposed by Dyer and Singh (1998). This grid was therefore made up of the categories: 'Investment in relationship specific assets', 'Knowledge sharing routines', 'Complementary resources and capabilities' and 'Governance mechanisms', all components of the proposed theoretical framework. Subcategories then emerged inductively from the analysis of the interviews, and therefore overall an abductive approach was used (Kovács & Spens, 2005). These subcategories are described in the next section below, where the analyses of the findings are presented.

#### **4. Analysis of findings**

As described in the previous section, the four sources of relational rents proposed by Dyer and Singh (1998) were used as the analytical categories for the research findings. In this way, empirical evidence was sought on: investments in relationship specific assets, knowledge sharing among partners, complementary resources and governance mechanisms in the region, as ways to boost the sustainability initiatives, as well as the creation of relational rents for the suppliers. Each of these sources of relational rents is presented on Table 2 and discussed in turn in the following sub-sections.

Table 2. Research constructs and associated empirical evidence

Construct		Subcategories	How it occurred in the empirical context	Sample evidence from interviews	Cases providing evidence
International market demands		-	Suppliers are pressured to act more sustainably, achieving the global supply chain demands as well as to leverage the company's reputation in this global market.	<p>“(…) <i>You don't even enter the market if you don't have the minimum sustainability requirements. The person doesn't even receive you. This is the minimum. So, if we are talking about superior commodity coffees, the farm must have some type of certification that will guarantee that buyer that, minimally, that farm does not use slave labour. This is the bare minimum. So, like that, you don't go to the international market without the minimum of certification (…)</i>” (E9).</p> <p>“<i>We signed a document affirming that we comply with environmental laws and social standards so that we can sell that coffee abroad</i>”. (E6).</p>	E1, E2, E3, E4, E5, E6, E7, E9
Collaborative Practices	Investment in relationship specific assets	Management improvements	Occurred as the supplier and its partners developed joint projects to improve company management.	“ <i>Information about markets and certifications arrive quickly to us through the federation and cooperatives. They help us a lot (…)</i> ” (E7).	E1, E2, E3, E4, E5, E7, E9
		Research and development (R&D)	They occurred as the supplier and its partners, mediated by the Federation (institution responsible for governance) are part of common research initiatives aimed at improving production and sustainable initiatives.	“(…) <i>This is a very nice job that we are doing, which is technological innovation. We have the Foundation of Cerrado Mineiro Development and we have 27 experimental fields in 17 municipalities with 12 new varieties. And these 12 new varieties are being tested and in the next three years we will be able to indicate which is the best for each micro-region</i> ” (E2).	E1, E2, E3, E4, E5, E7, E9
		Eco-innovations	They occurred as the supplier and its partners, being located in the region and by the partners, have	“(…) <i>We are making a plant nursery now in Monte Carmelo city, for the cooperative, which has 200 thousand native seedlings for improvement also in this sense of all the coffee</i>	E2, E3, E5, E7, E9, E10

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		access to unique resources, which can be characterized by a specificity of local assets.	<i>growers of our cooperative, so that they can restore the riparian forests and recompose some degraded area with native vegetation. And, as a social project, we have a school in the countryside, which is a partnership with the [multinational supplier of agricultural inputs]. This is a project where we value environmental issues that make the child who studies at school, in the countryside, proud to live in the countryside (...)" (E2).</i>	
	Investments in export	They occurred as the supplier and its partners (roasters, exporters, cooperatives and other institutions) share unique knowledge to predict and increase the external demand for the coffee they produce.	<i>"(...) we, through the coffee growers' federation, we are doing a job called 'Demand generation', which is to increase the demand for coffee produced in the Cerrado Mineiro region" (E1).</i>	E1, E2, E3, E4, E5, E8
Knowledge sharing routines	Knowledge creation	This occurred as the supplier and its partners produced incremental innovations in the properties.	<i>"(...) this issue also from the partnership with Sebrae has been bringing many innovations, but as this "is" in your daily life, it ends up being barely noticeable. Now, if I take a photo there, make an assessment of my company when I started with the Educampo project and now, over time, there have been several innovations. But, let's say, that we have been incorporating technology (...)" (E1).</i>	E1, E2, E3, E4, E7, E9, E10
			<i>"You learn a lot, because these people (international partners) transmit a lot of information to us, on the issue of international consumption, on the question of the evolution of technologies. So, like this, it's a win / win. We pass on information to them" (E2).</i>	

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	Knowledge sharing about coffee practices	This occurred as suppliers certified their properties with the help of partners (cooperatives, associates and associations) and developed joint training.	<i>“(...) today Sebrae has several courses, they are all linked to Sebrae, the S system. They provide a lot of training in this sense, for the operator, for spraying, use of pesticides. This is up to them” (E3)</i>	E3, E4, E5, E6, E7, E9
	Knowledge transfer to local entities	This occurred as suppliers became involved in actions such as internships granted to educational institutions in the region and the dissemination of knowledge in schools through social projects.	<i>“(...) And we do side projects with neighbouring schools to make the ecological trails, always thinking about making the youth, with the people who live in Patrocínio, recognize the value of the coffee culture, of producing coffee as a good thing and not wanting to leave the field” (E9).</i>	E1, E2, E3, E4, E5, E9
Complementary resources and capabilities	Resources and capabilities linked to marketing, logistics and distribution	This occurred as suppliers entered GSCs through partnerships, whether national or international. In the case of national partners, cooperatives act as a potential source of complementing suppliers' capacities. They offer information and develop practical actions related to the production, preparation and commercialization of coffee. With regard to international partnerships, some foreign entities (public and private), which have marketing expertise in the foreign market, complement the suppliers' resources.	<i>“Especially with Cooxupé [cooperative], because it is the cooperative that brought us to Rainforest. They have a team within Cooxupé. [...] they constantly bring us technical information to help our processes on the farm. There are always people there who are helping us and even in the marketing part too.” (E4).</i>	E1, E2, E3, E4, E5, E8, E9, E10

Governance mechanisms	Quality assurance	This occurred as suppliers use certifications as the main mechanism that strengthens their sustainability initiatives in the foreign market.	<i>“(...) You don't even enter the market if you don't have the minimum sustainability issues. The person doesn't even receive you. This is the minimum. So, if we are talking about super commodity coffees, the farm must have some type of certification that will guarantee that buyer that, minimally, that farm does not use slave labour. This is the bare minimum. So, like that, you don't go to the international market without the minimum of certification (...)”.</i> (E9)	E1, E2, E3, E5, E6, E7, E9, E10
	Structure of partner entities	This occurred based on the institutional structure of the entities that reduces transaction costs with international buyers and enables partnerships.	<i>“No, I don't export directly. It is through partners, who are traders, like Cooxupé [cooperative], or Terra Forte [export company]. We sell coffee to them and we know that the coffee is exported next, but I have no contact abroad that does the export work”</i> (E4).	E1, E3, E4, E5, E7, E9
	Trust and reputation	This occurred from the trajectory of interaction between suppliers and partners, reducing the risks of transactions and increasing truly.	<i>“(...) trust is built, it is not sold, it is not acquired, it is built. So, like this, we learn from the moment that trust is created and for there to be partnership, first there must be trust, for there to be a true partnership”</i> (E1).	E1, E2, E3, E4, E5, E7, E9, E10
Relational rents	-	It creates benefits through the relationships and the interactive process of sharing and recoding of individual and collective resources	<i>“The federation is a kind of link between us and the international market. This helps us to better understand international demands and to improve our activities in this regard”.</i> (E2).  <i>So, I still don't export directly. We have some partnerships to try to export directly in the future. But, through companies like Syngenta, we supply our coffee to Syngenta through the Nucoffee program and this coffee Syngenta sends to different countries in the world”</i> (E5).	E1, E2, E3, E5, E7, E9



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Sustainability Initiatives	-	As they are pressured to operate sustainably, they have been involved in social and environmental projects as well on certifications related do sustainability.	<i>As a social project, we have a school in the countryside, which is a partnership with the [multinational supplier of agricultural inputs]. This is a project where we value environmental issues that make the child who studies at school, in the countryside, proud to live in the countryside (...)</i> (E2)	E1, E2, E3, E5, E7, E8, E10
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*As the farm is certified and we serve several customers worldwide, these customers have many environmental and social requirements. (E8)*

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#### ***4.1. Investment in relationship specific assets***

Four subcategories emerged from the data under this theme, which were: (i) management improvements, (ii) research and development (R&D), (iii) eco-innovations and (iv) investments in export. It should be noted that regardless of the type of asset specificity, there is a potential productivity gain for both partners. Nonetheless, it is important to understand the nature of the relationship specific asset that has been shown to be effective in this context. Therefore, where possible, the discussion below highlights the type of asset specificity i.e. whether it comprises of: location specificity, physical asset specificity or human asset specificity (Williamson, 1985).

Management improvements, a specificity of relational specific assets, a human asset (Williamson, 1985), occurred as the coffee grower and his partners (other coffee growers, cooperatives, governmental institutions supporting the producer, among others) developed joint projects to improve farm management processes. The investment in this type of asset provides partners with unique know-how derived from the exchange of experiences between partner organizations (Dyer & Singh, 1998). This can be seen in reports on the implementation of the Rise Method, digital inclusion and certification:

*“(...) And so, in 2015, we have assessed our sustainability according to the Rise Method, through [our] partnership with the University of Bern in Switzerland. So, as you can see here, I think it is nice to see that when you consider social and environmental issues” (E1).*

The Rise (Response-Inducing Sustainability Evaluation) is a method developed by the School of Agriculture, Forest and Food Science at the University of Bern (Switzerland) that uses a computer program to make a holistic assessment of agricultural operations on farms.

In addition, as argued by interviewees such as E1, E2 and E7, the Foundation for Cerrado Coffee Development, linked to the Federation of Coffee Growers of the Cerrado (FCC), develops projects related to orienting producers about environmental and social certifications as well as designations of origin. In this context, the adoption and development of good agricultural practices, required by certifications, which standardize care for the environment

and social welfare, can be seen as one of the sustainable strategies for adding value to coffee production for these farmers. In particular, in terms of trust and additional value paid by buyers as mentioned by E10: *“We receive additional value for our coffee due to sustainable certifications”*. The relevance of certifications for coffee value was also identified in our secondary data by UTZ (2015): *“UTZ certification contributed to greater stability in coffee sales. [...] producers say whether UTZ helped to diversify sales channels”*.

Projects in the Cerrado Mineiro Region related to sustainability and market expansion provide suppliers with unique knowledge, derived from investing in specific assets. In this regard, the predominant role of the FCC is highlighted, which coordinates most of the projects and seeks to differentiate the Cerrado Region.

*“(...) one of the reasons for these innovations with results for the environment and for people is it is a strategy of the federation, which encourages producers in this regard” (E1).*

*“(...)the Federation seeks improvement and, therefore, to be different. Our region has always liked to be different, to be innovative. So, I can say that here in the region we produce sustainable, ethical, quality coffee with full traceability” (E2).*

*“Information about market and certifications arrive quickly to us through the federation and cooperatives. They help us a lot. (...) We also have some sustainability certifications in a group of producers” (E7).*

In the R&D subcategory, a Foundation action also stands out. In this subcategory, there is the presence of investment in physical and local assets. The Foundation is the entity responsible for the development of research in coffee growing and is the manager of the Coffee Center of Excellence in the Cerrado Mineiro Region. According to the interviewees, such as E2 and E6 it develops research projects with the use of experimental fields in different locations and farms in the Cerrado Mineiro Region. The purpose of these actions is to adapt the type of cultivar for each micro-region of the Cerrado Mineiro, enabling producers to improve quality and productivity, as shown in the following statement:

*“(...) This is a very nice job that we are doing, which is technological innovation. We have the Foundation of Cerrado Mineiro Development and we have 27 experimental fields in 17 municipalities with 12 new varieties. And these 12 new varieties are being tested and in the next three years we will be able to indicate which is the best for each micro-region” (E2).*

*“Our coffee is well classified and we have an experimental field on the farm to study in partnership with the federation” (E6).*

The mentioned relevance of Coffee Center of Excellence in the Cerrado Mineiro Region was also highlighted in our secondary data by CCCMG (2018) showing the relevance of research made in this institution with partnerships among producers and research institutions and universities:

*“Producers have direct access to technologies. The themes highlight genetics, drink quality and fight against diseases in the Cerrado Region.[...] The actions have been developed by EPAMIG, Federal University of Lavras (UFLA) and Federal University of Viçosa (UFV), provided the adaptation of coffee cultivars to the climate and soil conditions of the Cerrado Mineiro”.*

The results of the project will possibly offer more resistant and more suitable cultivars for each micro-region, improving productivity, reducing the use of chemicals, among other aspects of environmental impacts. Thus there are both sustainability and value creation objectives. In addition to R&D focused on the essential competence of coffee growers, there are also investments in machinery and equipment through relationships between the actors, which characterizes a specificity of physical and local assets (Williamson, 1985) as shown in the following report:

*“(...) we who look for other ways. For example, at the moment I am developing a large machine with the [Brazilian company that supplies agricultural machinery] to be launched in three years .... So, we have to look for a solution with our hands. (...) The reality of coffee production here in Brazil, particularly in our region, is different from other places. There are many hectares and we need adequate machinery for harvesting, washing coffee. (E8).*

Another specific relationship investment impacting sustainability relates to eco innovation. This, according to the European Union (2018), relates to all forms of innovation, technological or not, that create business opportunities and benefit the environment, avoiding or reducing the environmental impact or optimizing the use of resources. Therefore, eco-innovative actions were developed jointly with the cooperative, as well as with other companies and aimed at developing the quality of cultivars and promoting rural activities. Thus, the fact that they are located in the Cerrado Mineiro Region, allows suppliers to access unique

resources, which can be characterized a specificity of local assets. This is how E2's described this investment:

*“(...) We are making a plant nursery now in Monte Carmelo city, for the cooperative, which has 200 thousand native seedlings for improvement also in this sense of all the coffee growers of our cooperative, so that they can restore the riparian forests and recompose some degraded area with native vegetation. And, as a social project, we have a school in the countryside, which is a partnership with the [multinational supplier of agricultural inputs]. This is a project where we value environmental issues that make the child who studies at school, in the countryside, proud to live in the countryside (...)” (E2).*

In addition, investments in exports were evidenced, in which coffee farmers developed joint alternatives with other partners (roasters, exporters, cooperatives and other institutions) in order to forecast and increase the demand abroad for the coffee they produce. This can also be considered as a specificity of human assets in view of the unique knowledge generated between the parties. The following statement illustrates this:

*“(...) we, through the coffee growers' federation, we are doing a job called 'Demand generation', which is to increase the demand for coffee produced in the Cerrado Mineiro region” (E1).*

Therefore, in accordance with the relational view developed by Dyer and Singh (1998), through investment in physical assets, organizations can raise the standard of quality and ensure product differentiation, as seen in the case of Cerrado Mineiro Region. As highlighted by Dyer and Singh (1998) and Lavie (2007), from a relational perspective, the organization's competitive advantage involves the mobilization of internal and external resources. In the cases in question, the asset derived from this relationship has been able to expand the suppliers' market, as well as bring them closer to the final consumer.

#### **4.2. Knowledge Sharing Routines**

In this dimension, it was identified that the participants, in general, consider that they learn from their partners, both national and international. Thus, knowledge sharing for them is diverse and produces different types of learning. Therefore, three subcategories could be observed for knowledge sharing routines: (i) knowledge creation; (ii) knowledge sharing about

coffee practices, and (iii) knowledge transfer to local entities. For the first subcategory, it became evident that the creation of knowledge produced incremental innovations in one of the properties. Thus, E1 reports that:

*“(...) this issue also from the partnership with Sebrae has been bringing many innovations, but as this “is” in your daily life, it ends up being barely noticeable. Now, if I take a photo there, make an assessment of my company when I started with the Educampo project and now, over time, there have been several innovations. But, let's say, that we have been incorporating technology (...)” (E1).*

It should be noted that Educampo is a project by Sebrae (Support Service for Micro and Small Enterprises) that helps in creating opportunities for the individual and collective development of agribusiness. It consists of individual consultancies for each company, training that expands management experience, knowledge exchange and networking between producers and consultants and shared coordination with partner companies as presented in this quotation:

*“Sebrae has been operating in the coffee sector of the Cerrado Mineiro Region for almost 10 years. [...] Sebrae offers training and managerial assistance to producers, facilitated access to certifications that improve the quality of the product and processes and stimulate the group's internationalization”. (Cafeicultura, 2011)*

In the second subcategory regarding the sharing of knowledge about coffee practices, the evidence suggests that this occurs as suppliers certify their properties with the help of partners (cooperatives, members and associations) and develop training together. Some interviewees highlight partnerships with public institutions such as Universities, the National Rural Apprenticeship Service (Senar) and the Sebrae aiming at improving management and labour qualifications, as well as the safety and security and social welfare of those involved. Thus, E3 points out:

*“(...) today Sebrae has several courses, they are all linked to Sebrae, the S system. They provide a lot of training in this sense, for the operator, for spraying, use of pesticides. This is up to them” (E3)*

Knowledge sharing with partners has also extended to the international level. Actions related to meetings with international partners, information exchanges, cooperative activities and suppliers' participation in fairs outside the country were mentioned. For example, for one of the interviewees, the sharing of knowledge with international partners allows the exchange

of information on technological trends that can act to improve sustainable practices. Also, one of the suppliers cites participation in fairs abroad as a way of sharing know-how and promoting products abroad. The following statements illustrate these points:

*“I think there are different learnings. I will not say that one is more important than the other. So, there are different teachings” (E1).*

*“You learn a lot, because these people (international partners) transmit a lot of information to us, on the issue of international consumption, on the question of the evolution of technologies. So, like this, it's a win / win. We pass on information to them” (E2).*

*“We participate in associations that promote Brazilian products abroad and this is still a partnership. These associations, for example, I just arrived from a fair in Europe, in Amsterdam. So these NGOs, which, in this case, are the Brazilian Association of Special Coffees, they have a place where you expose your product, receive your customers, do the demos, do the cupping and everything” (E3).*

The Sebrae relevance in this sense can be evidenced in this quote: *“the institution [SEBRAE] supports the group's business strategies, focused on qualified consumer markets, the expansion of the number of farms certified with the Café do Cerrado seal and the participation of producers in the main international events in the sector”* (Cafeicultura, 2011).

It is also worth noting that the evidence within this subcategory adds to the evidence of Liu et al. (2019), who argue that suppliers from emerging economies learn about quality and sustainability standards primarily through partnerships with universities and/or research centers. However, in the evidence presented above, it can be seen that knowledge sharing routines between suppliers and their national and international partners can be considered as factors that support the sustainable and social practices of producers through tacit and explicit knowledge as pointed out by Dyer and Singh (1998) and Zang and Wang (2018).

The last subcategory derived from knowledge sharing was the transfer of knowledge from suppliers to local entities. There are actions such as internship programs granted to educational institutions in the region and dissemination of knowledge in schools through social projects such as *Escola no Campo* (School in the field). The following are illustrative excerpts about this action:

*“(...) There was even a UFV project, from agronomy students here at the company. It was completed about two months ago, it was a field project, field research that they were doing here. We gave the area to them and they brought the results to us” (E5).*

*“(...) And we do side projects with neighbouring schools to make the ecological trails, always thinking about making the youth, with the people who live in Patrocínio, recognize the value of the coffee culture, of producing coffee as a good thing and not wanting to leave the field” (E9).*

The *Escola no Campo* project is “a partnership between Syngenta and Cooxupé and served more than 500 children from 20 schools in 2017. The action took information in the field, preservation and guidance to 15 municipalities in the South of Minas and Cerrado Mineiro” (Expresso do Cerrado, 2017). Such actions demonstrate the concern of suppliers to share and disseminate the knowledge produced. Furthermore, knowledge sharing should also be seen as a source of learning for suppliers capable of acting in a competitive way (Dyer & Singh, 1998; Koberg & Longoni, 2019).

#### **4.3. Complementary resources and capabilities**

In terms of complementarity of resources and capabilities, some joint actions by suppliers and their national and international partners are highlighted. These actions influence suppliers from GSCs in improving their sustainable practices. Only one subcategory emerged from the interviewees' reports, that is, resources and capabilities linked to marketing, logistics and distribution.

Most respondents are part of GSCs through partnerships, whether national or international. In the case of national partners, cooperatives act as a potential source of complementing suppliers' capabilities. They offer information and develop practical actions regarding the production, preparation and commercialization of coffee.

*“Especially with Cooxupé [cooperative], because it is the cooperative that brought us to Rainforest. They have a team within Cooxupé. [...] they constantly bring us technical information to help our processes on the farm. There are always people there who are helping us and even in the marketing part too.” (E4).*

As for international partnerships, some overseas entities (public and private), which have the expertise of commercialization in foreign markets, complement the resources of suppliers. These entities, in the perception of the interviewees, in addition to their expertise in the



international market, have distribution know-how and consumer market confidence accumulated in this type of negotiation. The Cooxupé partnership is also highlighted in our secondary data by CCCMG (2010). The following statements by E2 and E5 illustrate this finding: *“Yes, because I have established agents around the world in the area of international trade, that I send my coffee to and they distribute it for me. This is knowledge and expertise that I don't have” (E2). “So, I don't export directly yet. We have some partnerships to try to export directly in the future. But through companies like Syngenta, we supply our coffee to Syngenta through the Nucoffee program and this coffee Syngenta sends to different countries in the world” (E5).* This collaborative practices between Syngenta and these producers were also evidenced on its website (Portal Syngenta, 2018): *“Syngenta seeks to qualify the production and connect the Brazilian coffee grower to the market, mainly the external one, through the Nucoffee project (program that allows exchanging coffee bags for inputs, services and intelligence)” (Portal Syngenta, 2018).*

Considering the relational view, Ngugi et al. (2010) highlight that the complementarity of resources can also act as an incentive for organizations to establish partners, and consequently, to access complementary resources from partners. Thus, our findings further corroborate this point, illustrating how organizations are able to create value through their relationships.

#### **4.4. Governance mechanisms**

Three subcategories were identified that reflect governance mechanisms, which are: (i) quality assurance, (ii) structure of partner entities and (iii) trust and reputation. For the first subcategory of quality assurance, the interviewees pointed to certification as the main mechanism that solidifies their sustainability initiatives in the foreign market. Regarding this factor, the narrative of E9 explained:

*“(...) You don't even enter the market if you don't have the minimum sustainability issues. The person doesn't even receive you. This is the minimum. So, if we are talking about super commodity coffees, the farm must have some type of certification that will*

*guarantee that buyer that, minimally, that farm does not use slave labour. This is the bare minimum. So, like that, you don't go to the international market without the minimum of certification (...)*”.

This evidence showed the sustainability initiatives as a qualifier criterion by international buyers, i.e. a kind of driver for suppliers' sustainability. In addition to certification, the structure of partner entities is another factor that reduces transaction costs involved with international buyers as mentioned by E2: *“The federation is a kind of link between us and the international market. It helps us to understand better the international demands and to improve our activities in this sense”*. Together with the work developed by the agricultural cooperatives, the FCC's role as a relevant governance entity for the coffee growers of Cerrado Mineiro Region stands out. The FCC is responsible for articulating the entire strategy of the region, acting mainly on traceability practices and demand generation. It should be noted that the institutional structure of the network, as well as actions developed by the FCC, has acted significantly to expand the markets of suppliers and to improve sustainable practices. As an example, the following fragment is pointed out:

*“No, I don't export directly. It is through partners, who are traders, like Cooxupé [cooperative], or Terra Forte [export company]. We sell coffee to them and we know that the coffee is exported next, but I have no contact abroad that does the export work” (E4).*

*“The Federation of Cerrado Mineiro always seeks improvements and, thus, to be different. Our region has always liked to be different, to be innovative” (E2).*

It is emphasized that the Cerrado Mineiro Region network is configured as a horizontal network, in which some activities of the organizations are coordinated together. Thus, some of the partnerships signed with Sebrae (CCCMG, 2015) and Embrapa (Embrapa, 2014; Embrapa, 2015) came from the FCC. In this sense, the role of the FCC, as an agent of governance in the network, is recognized by the interviewees and also present in the FCC website (Região do Cerrado Mineiro, 2020), as being essential for the expansion of innovations and the conquest of new markets. This quotation evidences the FCC importance for these coffee producers in terms of representativeness and the possibility of expanding their business: *“The Federation of Coffee Growers in the Cerrado invests heavily in the organization of producers, in certification*

*systems, strategic planning and marketing. The efforts made the brand known in the country and abroad*” (Embrapa, 2015). This provides further evidence for the claims of Tencati et al. (2008), who state that the management of relationships in GSCs should involve more collaborative forms of governance. In the case in question, the form of the institutional network is suggested to help companies meet the supply chain demands, as well as, boost their reputation in the global markets.

Trust and reputation, in this context, involve informal mechanisms that assist in the realization and reduction of transaction risks, that is, decrease transaction costs (Dyer & Singh, 1998). For example:

*“(...) trust is built, it is not sold, it is not acquired, it is built. So, like this, we learn from the moment that trust is created and for there to be partnership, first there must be trust, for there to be a true partnership” (E1).*

*(...) I think the great benefit of a partnership is that when you become known, that you have these partners, he buys your coffee in the future. (...) Any producer there, who does not have a partnership and the exporter does not know him, the exporter does not buy from them in the future. And, thank God, we have open doors with everyone. The quality that we sell we know that we will deliver. The farm has a taster inside the farm, who is an employee of ours. So, all batches that leave here are classified, drunk and given a report. So, whenever we sell a quality, we deliver that quality or a little better” (E6).*

In this sense, as highlighted by Dyer and Singh (1998), governance mechanisms are a source of competitive advantage given that they are able to increase synergy between partners and minimize transaction costs. As shown above, in the case of these emerging country suppliers, it is observed that formal and informal mechanisms can have this same impact.

## **5. Discussions and propositions**

Figure 1 above summarized the main theoretical framework developed from the extant literature reviewed, and the data presented in the previous section provides empirical evidence to support the development of propositions. Firstly, to explain how the framework was confirmed and expanded, Figure 2 presents a revised, expanded version of the framework, which now includes the sub-categories that emerged from the data for each of the dimensions of the relational view initially included in Figure 1. For example, Figure 2 illustrates that

emerging country suppliers, in the midst of their networks of horizontal and vertical relationships, establish collaborative practices through investments in specific relationship assets – including through management improvement, R&D, eco-innovations and investments in exports. Figure 2 expands the outcomes from the adoption of collaborative practices showing that they create relational rents associated with improvements in sustainability initiatives and export processes.

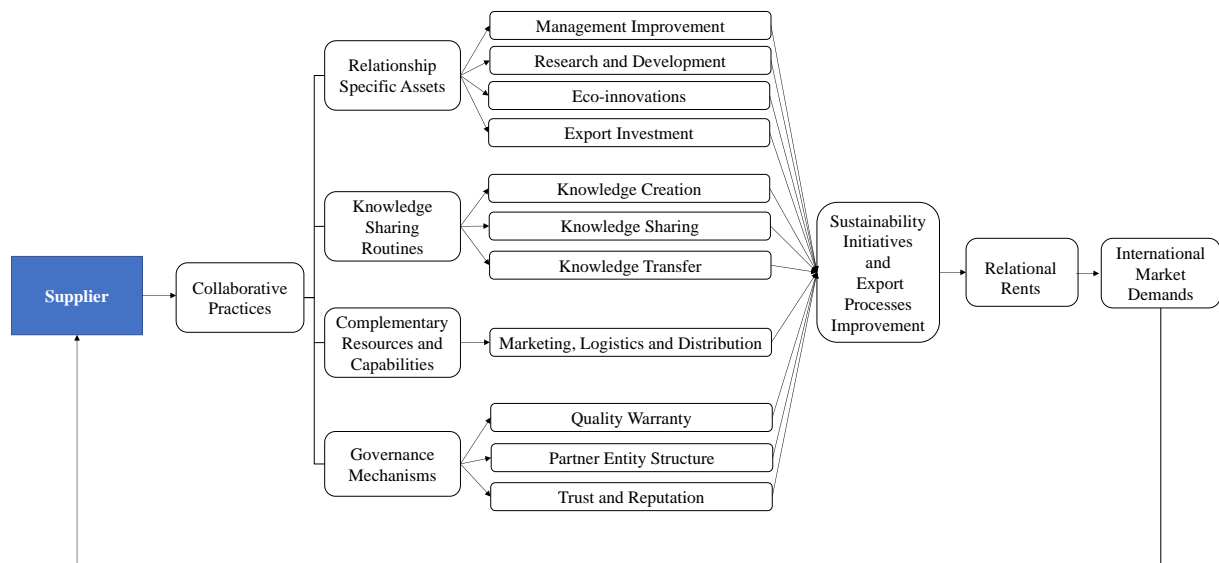


Figure 2. Relationship among collective practices, sustainability and relational rents of emerging country suppliers in global supply chains

Therefore, we found that: collaborative practices between key partners facilitate the development of emerging country suppliers in GSCs leading to improved sustainability-related practices and the creation of value in international markets. The data illustrates how this is taking place in the Brazilian coffee industry since the adoption of collaborative practices between the various national and international partners is providing the springboard needed for operations to be enhanced and developed using the principles of sustainability and value creation. Thus, the data demonstrates that a variety of such collaborative practices lead to the emergence of relational rents associated with sustainability and exports (Figure 2).

Therefore, this evidence also makes it possible to infer that the tenets of the relational view assist to explain how collaborative practices create value and improve the sustainability

initiatives of emerging country suppliers in GSCs. This is possible, since when establishing collaborative practices, partners develop sustainable practices that generate relational rents that are absorbed by the global chain itself. Therefore, based on the empirical results, it can be said that the creation of value occurred through relationships (Ngugi et al., 2010), which in fact were constituted by a dynamic and interactive process of sharing and recoding of individual and collective resources (Dyer & Singh, 1998) regarding sustainability and export. This involved interactions between members as well as routines and tools between organizations (Della Corte & Del Gaudio, 2014).

In addition, other aspects can be understood by the data, which contribute to a better understanding of the theory of the relational view, as well as the sustainability of emerging country suppliers operating in GSCs. Specifically, it was evident in the interviewees' reports that the main purpose for collaborative practices is to adapt to the demands of the international market. These demands come from the need to adapt suppliers to the laws of developed countries, as well as the requirements of consumers and the required socio-environmental certifications (Kaplinsky & Farooki, 2010). Therefore, it is emphasized that, in addition to the cultural aspects of the country and the relationship of trust present in the institutional environment, argued by Dyer and Singh (1998), external requirements enforce partners to develop and to maintain relational rents (Benstead, Hendry & Stevenson, 2018). Therefore, from the established discussions, some implications and propositions can be developed. Firstly, proposition 1 seeks to explain the influence of international market demand:

*P1: External requirements, such as certification, legislation and consumer requirements, lead emerging country suppliers to develop collaborative practices to enhance their sustainability initiatives.*

A second important aspect evidenced was the impact of the relational rents that result from the emerging economy suppliers' involvement in international markets and in

collaborative practices. These rents both arise from and lead to a greater understanding of international market demand, which in turn strengthens supplier capabilities to operate in these international markets and create value for these SC actors. The resultant positive feedback loop demonstrated in the findings of this study indicate that as the rents increase, the understanding of international market requirements grows, and this leads to the suppliers looking for further collaborative opportunities to further improve their sustainability initiatives and export processes. In this sense, the relational rents, though initially outcomes, then go on to act as facilitators of sustainability in the entire GSC. Thus when suppliers obtain relational rents they also can understand and better satisfy the international market demands by further improving their sustainability-related practices and creating value.

Therefore, it is understood that relational rents help suppliers to establish themselves within GSCs in a sustainable way. The means to do this include: sustainable strategies and practices that involve sustainable innovations (Diabat et al., 2014); environmental and social certifications (Hajjar et al., 2019; Rich et al., 2017); de-commoditization (Bustos & Moors, 2018; Ras & Vermeulen, 2009; Ras et al., 2007) and other forms that contribute towards the entry of such suppliers to GSCs.

Thus the sources of relational rents were seen to be the improvements in the suppliers' own businesses, that is, as better process management, i.e. export processes and value creation generated by the collaborative relationships between partners resulting in idiosyncratic contributions, which could not be obtained if they acted in isolation (Dyer & Singh, 1998; Capaldo & Petruzzelli, 2011; Li et al., 2012; Dyer et al., 2018). This leads to the second proposition:

*P2: Emerging country suppliers' collaborative practices generate relational rents that would not be obtained if they acted singly; and these rents in turn lead to a greater understanding of international market demands, creating a positive feedback loop that leads to further*

*collaborative practices and further improvements in their sustainability initiatives to satisfy international market demand.*

## **6. Conclusions**

This article aimed to investigate how collaborative practices with national and international partners influence the sustainability initiatives and relational rents of companies that supply GSCs. The results show that collaborative practices provide a strong foundation for sustainability initiatives, internationalization and relational rents for the foreign market. Our results suggest that GSC relationships depend on the involvement of key partners for the implementation of strategies related to sustainability initiatives in international markets. We found that the tenets of the relational view are adequate to explain the mechanisms for creating relational rents and improving sustainability initiatives by suppliers from emerging countries in GSC. From this evidence in the Brazilian coffee growing industry, it is suggested that the adoption of collaborative practices contributes to successful export processes and improvement in their sustainability initiatives.

As theoretical contributions, the study advances the understanding of sustainability in GSCs, pointing to collaborative practices as relevant mechanisms to generate relational rents for emerging country suppliers. Our results demonstrate the relationship between collaborative practices and relational capabilities as important factors for sustainability, for internationalization and for creating value for such actors in GSCs. No less important, this study also contributes to the advancement and consolidation of the theory of the relational view by supporting empirically and theoretically the constructs proposed by the theory, and expanding the key tenets of the theory (i.e. relationship specific assets, knowledge sharing routines, additional capabilities and resources, and effective governance mechanisms) into sub-categories as shown in Figure 2. In particular, we highlight the collaborative practices adopted by Brazilian coffee growers, who act as suppliers in GSCs and have not yet been analysed under

the relational view theoretical framework, as well as giving a voice to these agents. Thus, we address a specific gap in the literature identified by authors such as Jia et al. (2018), who argue for further studies involving suppliers from emerging countries. Finally, we develop propositions from our data indicating: how external requirements such as foreign market consumer requirements lead to collaborative practices in the search for sustainability improvements; and how these sustainability improvements in turn lead to relational rents which then lead to a greater understanding of international market demand, which results in further improvements in sustainability initiatives that would not be achieved if they acted alone.

From a managerial perspective, the evidence provided in this study on the sustainability initiatives of suppliers from emerging countries in GSCs can support the elaboration and implementation of public policies. It can also serve as information to the suppliers and to the focal companies for the formulation of appropriate strategies and the management of sustainability development mechanisms at the organizational level as well as across the entire SC (Pakdeechoho & Sukhotu, 2017; Jia et al., 2018; Mani et al., 2018; Liu et al., 2019; Koberg; Longoni, 2019).

Finally, as limitations we highlight the difficulty in empirically analysing the categories of knowledge and resource sharing routines and complementary skills. This limitation has already been argued by Tescari and Brito (2018) in their work using the quantitative approach.

As proposals for future research, it is suggested to investigate the barriers to relationships, relational rents and the adoption of sustainable initiatives of suppliers from emerging economies. In addition, new studies could compare the origin of suppliers as a means of identifying the uniqueness of interorganizational collaborative practices and their relationship to countries' level of development. Further studies could also use additional sustainability dimensions such as the Triple Bottom Line (TBL+) (Fritz & Silva, 2018) to study



sustainability in SCs in Latin America relating it to the relevance of inter-organizational collaborative practices in this specific context.

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## **Appendix 1 - Interviews Script sample**

Age:

Training:

Position in the company:

How many years have you been in office:

Operates in (city):

Area with coffee production (in hectares):

### Part I

1. What is sustainability for you?
2. Does your company adopt sustainability initiatives? Could you give some examples?
3. Why did you adopt these initiatives?
4. Does your company operate in the international market? In what sense?
5. Are there any demands from this market regarding sustainability? Which?
6. Do you see a relationship between acting in a global supply chain and the sustainability initiatives mentioned?
7. Do you face difficulties in this regard?
8. To what do you attribute these difficulties?
9. What have you been doing to overcome these difficulties?

### Part II

10. Do you have national and or international partners in your business? Who are they?
11. What are the benefits of this partnership?
12. Have these partnerships been relevant to your performance in sustainability?
13. Do you believe that they have learned or had other benefits from partnership/collaboration with them?
14. Do you think your company innovated from this partnership?
15. Do you notice a difference between the origin of the partners? (international learn more, for example?)

**PAPER 3 - Developing supplier sustainability competences through certification:  
an emerging country analysis**

\*To be submitted to the journal Business Strategy and Environment.

## **Developing supplier sustainability competences through certification: an emerging country analysis**

### **Abstract**

**Purpose:** This paper aims to investigate how sustainability certification programs adoption affects global suppliers' competences. Particularly, we are interested in which and why supply chain competences were developed by export-oriented Brazilian coffee producers.

**Design/methodology/approach:** A multiple case study strategy was employed to identify how emerging country suppliers have coped and managed the certification programs adoption. Thus, semi-structured interviews were developed with managers and a content analysis was developed to assess the impact of certifications on suppliers' competences.

**Findings:** By analysing suppliers' certification programs adoption, competences were spotted going beyond the Triple Bottom Line sustainability dimensions. In doing so, results show that they improved their culture to sustainability, the processes management and their relationships with buyers. Suppliers initially improved sustainability in their operations as part of the certification programs adoption, moreover competences at individual, organisational and supply chain level were evidenced. In addition, cooperation and collaboration were crucial in facilitating greater supply chain sustainability.

**Practical implications:** A greater understanding of supplier competences development through sustainability will aid buyers and certifiers agents to build novel assessment forms, which ratifies the role of the certification programs within the entire supply chain.

**Originality/Value:** This paper provides an understanding of the role of certification programs in the global suppliers' sustainability and competences development highlighting their perspective and expanding studies on suppliers' relevance to supply chain sustainability.

**Keywords:** Supply chain sustainability; Supply chain competences; Supplier country context. Certification. Emerging economy.

### **1. Introduction**

Global supply chains (SC) are more complex than local ones because they lead with more elements and particularities what challenge their management as well their sustainability (Koberg and Longoni, 2019; Muñoz-Torres et al., 2018). As modern globalised markets have required, sustainability has been becoming an important competitive advantage (Morais and Silvestre, 2018) what have been pushed companies to improve the management of impacts and risks related to sustainability throughout the SCs (Awasthi et al. 2018). In this context, some scholars have highlighted the relevance of emerging countries' suppliers as they are the majority in global SCs (Mani et al., 2018) and large part of these SCs activities (i.e., extraction, production and manufacturing) occurs in that countries (Jia et al., 2018; Li et al., 2018), which demonstrate the relevance of study these suppliers and sustainability in their operations (Jia et al., 2018; Koberg and



Longoni, 2019; Liu et al., 2019). Thus sustainability within these contexts needs to be better understood due to the impact of these suppliers' activities on the entire global SC sustainability and to the necessity of focal companies' management of impacts and risks related to these suppliers acting (Awasthi et al. 2018; Liu et al., 2019; Muñoz-Torres et al., 2018).

To manage sustainability in global SCs, buyer companies have required certification programs adoption by suppliers as a governance mechanism aiming to improve trust and strengthen the relationships among organizations (Alvarez et al., 2010; Hajjar et al., 2019). In food SCs, mainly in agriculture ones, certification programs have been increasingly spotted and valued in the international market as consumers and legislation in developed countries have become progressively stricter in this sense (Lambin et al., 2018). Thus, as many times certifications are prerequisite to participate in global SCs and a suppliers' assessment tool, emerging country suppliers have modified strategies and processes aiming to improve their learning and competences to sustainability to be certified (Hajjar et al., 2019). As these suppliers operate in a turbulent environment facing more barriers to sustainability (Akbar and Ahsan, 2019; Silvestre et al., 2015) and to surpass them, it has some evidence that they have adopted strategies like collaboration with other SC members (Bustos and Moors, 2018; Mani et al., 2018) and partnerships with research organizations (Bustos and Moors, 2018; Hajjar et al., 2019). It has some evidence that these strategies have enabled them to achieve certifications, learn and develop competences to sustainability (Bustos and Moors, 2018). For this study, we consider competences as sets of abilities to do something better that are constructed through experiences that lead individuals, companies and SCs to obtain benefits by them (Le Deist and Winterton, 2005; Mills et al., 2002) and in the research context, they are related to sustainability improvement at multilevel (i.e., individual, organizational and SC level).

It has been argued that it is necessary better understand why only some emerging countries suppliers effectively adopt sustainability in their operations and have positive outcomes from that while others not (Liu et al., 2019; Jia et al., 2018). what is crucial to reveal ways to improvement on global SC sustainability management (Liu et al., 2019). Despite some evidence that certifications bring positive outcomes to companies (Bloom, 2015; Hajjar et al., 2019; Vanderhaegen et al., 2018), there is unclear on how they occur and affect emerging country suppliers (Hajjar et al., 2019; Jia et al., 2018). Thus, this paper addresses these both research gaps by studying Brazilian coffee global suppliers aiming better understand how they have coped and managed the sustainability certification programs and the impact of certifications on their competences what can affect the entire SC sustainability. As the studied context is in a Latin American country that has its particularities on SC sustainability management like many aspects related to cultural and institutional changes, the TBL+ dimensions of sustainability (Fritz and Silva, 2018) were adopted. It approaches beyond of Triple Bottom Line (TBL) by Elkington (2004) and it can improve the understanding of emerging countries context due to it also approaches the cultural and institutional dimensions. Thus these additional categories were also considered to classify companies' competences and to support understanding of SC sustainability in that context.

The Brazilian coffee SC was studied due to its importance globally. Brazil is the largest coffee producer in the world that supplies around 32% of the total coffee consumed (Conab, 2021; International Coffee Organization, 2014;) and supplies GSCs such as Nespresso, Starbucks and Illy (Sakkis, 2018). Considering the relevance of supplier sustainability in global SC context, therefore, in this research, the supplier

perspective was approached, an often under-explored viewpoint in the sustainability literature (Jia et al., 2018), to answer the following research questions:

*RQ1: How sustainability certification programs adoption impact emerging country global suppliers' operations?*

*RQ2: Which supply chain sustainability competences were developed by emerging country suppliers through certification programs?*

This paper therefore provides new empirical evidence on how SC sustainability has been building through the suppliers' competences and the role of certification programs in this context, thereby making three main theoretical contributions. Firstly, the findings indicate that emerging country global suppliers' certifications have been implemented supported by interorganizational cooperation and collaboration that have improved companies' sustainability and supported them on their lack of knowledge and employees' qualification in this sense (Bustos and Moors, 2018; Mani et al., 2018). Secondly, the results demonstrate positive outcomes from certification motivating more sustainability strategies and certifications maintenance. Thirdly, it presents practical insights into the influence of certification programs as a key source of knowledge and skills as they provide building of multilevel competences that enable sustainability improvement at the entire SC. Thus, this study demonstrates the relevance of certifications to individual, organisational and SC development of competences within emerging economy suppliers influencing overall SC sustainability. These findings reveal how it is crucial to understand and better manage suppliers' sustainability as well recognize its relevance to global SC sustainability.

## **2. Theoretical Background**

### *2.1. Sustainability in global supply chains: the emerging country suppliers' role and certification programs effects*

Sustainability has been progressively necessary for companies and SCs to operate in the globalized markets and increase competitiveness (Agyemang et al., 2018). In order to achieve strategies in this direction, it is crucial a better management of SC sustainability that consists on managing interorganizational relationships and materials, processes, capital and information throughout SCs with aims focused on sustainability (Seuring and Müller, 2008). Currently, the main concept of sustainability is based on the Triple Bottom Line (TBL) (Elkington, 2004), however it has been argued that TBL is not sufficient to explain the goings-on in the emerging countries context (e.g., Latin American in their study) (Fritz and Silva, 2018). Thus, to analyse sustainability from emerging countries suppliers' perspective it is necessary to reflect on sustainability dimensions in that context what, according to these authors, the institutional and cultural aspects may also amplify the understanding of SC sustainability and, in this sense, they proposed the TBL+. This approach was adopted to analyse the characteristics of suppliers' certification programs adoption as well their competences built/strengthened through them as the emerging country suppliers operate in a different context than developed buyers with institutional voids, social inequalities and lack of qualified workers (Silvestre et al., 2015).

As global SCs have integrated organisations from different countries and many ones from emerging countries, mainly as suppliers (Morais and Silvestre, 2018; Muñoz-Torres et al., 2018), understanding these suppliers' role in global SC' sustainability is relevant because their operation and sustainability initiatives have been commonly linked with

buyers' requirements and SC strategy (Azimifard et al., 2018) and due to most of GSCs processes occur in these countries (Li et al., 2018). In this context, certification programs have been a relevant governance mechanism to international buyers assess suppliers and to intermediate their trust and interorganizational relationships (Bustos and Moors, 2018; Hajjar et al., 2019). Despite some studies present certification programs disadvantages like creation of extra costs (Hajjar et al., 2019) or being requirements imposed by buyers (Koster et al., 2019; Montiel et al., 2016), other ones evidenced several benefits from them to emerging country suppliers (Alvarez et al., 2010; Hajjar et al., 2019; Huq et al., 2014; Köksal et al., 2018; Koster et al., 2019). It has some evidence that certifications and other standards (e.g. codes of conduct, accreditation programmes and seals) can be a source of competitive advantage if they are in line with the business strategy (Pagell and Wu, 2009; Srivastava, 2007) and have a relevant role in SCs sustainability (i.e. improve suppliers' evaluation and lead them to act according to buyers' sustainability standards) (Seuring and Müller, 2008). Particularly on global SCs context, previous studies indicate that emerging country suppliers have been certified aiming to: (i) be assessed and accredited by their international buyers (Bloom, 2015; Bustos and Moors, 2018; Hajjar et al., 2019); (ii) follow their own sustainability strategic orientation (Köksal et al., 2018; Mani and Gunasekaran, 2018); (iii) learn, improve processes management and competitiveness (Hajjar et al., 2019; Silva et al., 2021); (iv) conform to local government regulations (Fontana and Egels-Zanden, 2019; Köksal et al., 2018; Mani et al., 2018; Nayak et al., 2019). Thus, from their strategies modification to operate more sustainably, some studies found these changes affecting themselves and the entire SC sustainability (Beske et al., 2014; Khalid et al., 2015).

In terms of mechanisms to improve these global suppliers' sustainability, it has been found collaboration with other SC members (Bustos and Moors, 2018), research centres, universities and NGOs (Bustos and Moors, 2018; Hajjar et al., 2019) and suppliers' cooperation (Bustos and Moors, 2018; Fontana and Egels-Zanden, 2019). These mechanisms have been enabled their certification implementation and maintenance as they have strengthened their sustainability learning and competitiveness (Hajjar et al., 2019). As emerging countries operational and socioeconomic context is different from that of developed ones, there global suppliers face additional barriers to operate sustainably and attend buyers/certification programs requirements in this sense (Akbar and Ahsan, 2019; Köksal et al., 2018). Thus, lack of knowledge and qualified workforce, difficulties on change culture/mentalities (Huq et al., 2014) as well high costs of certifications processes, adaptations have been evidenced as the main barriers faced by these companies (Akbar and Ahsan, 2019; Hajjar et al., 2019) to achieve sustainability. To surpass these difficulties, the literature highlights that they have enhanced their interorganizational relationships to improve knowledge sharing and learning (Akbar and Ahsan, 2019; Busse et al., 2016; Bustos and Moors, 2018; Fontana and Egels-Zanden, 2019) as well have participated in cooperatives what can develop sustainability competences and improve their engagement in initiatives in this sense (Silva et al., 2021). These modifications on companies' strategies, processes and culture aiming certifications and their maintenance have therefore boosted suppliers' engagement, learning and value creation to sustainability (Hajjar et al., 2019) promoting positive outcomes to entire SCs like improvement on trust between SC partners, facilitating the value added throughout the SC and sustainability spreading along SCs (Silva et al., 2021). These positive outcomes obtained by companies and SCs can develop organisations' competences and if they are strategically managed, sustainability improvement will be a result (Borland et al., 2016; Galleli and Hourneaux Junior, 2019). For instance, the study of Hajjar et al. (2019) found certification programs adoption in Brazil's coffee sector have improved

information spreading throughout SC and have reduced the environmental degradation, improved social and labour conditions, made the SC better-structured and well prepared to respond to international markets demands of sustainability.

## 2.2. *Competences and supply chain sustainability*

The definition of competences is not consistent (Galleli et al., 2019; Schulze and Bals, 2020) and based on some scholars, in this study, we define competences as a set of skills and knowledge developed through individual, organizational or SCs' experiences (Le Deist and Winterton, 2005; Mills et al., 2002; Osagie et al., 2016) what are developed over time, in an oriented manner that enable individuals, organizations and SCs be able to manage complex situations effectively resulting in a competitive differential for companies, which allows learning and expansion of internal resources (Kuzma et al., 2017).

Competences arises at multiple levels (Spekman et al., 2002) however they have been more studied at the individual level, and only more recently at the organizational level and at the SC level (Barnes and Liao, 2012). The initial studies on competences were introduced by McClelland (1973) and passing the time they started to be related to many management subjects of research (Barnes and Liao, 2012). From a strategic perspective, the competences approach at the organisational level has Prahalad and Hamel (1990) as the most representative scholars who emphasised the relevance of competences to organisations' strategies and practices. At SC level, there has been scarcity of research relating competences to SC performance and previous studies indicated competences building linked to interorganizational relationships and networks (Barnes and Liao, 2012; Ellinger et al., 2011). Thus SC competences seen emerge from integration and collaboration between and within SC members (Chen et al., 2009; Gold et al., 2010) what enable knowledge sharing, operations improvement, costs reducing (Ellinger et al., 2011), market requirements filling (Esper et al., 2010) also buyer-supplier trust improvement (Stank et al., 2003) suggesting SC competences as a source of competitive advantage (Ellinger et al., 2011; Gold et al., 2010).

The literature shows positive effects from organizational competences to companies' sustainability mainly related to knowledge building/sharing and improvement on interorganizational relationships (Borland et al., 2016; Gold et al., 2010; Murthy, 2012). However, how competences affect entire SCs need to be studied (Barnes and Liao, 2012; Flöthmann and Hoberg, 2017), mainly in terms of sustainability as they are essential for implementing SC sustainability practices, which may represent sources of competitive advantage (Gold et al., 2010). As relevant at global SC context, the emerging country suppliers' perspective is still under researched and its better understanding can support focal companies' strategies and management of SC sustainability (Jia et al., 2018; Liu et al., 2019). Some studies demonstrated that the sustainability strategies require development of specific competences at the organisational and individual level (Galleli and Hourneaux Junior, 2019; Osagie et al., 2016) and that competences management affects the companies' sustainability (DuBois and Dubois, 2012; Wiek et al., 2011). Thus, for implement sustainability strategies, it is necessary managers and employees' commitment and awareness, companies' knowledge to be sustainably innovative (Osagie et al., 2016) as well competences on relationships and communication (Galleli and Hourneaux Junior, 2019). These competences will represent what company do well and deliver value (Le Deist and Winterton, 2005; Ulrich and Dulebohn, 2015), mainly if they work aligned with sustainability strategies.

Organizational competences are constituted of more than a combination of individual competences (Berényi, 2012), but a set of skills in line with strategies

(Boyatzis, 2009; Prahalad and Hamel, 1990) and organisations' knowledge building and organisational culture (Flöthmann et al, 2018; Scully-Russ, 2012) because they involve more than cognitive ability (i.e. related to process management and operational activities) but also skills and attitudes such as awareness and social abilities (i.e. communication skills, culture and values) (McClelland, 1998; Spencer and Spencer, 1993). They also can support companies to solve challenges and problems related to sustainability as well enable benefits from sustainability practices (Galleli et al., 2019). To achieve sustainability, they need to be embedded into the company's culture (Scully-Russ, 2012; Vithessonthi, 2009) what requires development of a vision of sustainability and strategies to change work, processes and behaviours in this sense (Galleli and Hourneaux Junior, 2019). Thus, changing people's perception of reality and behaviours in the organization practices are crucial to develop and strengthen competences (Boyatzis and Boyatzis, 2008; Galleli et al., 2020).

As competences can be understood as a set of skills and learning that result in a competitive differential for companies, generally developed over time, in an oriented manner, which allows learning and expansion of internal resources (Kuzma et al., 2017), they can be linked to positive outcomes from emerging country suppliers' sustainability initiatives (Köksal et al., 2018; Hajjar et al., 2019). In this sense, concerning to economic dimension, such initiatives enabled manage costs and competitiveness (Hajjar et al., 2019). Social dimension outcomes have been related to employees' greater well-being like reduction of absenteeism and employee turnover (Tencati et al., 2008), also employees' engagement in sustainability strategies (Diabat et al., 2014) and labour retention (Huq et al., 2014). Environmental aspect looks mainly related to reduced use of natural resources (Bustos and Moors, 2018; Ras and Vermeulen, 2009). The cultural facet has presented changes in traditions/routine mainly in terms of workers awareness and dynamic, what looks also enabled organizational learning (Köksal et al., 2018; Li et al., 2017; Mani and Gunasekaran, 2018). Institutional outcomes have been highlighted in terms of improvement of companies' reputation and learning. Thus, suppliers have obtained more visibility due to sustainability certifications gaining legitimacy and reliability for their business (Hajjar et al., 2019; Köksal et al., 2018). They also have learnt about negotiation processes (Bloom, 2015; Hajjar et al., 2019) and collaboration (Mani et al., 2018). Therefore, as goals and challenges related to sustainability require specific organizational competences (Osagie et al., 2016), emerging country suppliers have learnt to effectively operate in global market filling their buyers' certifications and requirements to sustainability (Hajjar et al., 2019; Huq et al., 2014; Köksal et al., 2018; Koster et al., 2019). Thus, this paper addresses competences from suppliers' experience through certification to promote their sustainability and throughout SC.

As sustainability strategies require specific organizational competences due to face more complex challenges and need specific knowledge (i.e. to adapt processes and conduct initiatives) (Osagie et al., 2016), emerging country suppliers have improved their operations in global market filling certification programs and their buyers' requirements to sustainability (Hajjar et al., 2019; Huq et al., 2014; Köksal et al., 2018; Koster et al., 2019). It may be promoting differentiated sustainability knowledge and improvement on management as well competitiveness (Carter and Rogers, 2008). Thus, this paper addresses competences from suppliers' experience through certification to promote their sustainability and throughout SC analysing them in the context that they are (Fischer et al., 1993) considering knowledge and skills related to that situation as well how organizational culture and awareness to sustainability have been affected (Kilcourse, 1994). Thus, it has been argued that competences have also cultural aspects and they are essential to relationships and value creation thorough SCs (Barnes and Liao, 2012;

McCarter and Northcraft, 2007; Spekman et al., 2002). It has been argued that competences arise through the collaboration and other kinds of interorganizational partnerships throughout SCs as during these relationships' partners share and build knowledge (Carter and Rogers, 2008; Hargadon and Sutton, 1997).

### **3. Research Method**

This study adopted an exploratory approach with a multiple case study strategy (Ketokivi and Choi, 2014; Yin, 2017) aiming to identify how global coffee suppliers have coped and managed sustainability certification programs adoption and the outcomes from this process. This method was chosen due to its potential to allow the obtention of rich data (Eisenhardt and Graebner, 2007) and it can be particularly appropriate and very employed in supply chains studies (Seuring, 2008). Thus, an in-depth data collection was made in order to understand the global supplier's perspective in terms of certification impacts on their competences.

#### *3.1 Case selection criteria and research protocol*

The research protocol was focused on research questions. The Brazilian coffee producers participants were located in the Cerrado Mineiro Region, in the Minas Gerais state, which is an important region in terms of production and export amount, due to supply important GSCs, be certified according to its origin (Coffee from the Cerrado Mineiro Region) as well has a tradition of be innovative and sustainable. This region has around 4500 producers operating in 55 municipalities (Região do Cerrado Mineiro, 2020), supplying relevant GSCs of companies such as Illy, Nespresso and Starbucks (Sakkis, 2018).

The participants were selected based on two criteria: (i) act export-oriented and (ii) be medium or large coffee producer, as they are more involved with sustainability (Antonioli et al., 2013; De Marchi et al., 2012). The companies' size is related to hectares planted with the crop which criterion has been embraced by the Federation of Cerrado Coffee Farmers, based on legislation regarding the Tax on Rural Territorial Property (ITR) and its classification of rural properties. All participants had at least four modules - the minimum size for a rural property to be classified as medium-sized. Each module, in this classification, equals to 40 hectares – corresponding to 160 hectares of coffee plantation area.

#### *3.2 Data collection*

For data collection, semi-structured interviews were developed with managers to understand the context. To contact the participants, the “snowball” technique was adopted (Teddlie and Yu, 2007) and the sample therefore was established through this process. Initial interactions were made by calling some managers known by the researcher, and from their acceptance and suggestions, further producers were added to the sample. Thus, twenty coffee producer companies were studied in this research. The saturation level criterion was adopted to cease interviews what occurred when no more significantly new information was added (Eisenhardt, 1989). The set of interviews were conducted either face-to-face or by phone, according to the availability of the participant. Table 1 presents participant information as well as the interview lengths. The data gathering occurred in November 2019 with the aim to better understand the sustainability initiatives and

certification programs adoption by coffee producers in Brazil. The data collection had a specific script of questions and a sample of these questions is presented in the Appendix.

**Table 1** – Information of companies, participants and their certification programs adopted

Participant	Production size (hectares)	Time as company manager	Sustainability certification programs	Interview length
P1	Medium	7 years	Rainforest, DO	30 min
P2	Medium	5 years	UTZ, Rainforest, DO	43 min
P3	Medium	18 years	UTZ, Rainforest, DO	54 min
P4	Large	4 years	Rainforest, DO	27 min
P5	Large	33 years	UTZ, Rainforest, DO	25 min
P6	Medium	6 years	UTZ, DO	72 min
P7	Large	35 years	UTZ, Rainforest, DO	33 min
P8	Large	32 years	UTZ, Rainforest, DO	27 min
P9	Large	16 years	UTZ, Rainforest, ISO 14001, Certified B, Organic	33 min
P10	Large	15 years	Rainforest, ISO 14001, DO	67 min
P11	Large	6 years	UTZ, Rainforest, DO	34 min
P12	Large	2 years	Rainforest, DO	23 min
P13	Large	10 years	UTZ, DO	39 min
P14	Medium	28 years	UTZ, DO	25 min
P15	Large	40 years	Rainforest, DO	33 min
P16	Medium	2 years	UTZ, DO	27 min
P17	Medium	43 years	Rainforest, DO	31 min
P18	Medium	9 years	Rainforest, DO	33 min
P19	Medium	17 years	UTZ, DO	39 min
P20	Medium	8 years	Rainforest, DO	22 min
Total:	-	-	-	717 min

DO: Designation of origin certification (Coffee of Cerrado Mineiro Region); Medium: between 4 and 15 modules; Large: more than 15 modules. Each module, in the Cerrado Mineiro Region, is equivalent to 40 hectares.

The interviews were conducted in Portuguese, recorded and transcribed verbatim, producing a total of 154 pages of interview data. Selected quotations were translated to English to present results. In addition, secondary data was collected during this period to triangulate the interview information with other sources, including: websites of participant organisations, cooperatives, Federation of Cerrado Coffee Farmers and of certifiers; news about certification programs adopted of coffee producers in Cerrado Mineiro region.

### 3.3 Data analysis and rigour

The content analysis was carried out to understand the information gathered, as it has been argued to be an appropriate technique to analyse case studies data (Mayring, 2004; Seuring, 2008). Thus this procedure was used to understand the empirical findings and their relation to the research questions. To develop the analysis, the focus was centred on the characteristics of certification programs adoption and the supplier competences built through that. First, an in-case analysis of the experiences of each of the twenty cases was done to understand their experience through certification implementation, the motivation for that, the mechanisms adopted, the difficulties during this process, how they have surpassed these obstacles and the outcomes from certifications. The outcomes

were classified according to TBL+ sustainability dimensions (Fritz and Silva, 2018) that support understanding SC sustainability in Latin American as well emerging countries context. Secondly, a cross-case analysis was carried out to identify and analyse the competences developed from certification processes. In doing so, the certification programs drivers (internal and external), mechanisms, barriers and outcomes emerged from the empirical findings, what were selected only when mentioned at least three times among the cases. The positive outcomes feedbacking new sustainability strategies as well as the maintenance of certifications also arose in these analyses. This inductive analysis allowed a better understanding on how certification programs adoption occur at studied context and the type of advantages suppliers have achieved. In the final stage of the analysis, the competences built through certifications were identified and classified in three levels, what was defined *a priori* whilst the subcategories linked with each level emerged inductively (Kovács and Spens, 2005; Saunders et al., 2019). These competences were also classified according to TBL+ as they present characteristics related to its dimensions.

Having first identified that all farms were certified and which certification programs they have adopted, each characteristic of certification dynamic mentioned by respondents were central to better understanding how suppliers' sustainability improvement can also affect GSCs sustainability and how their adopted certification programs influence on suppliers' organizational competences development and how these competences were related to individual and SC level. At each stage, the research analysis was based on management perceptions of certification implementation, the main changes as well the competences development from that. To ensure research rigour reliability and validity criteria were applied (Yin, 2017). Reliability was ensured through the use of the research protocol and triangulation (between interviews and the secondary data) (Seuring, 2008; Yin, 2017). To ensure internal validity a second set of interviews was conducted to compare the first interviews and secondary data analysis with managers viewpoint on that interpretation – the subject of the second round of interviews. The second round of interviews occurred in October 2020 and it was carried out by phone given the social distancing restrictions as the COVID-19 pandemic was occurring. At this stage, thirteen managers were interviewed. For these interviews' specific questions were elaborated in line with first interviews analyses aiming to confirm the researcher understanding of that set of data.

#### **4. Findings**

This section presents the findings on how and why sustainability certification programs occurred by considering the main reasons and the mechanisms practiced during this process. Following it is discussed about suppliers' competences developed through certification.

##### *4.1. Certifications programs in the coffee export-oriented industry: understanding why and how they were adopted as well their effects*

Table 2 shows the characteristics of sustainability certification programs processes, their effects and why coffee producers aim continue in this way. This table presents



motivations, mechanisms, barriers, outcomes and feedback from certifications acting as new drivers to maintain certification programs. This presents benefits from sustainability initiatives formalized by certifications.

*Motivations:* Data show companies adopted certification programs pushed by internal and external drivers. The internal motivations were sustainability orientation, goals to improve companies' processes management and to receive additional payment for their coffee while the external factors were related to buyers' requirements and national legislation. As managers recognize their certification programs adoption been pressed/pushed by international buyers, P4 said: *"The buyer requires certification and certification requires us. We must operate sustainable for the company to be in evidence. The market is asking for this"*. It indicates that they see certification programs working as tool to gain access to international markets. They also related certifications to the strictness of Brazilian legislations in terms of labour and environmental aspects as said P7: *"Brazilian legislation is extremely strict. Social and environmental sustainability are linked to Brazilian legislation. Rainforest and UTZ certifications include less than or equal our legislation"*. Concerning certification programs' requirements, managers stated that Brazilian legislations are stricter than referred obligations. They also pointed out their obligation to follow stricter certification programs' rules - in comparison with other coffee producers' countries - as national rules related to sustainability are more severe than in these countries. Thus, P13 stated:

The certifier explained to me that they cannot demand less than Brazilian law. So, as our legislation is much stricter than that of other coffee-producing countries - environmental laws, labour laws - so certification is more costly and more painful for us than for producers in these other countries.

As Table 1 showed, all companies adopted at least one sustainability certification program – Rainforest or UTZ – and except one, all have the designation of origin - Coffee of Cerrado Mineiro Region – that it is also relevant in terms of sustainability, i.e., improve traceability. In general, they are satisfied with certification programs they adopted however, some of them (P3, P7, P11, P15, P17) desire adopt certification program of organic products, as argues P7: *"In addition to Rainforest and UTZ, I plan to also be certified organic"*. This finding indicates their awareness and aim to improve sustainability strategies achieving other certifications.

*Mechanisms:* To achieve and maintain certifications, they participate in certification groups managed by cooperatives. Managers argued that certification in groups and the cooperative support have been particularly important as they exchange experiences and learning and are constantly updated about certification programs rules, international market tendencies and receive training. In this sense, P4 said: *"I participate in a certification group, a group of 40 farms certified in partnership with the cooperative. It helps us a lot, communicates us about changed standards, new demands from buyers. It informs us and we are adapting"*. It indicates the relevance of cooperation and collaboration in certification process and organizational learning as P12 also stated: *"The way is always to talk to someone, exchange ideas, know how the other company does it, how it worked. [...] It is necessary to relate with other producers, have this connection, this exchange of experiences"*. Beyond collaboration and cooperativism, they have been invested in research and innovation (i.e., R&D) to achieve responses for sustainability challenges in agriculture processes in terms of fill certification programs requirements. In this sense they have partnerships with research institutions (e.g., universities/research centres/NGOs) as P12 explains that: *"We have a partnership with Epamig [governmental research institution]. Epamig has the experimental field inside the farm. [...] This project*

*is vast. There are many farms involved, they support and give the support we need*". In addition, P9 emphasised relevance of research: *"We have invested in research on the farm. Research is as important as producing coffee. We dedicate ourselves a lot to this because while we are researching, the team thinks"*. These findings indicate that they must constantly learn and develop abilities/skills to achieve/maintain certifications. Furthermore, some producers contracted specialized consultancy companies to assist them to follow certification programs requirements.

"We have consultancy from one company for environmental aspects and another in terms of safety at work. We also have a company that does pest and rodent control. There are many things that today are all outsourced. In total, we have around six or seven consultancies. They help us a lot, mainly because we often do not have professionals with this specific knowledge here on the farm." (P8)

*Barriers:* Lack of sustainability knowledge and qualified professionals have been the main barriers faced by producers during certification implementation/maintenance. Thus, managers statements reveal the relevance of training, cooperation with other suppliers and collaboration with research institutes as well consultancy to surpass this obstacle as trough these tools they have learnt and developed skills. In this way, P10 explains: *"We have a level of workforce below what we need. They were educated in poor families and without many opportunities. You cannot expect much from them because they have not had opportunities. We offer courses but it is not so simple. The role of consultancy and collaboration in this context was highlighted: "We hired a company of environmental technicians to guide us because many things we did not know and were unable to follow"* (P1). *"As we are certified in groups, there is a lot of exchange of experiences. I often call to farm X, which has been certified for a longer time and we keep helping each other. We see the best practices of others to apply in our case"* (P6). Lack of knowledge also affected changing of culture/mentality (i.e., non-monetary costs of changes) as P12 explains: *"It is difficult to implement changes, to adapt. It takes a lot of time, we have to insist, persevere"*. High costs of certification programs adoption were less mentioned what can indicate that barriers related to lack of knowledge have been their main issue in certification implementation/maintenance. These findings reveal how the turbulent emerging country suppliers' context (Silvestre, 2015) concerns their certification implementation leading them to improve their interorganizational relationships as a remedy to face barriers related to lack of knowledge.

**Table 2. Certification Dynamic**

CATEGORY	DESCRIPTION	EVIDENCE	SAMPLE QUOTES FROM THE EVIDENCE	SOURCES
<b>Motivations</b> (drivers)	Internal motivations	Strategic orientation	I want to produce something better for the people who are having our coffee. It is good know that the thing we are doing here, someone is evaluating and honouring us. So, we want to do better and better. Opening new markets also motivates us. (P4)  Sustainability is a philosophy of our company, regardless of anything, this is our motto, doing things correctly, being a company focused on caring for human beings and nature. (P5)	P1, P4, P5, P6, P9, P10, P12,P15, P17
		Premium price of coffee	They extra pay per bag if we have certifications, but the financial reason is not the only one because it is not so much in each bag of coffee. (P4)  Of course, it is important to be certified to earn an additional price for coffee for that. (P8)  If I have the certification, they pay me more for each bag of coffee. (P11)	P1, P4, P8, P10, P11, P13, P17
		Improve processes management	[...] to better organize the farm, to have things clearer and better done. And meet the certification. It is good to have someone guiding you, asking you, for we not become accommodated. (P4).  Those producers who are not certified yet, I always recommend it to them. It is important certify to improve companies' management. [...] The certification makes the producer specialize in collecting data to create a history of his lots. (P6)	P1, P4, P6, P11, P13, P18, P19
External motivations	Buyers requirements		[...] it is a market requirement and the consumer too, right? So, whoever does not have this idea, this attitude of be more sustainable and more transparent in everything he does on the farm every day, he will be the last to have preference by buyers. (P5)  Companies buy our coffee only if we have UTZ or Rainforest certification. These are the main two. (P8)  They are looking if we have any certification. Having certification, it is already a guarantee for them. The international market is more worry about sustainability aspects. (P12)	P1, P2, P4, P5, P7, P8, P10, P11, P12
		Local legislation requirements	Here in Brazil, the laws are very strict. Here in Brazil the laws are very heavy in relation to other coffee producer countries. They check a lot. The Ministry of Labour also carries out very heavy inspections. Certifications' requirements are compatible with the law because the law is already very heavy. (P5)	P1, P2, P3, P5, P6, P7, P8

<b>Mechanisms</b>	Adopted to obtain and maintain certifications	Certifications in group monitored by cooperatives	I have certification in group. This partnership with the cooperative is essential, they guide us on certifications and often help us to train employees. (P2)	P1, P2, P3, P4, P5, P6, P7, P8, P10, P12, P15, P16, P17, P19
		Partnership with universities, research centres and NGOs	We have partnership with UFV [Federal University of Viçosa], we do a lot of research together. (P1) We participate in environmental projects with the NGO CONSUB, which works directly with environmental education issues in the Region of Cerrado. (P3) We have research laboratories and we also work in partnership with universities. (P9)	P1, P3, P5, P7, P9, P10, P12, P15, P16, P20
		Employee training	We promote training and events for employees on health care. (P3) We always do training with employees, both on work issues and on caring for the environment and themselves, on well-being. This month we did an event on emotional health. (P4) I like to give employees specialty coffees produced on the farm. We roast the coffee and give each of them a gift package. I also like to buy roasted coffee from our national and international clients' cafeterias and prepare special coffees for them here [...] I like sharing this knowledge with them for they understand what they do on the farm, especially when it comes to specialty coffees, how much it impacts on the result and quality of coffee. (P6) One thing I value is that everyone who comes to work with me leaves here better than when they entered. Training is relevant in this sense. (P8)	P1, P3, P4, P5, P6, P7, P8, P10, P11, P12, P13, P16, P18, P19
		Consultancy	We have consultancy companies to help us with environmental and people management issues. (P3)	P1, P2, P3, P4, P5, P8, P12, P17
		Research and development	We have a research laboratory on biological solutions against pests. (P3) We have research on electromagnetic water to see if we can reduce the use of water in irrigation. [...] We also have a work on nematode varieties in partnership with Epamig, in search of existing varieties and to be able to publicize pros other producers too, not only for the farm, but also for a regional effect [...] all of this is precisely to rationalize the use of both water and chemical pesticides. We also have a micro factory of biological materials, where we use many bacteria and fungi on the farm, in a natural way, to reduce the use of pesticides. (P5)	P3, P5, P9, P10, P11, P14, P15, P16, P18
<b>Barriers</b>	Internal	Lack of sustainability	There is a lack of qualified labours, especially here, which is a small city. It is complicated. [...] Many times, we do not know how to attend some certifications requirements. (P2)	P2, P3, P7, P10, P13,

		knowledge and qualified professionals	The level of qualification of the people who work here is slightly lower. So we always have to train them. (P7)	P14, P15, P18
		Non-monetary costs of changes	A lot of initial resistance from employees to adapt, to change culturally and with new routines. It was hard. (P6) When we started, they questioned why we were bringing these things of sustainability. They said that we were changing the local culture, that I did not have to do all that. (P9)	P3, P6, P9, P12, P15, P17, P20
	External	High costs of certification programs implementation	The cost of adaptation is expensive. Maintenance is also very expensive. (P7) It is very expensive to adapt everything according to the certifications. (P17)	P2, P3, P7, P15, P17
<b>Outcomes</b>	Economic	Premium price	The certification helped us with a lot in terms of sustainability and it adds to the sale value of coffee. So we got better and the result started to appear. (P4) There is also the financial part. When selling coffee, we receive an extra amount for the farm to be certified. So it was also a gain for commercialization. (P12)	P1, P4, P5, P7, P8, P11, P12, P15, P19
	Social	Improvement on Employees' well-being	It changed a lot for the employees, mainly for their health [...] The certifications guided us a lot in this. (P3) We have parties and gatherings and we are all together. So, we are all very close, the relationship is good and this is good. (P4)	P1, P3, P4, P5, P6, P7, P9, P14
	Environmental	Reduction of negative impacts	I believe that we now have a much less impact on nature. We use less water and reuse much of it. we recycle the garbage. (P5)	P1, P3, P5, P6, P7, P9, P10
	Cultural	Changing in culture, traditions and routines	Today, people better understand the importance of wearing personal protective equipment, having lunch together and keeping workplaces more organized. (P3)	P2, P3, P4, P6, P9, P10, P12
		Workers' qualification and empowerment	When we receive overseas visitors, the employees who take care of certification and traceability participate [...] My employees have this intercultural experience. They like it and learn a lot from it. (P3)	P3, P4, P6, P9, P10, P12

	Institucional	Better reputation and trust	Now our buyers visit us, talk with employees and confirms what we have done in terms of sustainability. Our reputation improved a lot. (P9) We have gained visibility. We are well regarded in the market. (P10)	P4, P5, P8, P9, P10
		Organizational learning	Many of issues that we had, now have become small, we learnt. (P1)	P1, P4, P5, P6, P12, P17
	Negative effects		No. No negative effects. Absolutely sure of that. (P5)	P1, P2, P3, P4, P5, P8, P9, P10, P11 P12, P14, P15, P17
<b>Performance information acting as new drivers</b>	Feedback	Positive outcomes reinforcing motivators	There has to be continuation. I want to continue on this sustainability path. It has been really good. (P11)	P5, P6, P9, P10, P11, P12, P13, P15, P16

*Outcomes:* The findings indicate that managers recognise certification programs as guides for companies' sustainability management, orientation of actions/behaviours and as tools that have given them many competitive advantages. In this way, P9 argued that: *"Certifications materialize the culture of sustainability. They enable values transform in practices"*. About competitive advantages, P1 stated that: *"We won on both sides, with sales and with better internal organization. So, we only have gains. I do not see anything negative about certification"*. The certification programs' outcomes were classified according to TBL+ sustainability dimensions i.e., economic, environmental, social, cultural and institutional. In terms of economic aspects, they achieved additional coffee price due to be certified and about it, P1 stated that: *"This is a great incentive because beyond being sustainable, we are doing the right thing and gaining something more"*. On social dimension, they recognize an improvement on Employees' well-being, as P3 stated: *"It changed a lot for the employees, mainly for their health [...] The certifications guided us a lot in this"*. The environmental aspect evidenced was the reduction of impacts from their operations, as P10 said that: *"The certification requirements are numerous, but they lead us to harm the environment less"*. The cultural effects were modification in behaviours/culture and employees' empowerment as managers highlighted, companies' sustainability culture has improved and strengthened. Thus, P12 stated that: *"People started to fit in, things started to settle down. Today has become routine"*. In terms of empowerment, employees became more engaged in study and know more about other languages and cultures, as P6 declared: *"Today employees have a feeling of belonging, they are proud to be part of this process. For example, one of our employees is taking English classes on Saturdays, studying at night at college doing Agronomy, I see that this is a way for them to learn more"*. Related to institutional facet, coffee producers improved their reputation/trust to negotiate with buyers and learned on sustainability aspects also on multiple management areas (e.g., processes, financial and human resources management). In this sense, P12 argued: *"Many things that we did not know or do before, today we do. The employee care part got much better here"*. In addition, P9 explained that:

*"At the beginning, certification was required by several customers. Today, if our company had none of the sustainability certifications, our customers would still believe in us because they come here and see it. We have heard a lot like this: I do not care about the certification you have, because I have already seen what you do. What you do, for me, is truer than certification says. The relationship is informal and based on trust. They come, visit the farm and draw their own conclusions"*.

*Performance information as new drivers:* These findings show that despite barriers to be certified and maintain that, they largely recognize positive outcomes from certification programs adoption and have been strongly engaged to continue certified and improving their sustainability strategies continually. Thus, P5 stated: *"We believe that this is the way to go and today we see that there is no going back. This is the way. This is a matter of order. Whoever is not more and more sustainable will be out and I want to continue. It has to be more and more sustainable"*. In the same direction, none of them referred to negative outcomes from be certified and P9 highlighted: *"I only see positive outcomes and we only are here because we chose to be sustainable there when we were born"*. Based on these data, it seems that certification programs adoption has been beneficial to these suppliers as they emphasized relevant positive outcomes from them and their intention to continue certified and aiming for more sustainability. Thus, the positive outcomes from certification have acted as new drivers to more sustainability.

#### 4.2. Supply chain sustainability competences developed by emerging country suppliers through certification programs adoption

Beyond analysing suppliers' certification programs adoption by management viewpoint, nine multilevel competences (i.e. individual, organizational and SC level) were evidenced and related to sustainability certifications. Thus, Table 3 summarises and provides further evidence of each competence, showing how they work at each level and their classification according to TBL+ sustainability dimensions.

On economic aspect, the competence of better financial management was strengthened. Managers mainly highlighted how they can better analyse companies' data and reduce costs. They mentioned the relevance of this for organizations and SCs, as they have reduced losses and use of pesticides what led to costs reduction. In relation to environmental dimension, they developed competence of better manage environmental resources in the sense of reduce negative impacts from their operation. This competence was mentioned only in relation to organizational level what may demonstrate that managers percept this relevant mainly locally. The social competence built was better human resources management and it is linked to employees' retention and increasing of their motivation to work. As these employees became more connected and felt making part of companies, they got more engaged with studies and courses related to their work. Consequently, it made them better qualified for their activities. Managers recognize it reflects on SC as buyers visit companies and see employees/teams motivated what promotes trust between them and the entire SC better reputation as P19 said: *"Meeting social sustainability requirements is also good for buyers. They can show customers that our coffee is fair"*. The cultural competence developed was an improvement of sustainability culture management as this culture has gotten intrinsic to companies' routine what also positively affects buyers trust as P10 stated: *"Sustainability is not more an obligation, it is not something that bothers us, now it works without disturbing anyone. We all understand that very well. Today it is automatic, it has become a habit"*. P20 added: *"We changed thoughts, we changed behaviours. Certification is having someone really attesting that you are on the right way. It is not just you saying it is sustainable, it is having a reliable someone assuring it to your buyer"*. This cultural competence demonstrates how companies became able to make sustainability deep and change mentalities/ behaviours.

Competences linked to institutional dimension were the majority what indicates that certification programs adoption indeed strengthened this aspect of sustainability knowledge. Thus, four competences emerged in this sense: (i) strengthening of sustainability strategic orientation, improvement of (ii) processes management, (ii) negotiation management, (ii) interorganizational relationships management, (ii) organizational learning and continual improvement management. Their sustainability orientation was consolidated as managers recognize continuous learning and skills development and positive outcomes from operating in this sense, as P6 stated:

We have come a long way towards sustainability. The new challenges become easier because you have already overcome the cultural barrier, the initial resistance of employees. From the moment they see that this change brings a positive impact on the work environment, it gets better.

As presented in Table 3, it seems that other institutional competences demonstrate increasing of companies' learning, trust and power as they can operate more effectively and improve themselves constantly affecting their ongoing GSC activities. In this sense, P4 said: *"If you score well on certifications, the buyer trusts you. We won awards and now we are seen as a better company"*. In addition, P9 argued: *"With each passing year,*



*we are surer that we would not get where we got in recognition from buyers if we were not sustainable. We need to improve year by year*". Thus, these findings show SC sustainability has been affected by suppliers' competences building and how learning as well skills developed from experiences has been relevant at individual, organizational and SC level. In this direction, P13 stated: *"If I continually learn and improve, consequently, the entire chain follows in this direction"*. This evidence reveals the certification programs role in GSCs' sustainability, what begin as a tool to buyers assess suppliers and over time, they promote competences and knowledge development what positively can increase SC sustainability (Hajjar et al., 2019).

**Table 3. Multi-level competences through certification programs adoption**

<b>Competence</b>	<b>Level</b>	<b>Sample of key quotations</b>	<b>Evidence</b>	<b>Sustainability Dimension</b>
<b>Financial management</b>	<b>Individual level</b>	I learned a lot about management from the certification process. Today, I can predict better scenarios, manage my costs better. (P17) Certification helps us a lot because everything is very detailed and I learn to be more organized and detailed as well. (P19)	P1, P3, P5, P6, P12, P17, P18, P19, P20	Economic
	<b>Organisational level</b>	We well manage our resources, also have reduced costs because certification guides the farm to do our practices more sustainable and well organized. This better organization improve costs reduction. (P1) We have greatly reduced the use of crop protection products. Now everything is planned, everything is studied before. The use is conscious and without waste. It certainly improved a lot. (P4)	P1, P2, P4, P5, P6, P8, P11, P12, P14, P15 P18	
	<b>Supply Chain level</b>	Certifications make the producer specialized in collecting and organizing data about his coffee. It is possible to better manage processes and the financial part. This benefits the entire chain. (P6) When I reduce costs and inputs using, there are positive results for everyone. (P20)	P6, P8, P9, P18, P20	
<b>Management of environmental impacts</b>	<b>Individual level</b>	No mentioned.	-	Environmental
	<b>Organisational level</b>	We have increased the area of forest reserves. (P1) We use less water for irrigation and recycle all the produced waste. (P5) Today we use less chemicals. Biological solutions help a lot. (P9) We have been using less and less herbicides. We have been managing the bush. (P15)	P1, P2, P3, P4, P5, P6, P7, P9, P10, P12, P15, P18, P19	
	<b>Supply Chain level</b>	No mentioned.	-	
<b>Human resources management</b>	<b>Individual level</b>	We are their motivators and vice versa. (P10) Employees' motivation keeps me motivated too. Now employees are now more qualified. They all had to take the courses. It was great. In fact, it was through certification that things were improving. (P12)	P10, P11, P12, P13, P16, P17, P20	Social
	<b>Organisational level</b>	We have heard from the people who work with us that here is one of the best places to work. So, we were glad with this feedback. (P3) I have a female tractor driver. Almost no farm has women in this position. They do this well. (P4) We have employees working here for 25 years and this is a sign that we have been sustainable. It is a sign that we offer living conditions, respect and health conditions. (P5)	P1, P3, P4, P5, P7, P8, P9, P10, P12	
	<b>Supply Chain level</b>	Buyers talk to our employees. They know that we are taking good care of them. (P9)	P2, P8, P12, P15, P17, P19	

<b>Management of sustainability culture</b>	<b>Individual level</b>	Employees notice changes and are committed to improving themselves. For example, they don't want a messy workplace anymore. They are seeing that these attitudes are to improve their lives. The certifications were excellent, so they taught us a lot about it. (P5)	P3, P5, P9, P10, P12, P15, P16, P19	Cultural
	<b>Organisational level</b>	People started to understand the importance of sustainability. It was a group change. (P1) We could make Sustainability be routine here. (P12)	P1, P2, P3, P4, P5, P6, P9, P10, P12, P13, P14, P15	
	<b>Supply Chain level</b>	We changed behaviours here through certification implementation. They actually reveal we are working well and our buyers can see this. (P17)	P8, P9, P12, P15, P17, P19, P20	
<b>Strengthening of sustainability strategic orientation</b>	<b>Individual level</b>	Certifications help me a lot. I can see sustainability principles increasingly in our actions. (P10) It is a path of no return. Sustainability and quality, I learned that it is a path of no return. (P15)	P5, P8, P9, P10, P13, P15, P18, P19	Institutional
	<b>Organizational level</b>	There has to be a continuation. We produce sustainably and now we all understand that we will produce for many years without harming the environment and people. (P11) I think the biggest incentive is to know that the company is growing through sustainability, that the business will only improve if it is sustainable. It is the present and it is the future. (P12)	P2, P5, P6, P9, P10, P11, P12, P14, P15, P18	
	<b>Supply Chain level</b>	As we become more aware and acting more in line with certification requirements, we are improving sustainability for the entire chain. (P5)	P5, P6, P7, P14, P19, P20	
<b>Processes management</b>	<b>Individual level</b>	The certifications help me a lot in better manage the processes. (P3) I learn more and more to manage the company. It is much more organized. (P5) I developed myself as a manager. I learnt a lot since we started the certification process. (P20)	P3, P5, P7, P9, P13, P14, P20	Institutional
	<b>Organizational level</b>	Something very important that certification brought to the work environment is the improvement on organization, cleanliness, organization of processes. (P6) The certifications helped us to turn our principles in actions, helped us to organize our processes in a sustainable way. It materialized our principles. (P9)	P1, P3, P4, P6, P9, P10, P11, P12, P15, P18, P19	
	<b>Supply Chain level</b>	Certification was a great achievement. It is a very laborious thing. It was difficult to get the house tidy, but it was worth it. It has improved in all aspects not only for us but for buyers, for everyone. (P12)	P1, P4, P9, P10, P11, P12, P18	
<b>Negotiations management</b>	<b>Individual level</b>	The negotiations are totally different. I feel like they trust me more. (P1) I feel more secure during negotiations because relationships and trust have improved a lot. (P20)	P1, P3, P5, P8, P9, P10, P12, P17, P19, P20	Institutional

	<b>Organizational level</b>	<p>Today we have a name in the market. We are recognized as a responsible company, a company that has the preference of buyers. We have credibility to make future sales up to 3 years ahead. All of this makes it easier provide both social conditions for our employees and environmental conditions. (P5)</p>	P2, P4, P5, P8, P9, P11, P12, P18	
	<b>Supply Chain level</b>	<p>Today our farm is booming. We did not have that before. With certifications and specialty coffees, customers look for us. They want to know the origin of the coffee, meet the producer and it is really cool. I think it is an acknowledgment due to certifications as well. They have led it. (P12)</p> <p>Just knowing that I am certified, the buyer's conversation with us is different. Good for the entire chain (P5).</p> <p>When you have a certification, you have a seal that certifies that you are sustainable, they like this. Because it is easier for them to sell our product abroad. So they have a great interest in our farms be certified and so am I. (P8)</p> <p>It's good for the whole chain. Standardizes the criteria for everyone. (P20)</p>	P1, P2, P5, P8, P10, P12, P15, P16, P20	
<b>Management of interorganizational relationships</b>	<b>Individual level</b>	<p>We value and care for these partnerships. Without collaboration, it would be much more difficult to manage the company. We need each other. (P12)</p> <p>I always talk to someone, I exchange ideas. It is important to know how the other person does, how things worked well. [...] This dialogue with other producers is very important. We have a connection. This exchange of experiences on certifications as well. (P17)</p>	P1, P7, P9, P12, P17, P18, P20	Institutional
	<b>Organizational level</b>	<p>We participate in the cooperative and this helps us a lot to know about the market demands. (P4)</p> <p>We have a group in the cooperative coordinated by it. Members, producers, an environment for exchanging experiences. This is very good. Positive. (P6)</p> <p>I learn a lot from the cooperative. I imagine a small producer without it. He would not survive. (P9)</p>	P1, P2, P4, P5, P6, P7, P9, P12, P15, P17, P20	
	<b>Supply Chain level</b>	<p>Collaboration between producers is very important. This strengthens the chain. The cooperative strengthens us and connects us to the buyers, informs us about news in the international market, very good. (P5)</p> <p>The exchange of experiences with others strengthens us to work with international buyers. (P9)</p>	P5, P6, P7, P8, P9, P10, P12, P13, P15, P16, P18, P19, P20	
<b>Management of organizational learning and continuous improvement</b>	<b>Individual level</b>	<p>It is a constant learning for me and the company. It is not because we have improved that this is resolved forever. (P1)</p> <p>I am developing all the time. Each of us here needs to improve continuously. (P9)</p>	P1, P4, P5, P7, P9, P11, P12, P15, P17, P18, P20	Institutional
	<b>Organizational level</b>	<p>It is a continuous sustainability. We achieve one thing and we are already thinking about another and we are going on this crescent. (P9)</p> <p>We are on a path of continuous improvement. (P11)</p> <p>We are on the right way, learning, reaping the rewards and moving on. (P12)</p>	P1, P5, P7, P9, P11, P12, P17, P18, P19	

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<b>Supply Chain level</b>	We have to continually learn, not only my company but the entire chain have to follow in this way (P19).	P5, P8, P9, P11, P14, P16, P19, P20
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## 5. Discussions

To study building SC sustainability through supplier competences, this paper analysed the influence of certifications in Brazilian coffee producers' context showing how they occur, the outcomes from them and the suppliers' competences developed/strengthened from this process. Thus, our findings show that producers have certified pushed by their own sustainability strategic orientation, to access international market, be better paid by their product, improve companies' management as well to fill Brazilian legislation. These results corroborate the literature understanding how companies' sustainability (Hajjar et al., 2019) can be attributed to certifications challenge, achievement and maintenance what confirms that they have modified strategies/processes to operate more sustainable affecting themselves and the entire SC sustainability (Beske et al., 2014; Khalid et al., 2015).

In terms of certification mechanisms, this study highlighted the relevance of interorganizational relationships like cooperation and collaboration in emerging countries context as it was revealed as the main tool adopted by suppliers when implementing/maintaining certifications. Brazilian coffee producers have embraced certifications in groups of farmers monitored by cooperatives as well established partnerships with research institutions to improve their sustainability knowledge/learning what also have enabled R&D. Beyond that, they also have contracted consultancy to support them to fill all certifications/legislations requirements. It demonstrates that interorganizational relationships have been crucial to suppliers operate more sustainably and achieve certifications (Bustos and Moors, 2018; Fontana and Egels-Zanden, 2019; Hajjar et al., 2019). It seems collaboration supporting them to oppose the main barriers faced in this trajectory - lack of knowledge and complexities to improve sustainability culture (Akbar and Ahsan, 2019; Hajjar et al., 2019). Thus, the first proposition follow is linked to the:

*P1: Adoption of cooperation and collaboration can boost emerging economy suppliers' certifications implementation as well their sustainability.*

Despite facing these barriers, coffee producers recognize achievement of many sources of competitive advantage from certifications (e.g., better price of coffee, workers well-being, improvement of companies' reputation, trust, organizational learning) and they want to persist in this strategy. It demonstrates that despite many certifications' disadvantages highlighted in literature (Hajjar et al., 2019; Koster et al., 2019; Montiel et al., 2016), in the studied context, managers of certified companies recognize only positive effects from this standardization what also evidence it is beneficial to entire SC sustainability. As suppliers obtain more visibility due to sustainability certifications, they gain legitimacy and reliability improving interorganizational relationships and negotiation (Hajjar et al., 2019; Köksal et al., 2018), as well sustainability learning (Hajjar et al., 2019; Huq et al., 2014; Koster et al., 2019) throughout SC. In this sense, these findings reveal positive outcomes from certifications reinforcing drivers to their implementation/maintenance as well to companies' sustainability strategies. Thus, the second proposition is:

*P2: Benefits obtained from certifications implementation strengthen emerging economy suppliers' sustainability strategies.*

This study also reveals new nuances of emerging country suppliers' certifications and how sustainability has been developing throughout GSCs as our findings are broadly linked to the SC

sustainability competences development. Thus, this paper demonstrates the building of competences at individual, organizational and SC level as results of sustainability certifications. The findings therefore reinforce the literature regarding how competences can affect positively the entire SCs (Barnes and Liao, 2012; Flöthmann and Hoberg, 2017; Gold et al., 2010) as well improve understanding on emerging country suppliers' role in this context (Jia et al., 2018). In this sense, this research strengthens the argument of sustainability strategies require development of specific multilevel competences (Galleli and Hourneaux Junior, 2019; Osagie et al., 2016) to improve SC sustainability. These competences have been developed from certifications implementation and they might improve the suppliers' certification performance as they have achieved the necessary skills and knowledge for that. These developed competences are linked to all TBL+ aspects, however, they experienced a special improvement in the institutional aspect as they strengthened their sustainability strategic orientation, enhanced their ability to manage processes, negotiation, inter-organizational relationships and organizational learning as well the continuous improvement. The competences built seems to be largely related to cooperation and collaboration adoption - a special source of knowledge through sharing of experience (Hargadon and Sutton, 1997) - as studied companies used them as the main mechanisms to achieve certifications as well to surpass barriers in this trajectory. These competences, therefore, can improve GSC sustainability and make emerging country suppliers well prepared to respond to international markets demands of sustainability and make the SC better-structured as they enable reduction of environmental damages, social and labour conditions improvement, information sharing throughout SC (Hajjar et al., 2019) and improvement of trust among SC partners (Bustos and Moors, 2018). These findings therefore lead to a third proposition, as follows:

*P3: Emerging country suppliers' certifications achieved through cooperation and collaboration adoption build multilevel competences that play a key role in SC sustainability.*

Therefore, this study evidenced emerging country global suppliers have been benefited by certifications what corroborates with Bloom (2015), Hajjar et al. (2019) and Köksal et al. (2018) studies that also found certified companies improving management aspects and trust what have affected the entire SC sustainability. Thus certifications have acted in this context as source of knowledge guiding suppliers sustainability leading them to develop competences and be motivated to engage in more strategies in this sense.

## **6. Conclusions and further studies**

This paper investigated how sustainability certifications have affected emerging economy global suppliers in terms of competences building and how they influence on SC sustainability. Understanding that these certifications arise pushed mainly by companies' sustainability strategic orientation and to access international market and its benefits, it can be concluded that these standardizations have positively affected Brazilian coffee producers in terms of sustainability and competences development. Thus, this research contributes to the literature regarding to GSC sustainability since the findings provide evidence of positive suppliers' perception about certifications, as they highlighted gains in terms of knowledge and sources of competitive advantage through them and demonstrated intention to maintain them improving their management aspects and competitiveness. This paper therefore highlights the need to advance studies of emerging economy supplier competences and their influence on GSCs sustainability considering their relevance in this context.

*Theoretical implications* emerged during this research. Firstly, a better understanding arose on how certifications has been implemented and maintained by emerging economy global suppliers. Thus, facing specific barriers, they strength interorganizational relationships to achieve the necessary knowledge to be certified what constitutes a relevant strategy and mechanism of sustainability competencies building. Secondly, from understanding these global suppliers' certifications achievement, it was also clarified the benefits they have obtained from certification what demonstrated a strengthen on their sustainability in terms of all TBL+ dimensions what has feedbacked motivations to improve their sustainability strategic orientation and continue certified. This indicates therefore that certifications have improved their sustainability culture as well have been a source of competitive advantage. Thus this study demonstrates positive outcomes from certifications acting as new drivers for emerging country global suppliers' sustainability what tend to be beneficial to the entire SC sustainability. Thirdly, the findings reveal the role of certification beyond a tool of buyers assess suppliers but as a rich source of knowledge and competences for managers, organizations and SCs. This paper therefore reinforces that organizational and SC competences is more than the sum of individual and organisational competences as it could be evidenced multilevel competences from certifications adoption positively affecting interorganizational relationships and trust between buyers and suppliers.

*Managerial implications* are related to certifications relevance in emerging economy suppliers' context mainly to sustainability competences development. Beyond knowledge and skills, the findings suggest changes on mentalities, culture and behaviours in these companies what seen beneficial for all SC members as these changes also enable interorganizational relationships and trust among them. Thus, managers may reinforce strategies of sustainability and interorganizational cooperation and collaboration to strength their current competences and build additional ones to better face the barrier of lack of knowledge as well increase their sustainability and reputation in GSCs.

This research also has both *policy and social implications*. In terms of *policy implications*, this study results highlighted the relevance of sustainability knowledge for individuals, companies and SCs. Thus, public managers need to better recognise their influence on countries' sustainability and develop policies that can support multilevel sustainability knowledge development and sharing, promoting more investments in research and educational institutions as well the partnerships between them and local companies. The national legislation was also evidenced in studied context as a driver to certifications/sustainability initiatives what spots the need of governmental inspection leading companies to operate increasingly sustainable. In terms of *social implications*, the results demonstrate the relevance of companies on improving culture and awareness to sustainability what emphasizes the importance of emerging economy suppliers' actions with employees and local community. These study findings provide reasons for companies in these countries to strengthen their sustainability competences and initiatives, thereby impact positively on local development.

The study has two main limitations: (i) despite case studies be a plentiful source of theory expansion on SC sustainability, they cannot lead to generalisation of all coffee suppliers in Brazil; (ii) only managers' perspective was analysed, while other SC stakeholders could add other viewpoint improving the understanding on how certifications affect emerging economies global suppliers' competences as well the SC sustainability. As this study focused on certified coffee producers, it would be interesting to conduct a further study with non-certified ones to analyse differences/similarities between their knowledge, processes, trust, culture and their link with building of competences and SC sustainability. This would enable companies and SCs to reflect on certifications meaning and strategies to improve them as well better manage their effects. Further



research should also consider different GSC stakeholders, including buyers, certifiers, employees, partners (e.g., research institutions, NGOs and consultancy companies) to obtain other perspectives on how suppliers' certifications have been implemented/maintained also their outcomes. Regarding emerging economy global suppliers' competences and their relation to SC sustainability, further studies should be conducted in other industries in order to reveal nuances of the multiple level competences perspective which is still underexplored.

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## Appendix 2 - Interviews Script

### I. Atuação sustentável da organização

1. Você acredita que sua empresa atua de forma sustentável? Se sim, de que forma essa atuação acontece?
  - a. Você poderia explicar de forma detalhada?
  - b. Você pode dar alguns exemplos?
2. Você acha que as práticas sustentáveis adotadas por sua empresa estão alinhadas a aspectos econômicos, ambientais e sociais, conjuntamente?
  - a. Você poderia explicar de forma detalhada? Se possível, poderia citar exemplos práticos?
3. Eles fazem parte da cultura da empresa? Em que sentido?
  - a. Se possível, você poderia citar exemplos práticos?

### II. Mecanismos de atuação sustentável adotados

4. Como a atuação sustentável tem sido gerenciada dentro da organização (recursos, métodos e gerenciamento)?
  - a. Você pode explicar de forma detalhada?
  - b. Você poderia dar exemplos?
5. Que meios (ferramentas, estratégias) vocês têm utilizado para conseguirem atuar de forma sustentável?
  - a. Você poderia explicar de forma detalhada?
  - b. Você poderia dar exemplos?
6. Você tem utilizado parcerias ou relacionamentos com outras organizações nesse sentido?
  - a. Estas são organizações nacionais ou internacionais?
  - b. Você pode explicar como?
  - c. Vocês têm aprendido com elas?
7. Vocês possuem certificações voltadas à sustentabilidade?
  - a. Quais?
8. Há alguma certificação que vocês gostariam de ter e ainda não tem?
  - a. Por que vocês gostariam de tê-la?
  - b. Por que ainda não a(s) tem?

### III. Atuação sustentável e empresa focal

9. Você acha que a empresa focal influencia em sua atuação sustentável?
  - a. Em que sentido?
  - b. Você poderia explicar melhor?
10. Como é o relacionamento de sua empresa com ela nesse sentido (no que se refere à atuação sustentável)?
  - a. Você poderia explicar melhor?
11. Quanto aos critérios de sustentabilidade colocados pela empresa focal, qual a sua opinião?
  - a. Você poderia explicar melhor?
  - b. Você poderia dar exemplos?
12. Como a empresa focal avalia/ monitora sua atuação sustentável?
  - a. Você poderia explicar melhor?
  - b. Você poderia dar exemplos?
  - c. Isso ocorre com que frequência?
13. A empresa focal recompensa sua empresa por atuar de forma responsável?

- a. Como? Você poderia explicar melhor?
- b. Você poderia dar exemplos?

#### IV. Fatores motivadores à atuação sustentável

14. O que você acha que mais incentiva sua atuação sustentável? Quais os principais incentivos para essa atuação?
- a. Você poderia explicar de forma detalhada?
  - b. Você poderia dar exemplos?
15. Que fatores externos à empresa incentivam a atuação sustentável da mesma?
- a. Você poderia explicar de forma detalhada como estes fatores incentivam tal comportamento?
  - b. Você poderia dar exemplos?
16. Que fatores internos à empresa incentivam a atuação sustentável da mesma?
- a. Você poderia explicar de forma detalhada como estes fatores incentivam tal comportamento?
  - b. Você poderia dar exemplos?
17. Você acredita que fazer parte de uma cadeia de suprimentos global é relevante neste sentido?
- a. Você poderia explicar de forma detalhada?
  - b. Você poderia dar exemplos?

#### V. Barreiras à estratégias/iniciativas de sustentabilidade, programas de certificação

18. Vocês têm enfrentado dificuldades em atuar de maneira sustentável?
- a. Você poderia explicar de forma detalhada?
  - b. A quais razões você atribui estas dificuldades?
19. Você poderia comentar sobre a principal dificuldade que sua empresa tem enfrentado neste sentido?
20. Que dificuldades (barreiras) externas à empresa vocês têm enfrentado nesta atuação?
- a. Você poderia explicar de forma detalhada?
  - b. Você poderia dar exemplos?
21. Que dificuldades (barreiras) internas à empresa vocês têm enfrentado nesta atuação?
- a. Você poderia explicar de forma detalhada?
  - b. Você poderia dar exemplos?

#### VI. Estratégias de enfrentamento às barreiras

22. Que estratégias vocês têm utilizado para superarem estas dificuldades (barreiras), especificamente?
- a. Você poderia explicar de forma detalhada?
  - b. Você poderia dar exemplos (qual barreira e que estratégia utilizou)?
23. Você acha que as parcerias ou a cooperação (com outros membros da cadeia de suprimentos ou com outros produtores, centros de pesquisa, universidades) te ajudam nesse sentido?
- a. Você poderia explicar melhor?
  - b. Há diferenças, nesse sentido, quanto ao fato de serem nacionais ou internacionais?

#### VII. Resultados obtidos a partir das iniciativas de sustentabilidade e adoção de programas de certificação

24. Vocês têm obtido resultados positivos ou negativos a partir das iniciativas de sustentabilidade e adoção de programas de certificação?
- a. Você poderia explicar melhor?
  - b. Você poderia dar exemplos de resultados positivos?



- c. Você poderia dar exemplos de resultados negativos?
- 25. Quanto aos resultados econômicos, você pode mencionar e explicar quais deles vocês têm obtido?
  - a. De forma geral, os resultados, neste sentido, têm sido, em sua maioria, positivos ou negativos?
  - b. Você poderia explicar de forma detalhada?
- 26. Quanto aos resultados ambientais, você pode mencionar e explicar quais deles vocês têm obtido?
  - a. De forma geral, os resultados, neste sentido, têm sido, em sua maioria, positivos ou negativos?
  - b. Você poderia explicar de forma detalhada?
- 27. Quanto aos resultados sociais, você pode mencionar e explicar quais deles vocês têm obtido?
  - a. De forma geral, os resultados, neste sentido, têm sido, em sua maioria, positivos ou negativos?
  - b. Você poderia explicar de forma detalhada?
- 28. Vocês acham que criaram competências ou habilidades a partir da adoção de programas de certificação? Você poderia dar exemplos?

#### VIII. Informações sobre o desempenho retroalimentam estratégias de sustentabilidade

- 29. Os resultados positivos que a empresa tem obtido quanto à sua atuação sustentável têm incentivado a adoção de mais práticas sustentáveis?
  - a. Em que sentido? Você poderia explicar de forma detalhada?
  - b. Você poderia dar exemplos?
- 30. Os resultados negativos têm impactado na atuação sustentável da empresa?
  - a. Em que sentido? Você poderia explicar de forma detalhada?
  - b. Você poderia dar exemplos?

**PAPER 4 - Supply Chain Sustainability Learning: the COVID-19 impact on emerging economy suppliers**

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## Supply Chain Sustainability Learning: the COVID-19 impact on emerging economy suppliers

### Abstract

**Purpose:** This paper investigates the impact of the COVID-19 pandemic on supply chain sustainability learning. In particular, it focuses on the learning associated with changes in the sustainability initiatives of emerging economy suppliers.

**Design/methodology/approach:** Through studying three scenarios (pre-outbreak, buyer-centred peak, and supplier-centred peak) over a nine month period, a multi-case study strategy was used to gain an understanding of the learning of export-oriented Brazilian coffee producers, using both exploitation and exploration capabilities. Content analysis was developed after each data collection phase to investigate how sustainability initiatives had changed.

**Findings:** Social sustainability was observed to be the main priority by suppliers facing this unprecedented outbreak, in ways that go beyond sustainability certification requirements. For instance, there was evidence of outstanding contributions to the local community. Suppliers initially developed their sustainability initiatives during the outbreak without any support from global buyers, certification bodies or government. Despite this, stronger relationships with buyers ultimately emerged facilitating greater supply chain sustainability. Consequently, by using both exploitation and exploration learning capabilities, multiple levels of learning were observed (i.e., individual, organisational and supply chain) as related to planning, new procedures and social awareness.

**Practical implications:** A greater awareness of supplier learning processes will aid buyers in developing recovery plans that are appropriate for their global supply chain partners.

**Originality/Value:** This paper provides an understanding of how emerging economy suppliers of global supply chains are coping with this unprecedented outbreak in regard to sustainability management. Moving the spotlight from buyers to suppliers, the research demonstrates that supplier learning is central to global supply chain sustainability.

**Keywords:** Supply chain sustainability; Supply chain learning; Sustainability initiatives; COVID-19; unprecedented outbreak; Emerging economy supplier.

**Article classification:** Research Paper

### 1. Introduction

The COVID-19 outbreak has challenged global economic activities worldwide (Ivanov, 2020), affecting global and regional supply chains (SCs) in terms of both demand and supply (Ivanov, 2020; Pantano et al., 2020). In contrast to other SC disruptions, such as Brexit related constitutional change (Hendry et al., 2019) or an extreme weather event (De Sá et al., 2019), the COVID-19 outbreak has unique characteristics (Craighead et al., 2020). For instance, it has been

argued that the level of pressure and requirement to guarantee supply in an efficient and safe way is higher (The Economist, 2020). This poses new challenges for many different SC players worldwide in terms of their learning and the adaptation of their activities. In this context, this paper aims to understand the impact of the outbreak on emerging economy supplier learning as associated with sustainability initiatives.

Despite the severity of the COVID-19 outbreak, different tiers of the supply chain have managed to respond well. For example, major food supplies (e.g. cereals) have been maintained, helped by good harvests and very high levels of stocks (The Economist, 2020). However, addressing only the market demand is not sufficient since there are also a set of urgent social issues (e.g. workers' health and safety protection, Larue, 2020) and the need for economic support on both the demand and supply sides (Bell and Blanchflower, 2020). Thus sustainability has emerged as a key issue for achieving SC resilience during the outbreak (Queiroz et al., 2020). This has led to the question of whether organisational sustainability priorities have been impacted by the outbreak (Barreiro-Gen et al., 2020; Hakovirta and Denuwara, 2020; Jabbour et al., 2020), in turn having a direct impact on SC learning. Since sustainability initiatives do not change overnight (Silvestre et al., 2020), it is important to study how they have evolved as the global effects of the outbreak have unfolded. It is particularly important to study how the initiatives of emerging economy suppliers have evolved as these suppliers tend to face additional barriers to sustainability (Busse et al., 2016), especially when an unprecedented event unfolds (Smith and Wenger, 2007). Given the cultural differences between emerging economy suppliers and their global buyers (Koberg and Longoni, 2019), it is likely that adopting a supplier perspective will lead to a fuller understanding of the impact of the pandemic on their learning. Thus, this perspective is adopted in this paper, strengthening its contribution as this is an under-explored viewpoint in the sustainability literature (Jia et al., 2018).

SC sustainability research to date has included investigation into the complexity surrounding how sustainability initiatives evolve along trajectories (Silvestre, 2015; Roy et al., 2018). In this context, a trajectory represents a sequence of learning loops forming a path towards SC sustainability (Silvestre et al., 2020). However, there is a lack of research that explains how SC sustainability learning occurs (Gong et al., 2018; Yang et al., 2018). In particular, the extant literature has been barely interested in how SC sustainability learning differs for various SC players, and there is no research to date that considers how this learning occurs when facing an unprecedented outbreak such as the COVID-19 pandemic. Thus, there is a need to study how sustainability-oriented supplier learning occurs at multiple levels (individual, organisational and SC). This paper addresses this research gap claiming that learning refers to changes in knowledge, behaviours and values (Huber, 1991; Siebenhüner and Arnold, 2007). Thus two research questions are posed, to first investigate how sustainability initiatives have evolved during the pandemic, with a specific focus on the initiatives of emerging economy suppliers, and second to explore the levels of learning that have been experienced by these suppliers. The research questions are as follows:

*RQ1: How are sustainability initiatives being impacted by the COVID-19 pandemic in export-oriented emerging economy suppliers?*

*RQ2: Which levels of supply chain sustainability learning are being experienced by emerging economy suppliers during this unprecedented outbreak?*

A multi-case study approach is used to answer these research questions, by collecting data from Brazilian coffee suppliers both before the outbreak began and then comparing these findings

with their sustainability-related activities as the pandemic spread first to their buyer countries and then into Brazil. The selection of the Brazilian coffee SC can be justified for two reasons (i) the importance of this industry and (ii) the way it was impacted by the COVID-19 outbreak. The impact was significant as, given social distancing restrictions, the majority of coffee shops and restaurants were closed (Rizou et al., 2020). In terms of the size of the industry, Brazil is the largest coffee producer in the world, supplying around 32% of the total coffee consumed (Embrapa, 2018; International Coffee Organization, 2014; Conab, 2020). These coffee producers are key suppliers of many global SCs with the main buyer destinations in the USA, Italy and Germany (Brazilian Coffee Exporters Council, 2020), and customers that include important global brands such as Nespresso, Starbucks and Illy (Sakkis, 2018).

It is important to highlight that, at the time of this research, the pandemic is ongoing, therefore this is an initial analysis to explain how emerging economy suppliers in global SCs have operated and learned during this crisis. This paper therefore provides new empirical evidence on how the sustainability initiatives of these suppliers have evolved during the initial spread of COVID-19, thereby making three main theoretical contributions. Firstly, the evidence suggests that use of a ‘light touch’ buyer monitoring approach is more appropriate as a governance mechanism in this context, as it is more conducive to supplier learning. Secondly, it demonstrates that certifications are a key source of learning, but that learning is not limited to this source during an unprecedented outbreak. In particular, the evidence demonstrates that emerging economy supplier sustainability priorities have changed to become more focused on social sustainability issues, and that the crisis has accelerated their sustainability-oriented learning in this direction. Thirdly, it provides practical insights into the influence of an unprecedented outbreak on multiple levels of learning, including the individual level, given that SCs learn through individuals (Azadegan et al., 2008; Wieland et al., 2016). Thus the findings demonstrate the important role of learning at the individual, organisational and SC levels within emerging economy suppliers, for improving overall SC sustainability.

## **2. Theoretical Background**

### *2.1. Sustainability in global supply chains: the need for a supplier perspective*

Managing global SCs is complex as their operations take place within many parts of the world and hence the companies involved are characterised by differences in culture, language, size, resources, profitability and bargaining power (Awasthi et al., 2018; Koberg and Longoni, 2019). In this context, global SC sustainability studies have emphasised the importance of the effective management of suppliers in emerging/developing countries (Koberg and Longoni, 2019), mainly due to their high impact on global emissions and their economic and social instability (Jia et al., 2018; Liu et al., 2019). Thus it has been argued that sustainability within supplier country contexts needs to be better understood because their activities greatly influence the sustainability of the entire global SC, particularly given that the role of these suppliers tends to relate to extraction, production and manufacturing (Jia et al., 2018; Liu et al., 2019).

The way in which these global suppliers, located in emerging/developing countries, undertake sustainability-related learning has not yet been sufficiently discussed in the literature (Jia et al., 2018; Koberg and Longoni, 2019). In particular, more research is needed to consider the supplier perspective, as focal companies do not comprehend well why some suppliers adopt sustainable initiatives successfully while others do not (Liu et al., 2019). This may be due to the operational context of these emerging/developing country suppliers, which contrasts with that of

their buyers' in developed countries (Akbar and Ahsan, 2019; Köksal et al., 2018; Koster et al., 2019). Differences include: a lack of strict national laws; a lack of infrastructure; high social inequalities and informality; and high levels of corruption (Fritz and Silva, 2018; Koberg and Longoni, 2019; Tanco et al., 2018). In addition, these companies face barriers related to weak organisational culture, and lack of top-level management commitment to sustainability (Hajjar et al., 2019; Silvestre, 2015).

Despite these barriers, emerging/developing countries' suppliers need to act sustainably to comply with their mandatory buyers' requirements and, thus, many of them have gained certifications aiming to improve their management practices (Hajjar et al., 2019; Köksal et al., 2018). Some previous studies on global SCs evidenced both positive (Hajjar et al., 2019) and negative (Mancini, 2013) environmental, economic and social outcomes attached to these certifications. Although previous studies have shown that subsequent sustainability initiatives improve corporate performance, there is insufficient data about this in emerging/developing countries' context in comparison to developed economies (Jia et al., 2018). Thus the relationship between sustainability in SCs and countries' development is an important subject to consider in research (Awasthi et al., 2018; Jia et al., 2018) and a better understanding of the emerging/developing countries' suppliers' role is crucial for better global SC sustainability management. This will enable buyers to both better assess these suppliers and to develop their relationship with them enabling successful strategic collaboration (Koberg and Longoni, 2019). It can therefore be argued that one important aspect of the supplier operations requiring greater understanding concerns how they learn about sustainability initiatives, thereby increasing the implementation of these initiatives within the SC.

## *2.2. Supply chain sustainability learning during unprecedented outbreaks*

The sustainability literature is starting to challenge existing meanings and definitions regarding the implementation of sustainability within companies and SCs (Elkington, 2018). For example, Fritz and Silva (2018) have suggested that the UN sustainable development goals should be used to analyse SC sustainability, as these provide greater breadth and depth than is typically achieved using the triple bottom line (TBL). In this paper, sustainability refers to the inter-generational sharing of needs and responsibility, which is represented by various initiatives. In this sense, sustainability initiatives comprise companies' long-term actions (e.g. projects and programmes, Walker and Jones, 2012) developed by companies and disseminated among SC members. These initiatives emerge to improve the SC practice and performance and arise according to specific sustainability trajectories that guide SC members' behaviour (Silvestre et al., 2020). According to Silvestre (2015), the SC sustainability trajectory consists of a series of learning loops along a non-linear and multi-directional journey. He thereby argues that building a trajectory depends on how efficient the SC is at learning.

The learning associated with sustainability initiatives as part of this trajectory is essential for successful SC sustainability implementation (Oelze et al., 2016; Silvestre et al., 2020). Therefore, learning is an ongoing process that companies experience as they develop their sustainability initiatives; however, it is not limited to conscious and intentional changes since "an entity learns if, through its processing of information, the range of its potential behaviour is changed" (Huber, 1991, p. 89). Here, an entity refers to learners (e.g. individuals, groups, organisations, industries, etc.) and the processing of information refers to the acquiring, distributing and interpreting of this information (Huber, 1991). This learning occurs at multiple levels (Antonacopoulou, 2006; Knoppen et al., 2010), and interactions between these levels occur as part of the SC sustainability

trajectory. Thus, since SC learning is not simply a sum of individual/organisational learning (Knoppen et al., 2010), the following definitions are proposed:

- SC sustainability learning at the *individual level* as the personal process experienced by employees and managers to increase sustainability information and awareness. This includes different learning representations, such as: new behaviours, knowledge and values incorporated, for example, through a leadership process (Gosling et al., 2017; Knoppen et al., 2010; Ojha et al., 2018; Yang et al., 2018).
- SC sustainability learning at the *organisational level* involves the function-related sustainability knowledge that may occur within specific parts of an organisation. It refers to both continuous improvement and fundamental changes towards sustainability goals across the whole organisation, including: strategies, culture and practices (Azadegan et al., 2008; Bessant et al., 2003; Siebenhüner and Arnold, 2007).
- SC sustainability learning at the *supply chain level* occurs when there is sustainability knowledge that crosses firm level boundaries, such that information is thereby transferred, acquired, assimilated and exploited to increase sustainability in the SC (Bessant et al., 2003; Gong et al., 2018; Huo et al., 2019; Yang et al., 2018).

Sustainability-oriented learning at all three levels is informed by multiple sources and is defined as a process where entities deal with changes in both knowledge and values (Siebenhüner and Arnold, 2007). Thus, this type of learning is a powerful means to analyse and apply sustainability initiatives (Gavronski et al., 2012; Silva et al., 2020; Yang et al., 2018). These sustainability initiatives may be limited to implementation within a focal firm, however they rely on learning at both individual and organisational levels as well as the SC level (Gong et al., 2018; Silvestre et al., 2020). For instance, Silvestre (2015) claims that SC learning loops are related to introducing innovations within a SC sustainability learning trajectory in a non-linear and self-supportive manner. Focusing on learning means that processes are analysed within loops of sharing to achieve a specific target. It can hence be argued that supplier sustainability learning is relevant to the entire SC learning, as buyers can learn through supplier innovations (Azadegan et al., 2008; Flint et al., 2008; Zhang and Lv, 2015). Thus, it is important to understand how learning associated with sustainability initiatives has occurred at multiple levels. More specifically, there is a research gap to study changes in the knowledge, values and behaviours of emerging economy suppliers as essential participants in these SC learning loops, where these changes may include their level of awareness of sustainable operations (Geldermann et al., 2007; Faisal, 2010), and especially their agility to adapt their sustainability initiatives within a turbulent environment (Bag et al., 2020).

SC sustainability learning therefore shapes how diverse SC stakeholders deal with sustainability initiatives. In this context, Silvestre (2015) point out that SC learning involves integrating activities and creating joint collaboration among stakeholder members. Oelze et al. (2016) corroborate showing learning as a driver for SC sustainability strengthened by collaboration with intra-industry and inter-industry partners. In turn, Chandès and Pachè (2010) point out that in humanitarian SCs monitoring may be used to improve SC coordination by learning from past disasters. It is important to highlight, that some companies will assume a leadership position to initiate and disseminate sustainability throughout their SCs (Gosling et al., 2017); however, this depends on its learning orientation. Thus, sustainability-oriented learning can be used, for instance, to disseminate sustainability initiatives to suppliers, since the learning complexity reduces once they acquire sufficient knowledge (Gong et al., 2018). However, less is known about how suppliers react to this dissemination in terms of their own learning.

Whether the source of the learning is inter or intra-organisational, SC members need learning capabilities to be able to assimilate and consolidate new knowledge (Yang et al., 2018). Two key types of learning capabilities have been studied in the supply chain learning context – ‘exploration capabilities’ and ‘exploitation capabilities’, see for example Ojha et al. (2018) and Silvestre et al. (2020). These constructs have their origins in the broader organisational learning literature, where, according to March (1991), exploration refers to capabilities related to discovery and flexibility, for example, whereas exploitation relates to issues such as refinement. March (1991) argues that both are essential for organisations, but they compete for scarce resources. Ojha et al. (2018) suggest that exploitation is the primary capability for short term change, whereas exploration is more significant for a long term perspective. In addition, Silvestre et al. (2020) conclude that exploitation capabilities are more frequently used than exploration. It can therefore be inferred that SC learning typically takes a short-term perspective, which could be argued to be inappropriate in the context of sustainability. Gaining a complementary balance between the two capabilities has been argued to be important in the context of supplier selection - see for example, Azadegan et al. (2008). However, this balance is made difficult when there are multiple levels of learning and particularly in a changing environment (March, 1991). Further research is needed to determine the relative importance of exploration and exploitation capabilities as relevant to sustainability-related learning for emerging economy suppliers, particularly during an unprecedented outbreak.

Prior research has identified drivers and barriers that prevent SCs from developing the required learning capabilities when they operate in a turbulent environment (Bessant et al., 2003; Silvestre, 2015; Yang et al., 2018). The literature argues that turbulence mainly occurs in emerging and developing countries, and leads to barriers such as: lack of manager knowledge (which includes low qualifications) (Hajjar et al., 2019; Jia et al., 2018; Köksal et al., 2018; Tanco et al., 2018); non-monetary costs of training and monitoring change (including the difficulty of changing group mind-sets) (Hajjar et al., 2019; Tencati et al., 2008); and local corruption (Akbar and Ahsan, 2019; Köksal et al., 2018). However, this research was undertaken under “normal” conditions. Even where SC disruptions have been studied (e.g., De Sá et al., 2019; Hendry et al., 2019), albeit in a variety of country contexts, companies were not experiencing the same level of disruption as is occurring currently in the context of the COVID-19 pandemic. Thus, this paper is centred on studying sustainability initiatives and learning during the COVID-19 pandemic, as the barriers and drivers may be different in this context.

Given that this unprecedented outbreak is causing a set of different impacts worldwide, it is necessary to assume that not all countries are experiencing the same impact, mainly because not all of them have a stable business environment, i.e. the turbulent environment is ongoing (Majumdar et al., 2020). According to these authors, while some countries are concerned about measures of social distancing, others are more severely experiencing the social and economic consequences. This impacts sustainability priorities and concerns. For instance, Barreiro-Gen et al. (2020), point out that social sustainability is now a higher priority for many companies in comparison to the other TBL dimensions. On the other hand, Trautrimis et al. (2020) highlight the possibility for further worker exploitation leading to more modern slavery during this pandemic. Given this debate, further research is needed to understand the main priorities of companies and SCs sustainability operations during this unprecedented outbreak. This paper addresses this research gap by providing insights from an emerging economy supplier country (i.e. Brazil) and their sustainability-oriented learning to provide an original contribution to theory and practice.

### **3. Research Method**



Given the unique nature of the COVID-19 pandemic, an exploratory research approach has been adopted using qualitative multiple case studies (Ketokivi and Choi, 2014; Yin, 2017). This method was selected because it has the potential to enable deep and rich data collection (Eisenhardt and Graebner, 2007). In-depth data collection is needed for this research in order to fully understand the global coffee supplier's perspective in terms of their SC sustainability initiatives and learning, which are the main focus of the two research questions as previously presented.

### *3.1 Case selection criteria and research protocol*

The research protocol was initially focused on SC sustainability learning, and later, questions were added to the interview schedule to study the COVID-19 pandemic influence in the region. Therefore, although initially, the study focused on the “normal” context, this unprecedented outbreak provided an excellent opportunity to compare findings from data collected before and during the pandemic. The Brazilian coffee farmers selected were located in the Cerrado Mineiro Region, in the Minas Gerais state, because it is an important region for the worldwide sourcing of coffee with suppliers concerned about sustainability within global SCs. There are around 4500 producers operating in 55 municipalities in the region (Região do Cerrado Mineiro, 2020), and the coffee is sold to multinational companies such as Nespresso, Starbucks and Illy (Sakkis, 2018).

To select the specific cases to study, the following criteria were established:

- (i) size, to the study focused on medium/large coffee producers, as they are more engaged with sustainability initiatives (Antonioli et al., 2013); and
- (ii) export-oriented, to ensure they operate in global SCs.

The size classification is based on the total hectares of crop planted. This is the criterion adopted by the Federation of Cerrado Coffee Farmers, based on the classification of rural properties and the legislation regarding the Tax on Rural Territorial Property (ITR). Four modules, according to the ITR, is the minimum size for a rural property to be classified as medium-sized. Thus, all the producers that participated in the research had at least four modules, which is equivalent to 160 hectares of coffee plantation area in the Cerrado Mineiro Region.

### *3.2 Data collection*

To gather data to understand the sustainability journey during the COVID-19 pandemic, three rounds of semi-structured interviews were used with different research protocols (before and during the outbreak). In order to define the research sample, the “snowball” technique was used to access the participants (Teddlie and Yu, 2007). Hence, initial contacts were made by calling coffee producers known by the main researcher, and after their acceptance, suggestions were made for further producers to add to the sample. Thus, twelve coffee farmers participated in this study. The criterion used for ceasing data collection was the saturation level, i.e., the data collection process stopped when no more significantly new data was being added (Eisenhardt, 1989). The first set of interviews (referred to below as scenario 1) were conducted either face-to-face or by phone, according to the availability of the participant. The remaining interviews (scenarios 2 and 3 which took place after the pandemic had begun as further described below) were all carried out by phone given the social distancing restrictions surrounding the pandemic. Table 1 shows the main company and participant information as well as the interview lengths during the three different scenarios of analysis.

**Table 1 – Company, participant and interview information**

Code	Gender	Time as company manager	Production Size (hectares)	Number of employees	Certifications	Interview 1 November 2019	Interview 2 April 2020	Interview 3 June 2020	Interview length per participant
P1	Male	07 years	Medium	8 permanent, 40 temporary contracts/year	Rainforest, UTZ, Cerrado Mineiro Region (DO)	30 min	26 min	22 min	78 min
P2	Male	08 years	Medium	10 permanent, 24 temporary contracts/year	Rainforest, UTZ, 4C, Cerrado Mineiro Region (DO)	22 min	15 min	18 min	55 min
P3	Male	30 years	Medium	12 permanent, 53 temporary contracts/year	UTZ, Cerrado Mineiro Region (DO)	28 min	18 min	16 min	62 min
P4	Male	17 years	Medium	4 permanent, 44 temporary contracts/year	UTZ, Cerrado Mineiro Region (DO)	38 min	18 min	29 min	85 min
P5	Male	33 years	Large	52 permanent, 20 temporary contracts/year	Rainforest, UTZ, Cerrado Mineiro Region (DO)	25 min	15 min	17 min	57 min
P6	Male	09 years	Medium	6 permanent, 8 temporary contracts/year	Rainforest, Cerrado Mineiro Region (DO)	33 min	16 min	19 min	68 min
P7	Female	02 years	Large	9 permanent, 4 temporary contracts/year	Rainforest, Cerrado Mineiro Region (DO)	23 min	18 min	27 min	68 min
P8	Male	17 years	Medium	9 permanent, 4 temporary contracts/year	UTZ, Cerrado Mineiro Region (DO)	39 min	22 min	18 min	79 min
P9	Female	05 years	Medium	28 permanent, 5 temporary contracts/year	Rainforest, UTZ, Cerrado Mineiro Region (DO)	43 min	17 min	15 min	75 min
P10	Female	16 years	Large	370 permanent, 120 temporary contracts/year	ISO 14001, Rainforest, UTZ,	33 min	23 min	24 min	80 min
P11	Male	02 years	Medium	9 permanent, 3 temporary contracts/year	UTZ, Cerrado Mineiro Region (DO)	27 min	21 min	19 min	67 min
P12	Female	05 years	Medium	30 permanent, 100 temporary contracts/year	Rainforest, UTZ, Cerrado Mineiro Region (DO)	29 min	19 min	-	48 min
Total	-	-	-			370 min	228 min	224 min	822 min

DO: Designation of Origin certification; Medium: between 4 and 15 modules; Large: more than 15 modules. Each module, in the Cerrado Mineiro Region, is equivalent to 40 hectares

As can be seen in the table, all participants were available throughout the research process, except P12 who was not available during scenario 3. Primary data gathering started in November 2019 with the aim to better understand the sustainability initiatives adopted by coffee farmers in Brazil. Once the COVID-19 pandemic began, the focus was moved to investigate changes and learning during this period, thereby creating three scenarios for research. This shift aligns with the time frame analysis recommended by Dasaklis et al. (2012) to understand the influence of an unprecedented outbreak on operations. In doing so, both the pre-event setting and the impact of this unprecedented outbreak during the event were studied. The first scenario was the pre-outbreak context with data already collected, thus providing a unique opportunity to compare this data with information gathered during the outbreak. The second scenario represents the context where the main buyers' countries were experiencing the initial contamination peak in April 2020. At this point, Brazil was just reporting its first cases. This scenario was selected as lockdown restrictions had led to the closure of the main places of coffee consumption (e.g. coffee shops and restaurants). Finally, the third scenario focused on the displacement of the contamination peak from European buyers to Brazil. Thus, the final interviews were carried out between the end of June and the beginning of July 2020, when the main buyers' countries were past the initial peak and reopening non-essential shops/services, including coffee shops and restaurants, and Brazil was experiencing its first contamination peak.

Each data collection phase had specific questions in the interview guide, and a sample of these questions is provided in the Appendix. For example, the last scenario considered the learning that participants had undertaken since the second interview. Specific sustainability initiatives were thus investigated, which had emerged during the second interview, in order to perceive whether these new initiatives were becoming embedded within daily operations. All interviews were conducted in Portuguese, recorded and transcribed verbatim, thereby generating a total of 208 pages of interview data. Selected quotations were translated to English to ensure that the correct meaning was presented in each quotation. In addition, secondary data was collected during this period to triangulate the interview information with other sources, including: the organisations websites; news about the pandemic in the buyers' countries and in Brazil; and certification rules.

### *3.3 Data analysis and rigour*

Content analysis was used to understand the information collected, as has been argued to be an appropriate technique to analyse case studies (Mayring, 2004; Seuring, 2008). Thus this strategy was used to understand each scenario based on its own context and characteristics. To develop the analysis, the focus was centred around the SC sustainability initiatives, which were the unit of analysis. First, an in-case analysis of the experiences of each of the twelve cases was completed. Secondly, a cross-case analysis was carried out to compare the sustainability initiatives and associated learning. In doing so, the sustainability initiatives emerged from the empirical findings, and were selected only when mentioned at least three times among the cases. This inductive analysis allowed a local understanding of the meaning of sustainability to emerge during each of the three scenarios of analysis. In the final stage of the analysis, the three levels of SC sustainability learning for the content analysis were defined *a priori* whilst the subcategories linked with each level emerged inductively (Kovács and Spens, 2005; Saunders et al., 2019) from the data. In the findings below, only the cross-case analysis from the second and final scenarios is presented as this provides an overview of SC sustainability learning in the region during the outbreak.

Each initiative studied was highlighted by the respondents as central to supply chain sustainability. Having first identified an initial set of initiatives during the first scenario, this set

was then used as a reference point during the research to (i) identify priorities and changes in the initiatives and (ii) to investigate the main SC learning by considering the COVID-19 outbreak influence. At each stage, the research analysis was based on management perceptions of the main changes and learning during this turbulent environment. To ensure research rigour reliability and validity criteria were applied (Yin, 2017). Reliability was ensured through the use of the research protocol and triangulation (between interviews and secondary data) (Seuring, 2008; Yin, 2017). To ensure internal validity a double-check strategy was used, i.e. two researchers were involved in the data analysis. In addition, for external validity, the findings were compared with those of the newer research regarding the COVID-19 outbreak (e.g. Barreiro-Gen et al., 2020; Chowdhury et al., 2020; Majumdar et al., 2020).

#### **4. Findings**

This section begins by presenting the findings on how sustainability initiatives evolved due to the outbreak by considering each of the three different scenarios in turn in sections 4.1 to 4.3 respectively (pre-outbreak, buyer-centred peak, and supplier-centred peak). Then, in section 4.4, the main learning analysed using a multi-level perspective is presented.

##### *4.1. Scenario 1 (pre-outbreak): understanding SC Sustainability initiatives*

Table 2 lists the sustainability initiatives as identified by managers in the first set of interviews. This table shows a high level of environmental concern as a direct result of the influence of buyers' certification requirements. This confirms previous research which indicates that for coffee production in particular, many different certifications have been adopted (e.g., UTZ, Rainforest, Nespresso) in order to gain access to international markets (Hajjar et al., 2019). Thus the findings indicate that managers recognised certifications as guides to transform their practical actions/behaviours, and during the interviews they were emphatic that there are a set of learning processes influenced by these certifications. For instance, health and safety issues and eco-innovations are initiatives resulting directly from certifications, which were not previously implemented by managers. In addition, other initiatives emerged indirectly to support the learning process such as raising the environmental awareness of employees and community and improving environmental protection.

**Table 2 - Sustainability Initiatives evidenced in interviews – COVID-19 pre-outbreak**

Initiative	Trigger	Description	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12
<b>(1) Sustainable agriculture certification</b>	Owing to market demand, managers were required to have certifications. This perspective helps them in the market to provide food security.	Certifications are standards in terms of environmental, social and economic management of production, and are audited and validated by certifiers' organizations frequently.	X	X	X	X	X	X	X	X	X	X	X	X
<b>(2) Cooperation to improve economic sustainability</b>	To improve their knowledge as well as have support on the economic side, managers have partnerships.	Cooperation between suppliers locally, and cooperatives and other institutions creates a strong network.	X	-	X	X	-	-	X	-	X	X	-	-
<b>(3) Environmental awareness of employees and community</b>	To implement certification, changes are necessary in the employees and community's mentality and understanding on sustainability.	Programs of training or social projects to motivate workers and the community to improve their awareness and care in regard to the environment.	-	X	X	-	X	-	-	X	X	X	X	X
<b>(4) Environmental protection beyond the law and certification requirements</b>	Beyond what is required by law, companies changed their strategic orientation towards sustainability.	Focused on their environmental contribution, large areas of nature reserves and reforestation were created.	-	X	X	-	X	-	X	X	X	X	-	X
<b>(5) Health and Safety</b>	To follow local and certification rules, actions are necessary to avoid employees' accidents and diseases.	Program of protection, including vaccinations and blood tests; provision and use of PPE; psychological care.	X	X	X	X	X	X	X	X	-	X	X	X
<b>(6) Working condition improvement</b>	Beyond following local and certification rules, they decided to improve workers well-being.	Involves changes and improvement to the refectory, new equipment or machines to offer more comfort to workers, etc.	X	X	-	X	-	X	X	X	-	X	-	X
<b>(7) Traceability</b>	Needed to ensure sustainability and to maintain the designation of origin label.	The provision of information on the production process and the history of the producer and farm. Certifies the origin.	-	-	X	-	X	-	X	-	-	-	-	-
<b>(8) Eco-innovations (e.g., R&amp;D)</b>	To reduce environmental impacts and improve productivity as well as achieve some certification criteria.	Partnership with universities/ research centres were developed in order to better use their resources.	-	-	-	X	X	-	-	-	-	X	-	-

As can be seen in the table, SC sustainability initiatives were presented in all cases albeit with different numbers of companies engaged. Each case highlighted the most relevant initiatives for their context, which varied between raising the environmental awareness of employees with low levels of education (P2, P3, P8, P9 and P12) through to traceability which was mentioned only by three cases (P3, P5 and P7). Therefore, SC sustainability learning can be seen to be different even in the same region and sector, with priorities concerning sustainability initiatives being defined differently by each producer even when they are following the same guide. For example, cooperation with local cooperatives was mentioned in only six cases, who were more interested in having support for their economic sustainability. Nonetheless, as already discussed, the role of the certification in supporting learning is clear in the evidence:

Certifications are essential to ensure the proliferation of a culture of sustainability in the company. [...] Given that the certification details what is expected of each action, what the company can or cannot do, these certification tools serve exactly to guide you as to what to do. So, certification has a very important role in the implementation of sustainable management. It materializes and facilitates. It systematizes (P10).

The findings indicate that the production in the Cerrado Mineiro region is highly mechanised which may explain why social sustainability initiatives had a lower priority at this point in comparison to other sustainability initiatives. In addition, some producers mentioned collaborations with universities/research centres (which supported eco-innovations) and local institutions (mostly focused on supporting economic sustainability), which were sources of knowledge to support producers in better achieving certification requirements. Surprisingly, traceability was not recognised as a central initiative by the majority, despite it being aligned with certification requirements and the designation of origin label (e.g., production process, quality, producer history). In summary, the analysis of the first scenario showed that SC sustainability learning is evident for managers and guided primarily by buyer certification requirements. Thus it can be argued that the main source of learning at this stage was external to the emerging economy suppliers, and transferred to them via their supply chain partners. The suppliers then used exploitation capabilities to apply the knowledge obtained from these external learning sources to their context.

#### *4.2 Scenario 2: Buyer-centred outbreak peak*

While most of the buyer countries were implementing COVID-19 outbreak measures, the suppliers in Brazil had only just started to consider the influence of the pandemic in their region. Thus, the findings suggest that at this initial stage, the concerns of most of the participants were related to their response to early lockdown restrictions. At this point, they started to think about the future since the harvest period was imminent. According to the analysis, although the environmental sustainability initiatives were maintained, the priority shifted to social and economic initiatives, and it was these initiatives that received additional attention by managers. It is important to also note that the institutional environment was very uncertain, since local political turmoil was influencing the economy as much as the outbreak itself. In this context, ‘health and safety’ initiatives were intensified by all suppliers including P1 who explained that: “*We made some adaptations including the use of alcoholic gel and face masks [...] people in the risk group were put on vacation [...] Then we hired a psychologist also to provide support for the staff*”.

At the beginning, certification requirements of care and cleanliness were essential to guide them in learning how to deal with the lockdown. As P12 argued “*to have a certification, you*

*already must be prepared for this type of thing [e.g., sanitary safety]*". In addition, P6 stated that *"Everything is certified here and everything is very clean. But I think that the pandemic serves to show that we always have to be more attentive to anything that we don't even see, but that can come through and bring us down"*. Therefore, interviewees started to show more concern for their employees, even though the harvest is highly mechanised, thus reinforcing initiative 5 as identified in Table 2. On the other hand, they also focused on economic sustainability and changes were developed in the region, including in the negotiation process (e.g., postponement of payments) and additional SC interactions. For instance, P10 developed a project called 'Beanstalk' with the promise that for *"everyone who buys a kilo of roasted coffee on our roaster/coffee network in the world, [then] we will plant a tree. So, it's: one kilo, one tree!"* This project stimulates economic sustainability throughout the SC and is therefore categorised as being part of initiative 2 in Table 2, and at the same time it addresses environmental issues.

As well as reinforcing some of the eight sustainability initiatives identified in Table 2, two new initiatives were introduced as a result of managers learning during this stage of the outbreak. Thus exploration capabilities began to be evidenced in the data at this stage, in addition to the ongoing use of exploitation capabilities as the existing initiatives also continued to be maintained and refined. As shown in Table 3, these new initiatives have been labelled as 'Community support during COVID-19' – evidenced by three interviews (initiative 9) and 'Re-shape social interaction processes' – as evidenced by all participants (initiative 10). Both initiatives were crucial to address the lockdown requirements, as they involved changes to operations to avoid infections (e.g., having more buses for transportation) and started to provide more local community assistance to address the lack of infrastructure and equipment in local hospitals. Initiative 9 further illustrates the greater priority concerning social sustainability, as given the chaos caused by the delayed government support, the coffee producers decided to shift resources to provide medical care within the local community, an important stakeholder in their context. Table 3 summarises the impact on each initiative of this phase of the outbreak and indicates that four initiatives were not mentioned by the interviewees at this point.

This focus on social sustainability as a priority arose since the harvest period was imminent and 10 of the producers did not receive any relevant information from buyers, local government and certification bodies. Although information was eventually available on some government websites - national and local - it was vague and delayed considering when the outbreak began, and this ratifies the managers' perception of lack of government support. Only two participants received advice from buyers/certifiers to improve health and safety issues. P11 stated that they received *"a booklet about the measures that should be taken, not as far as agricultural management is concerned, but, rather, concerned with society, with the social aspects on the farm. [...] We had a direct meeting with them."* The remaining suppliers studied showed adaptation and resilience considering they were not supported by buyers at this stage. This showed that their main sustainability initiatives shifted from buyers and certifiers requirements to attending to local needs and specifications, indicating a shift in their primary source of learning. Therefore, the main influence of the buyer and certification guides on learning as identified in scenario 1 seemed to reduce during scenario 2. Instead, the suppliers now also demonstrated a pro-active orientation to learn using exploration capabilities, as well as continuing to use exploitation capabilities in maintaining/ refining their existing initiatives.

**Table 3. Sustainability initiatives evidenced in scenario 2 and scenario 3**

<b>Initiatives</b>	<b>Sample Quotes Scenario 2</b>	<b>Evidence</b>	<b>Sample Quotes Secenario 3</b>	<b>Evidence</b>
<b>(1) Sustainable agriculture certification</b>	We have had a certification project on the property for several years. So, it intensified more because, of course, of the pandemic, but, a good part of the actions we were already doing. (P1) [...] According to certification rules, the workplace is always clean, with everything in the right place. (P8)	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12	Because we have had this certification for a long time, my father was always careful with cleaning the farm, with hygiene, so we were very careful with that. [...] it is good to have no problems during the pandemic. (P9)	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11
<b>(2) Cooperation to improve economic sustainability</b>	We participate in the cooperative and it has several initiatives in schools and with the members' families. (P8) We have launched a project called Beanstalk, by João, through which we are encouraging people to buy. For everyone who buys a kilo of roasted coffee on our roaster/ café network in the world, we will plant a tree. So, it's: one kilo, one tree. It is a way for us to encourage the purchase of coffee, mainly from these small roasters, which need to get through the crisis. (P10)	P2, P3, P4, P5, P6, P7, P9, P10	The cooperative is very important for us, it is our base here. Together we made instruction booklets and mailed them out for other farmers. (P2)	P2, P3, P7, P9, P10
<b>(3) Environmental awareness of employees and community</b>	We are giving the same guidelines to employees and everything about hygiene. (P2) We always talk and reinforce the issue of hygiene in the workplace. Everything is certified here. Everything is very clean. But I think it shows the employees, those more hard-headed, that they always have to be aware of any little thing that we are not even seeing, that can come and bring us down. (P8)	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12	No mention	-
<b>(4) Environmental protection beyond law and certifications</b>	No mention	-	No mention	-
<b>(5) Health and Safety</b>	What was possible to do from home we did, but there are things that need to be done in the field [...] We started to sanitize buses with bleach to disinfect aluminium, something that is in common use. When the truck comes out, we go and spray the tyres, the truck, with bleach. (P1) Hygiene is a recurring procedure. We are cleaning transportation with only half the capacity of the bus in use, and the employees wearing a face mask. If they have any symptoms of fever or something, that person will be isolated. (P5) We started using face masks, alcohol gel, these things, but we didn't stop at the farm. (P6)	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12	The issue of PPE, we became much more rigid with the use of a mask, with the non-sharing of PPE, you know, each one with his own. [...] during meals, we try to stay as far away from each other as possible. We have two tables well separated from each other. So, they split up there and are more distant from each other. (P7) The use of masks became mandatory. We made masks for everyone. And we continue to do what has to be done, which is to use alcohol gel, cleaning the bus. On receiving people on the farm, we only receive visits that are essential. We are not receiving visitors to see the harvest. (P9)	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11



<b>(6) Working condition improvements</b>	No mention	-	No mention	-
<b>(7) Traceability</b>	No mention	-	No mention	-
<b>(8) Eco-innovations (e.g., R&amp;D)</b>	No mention	-	No mention	-
<b>(9) Community support during COVID-19*</b>	<p>The cooperatives that we also participate in have a PCR, which is a molecular separation piece of equipment. This equipment alone is expensive; so it was borrowed from the laboratories at Coopacer by the local university laboratory in Rio Paranaíba city [...] to carry out the [COVID-19] tests. (P1)</p> <p>We are in partnership with the Ministry of Agriculture. We are making a booklet with all the procedures for us to harvest in a peaceful way here in the Cerrado Mineiro Region. (P5)</p> <p>Each cooperative has taken an initiative. [...] In our case here, we are doing a coffee campaign, and this collected coffee will be transformed into a basic food basket and we will donate to the entities that have registered vulnerable people. Now, the others, some have raised money to buy a respirator for the hospital, others are making masks for the hospital. Each is doing an action according to the local need. (P5)</p>	P1, P5, P8	We are helping even more at the local hospital with the purchase of respirators and expansion of the building to serve possible patients with COVID-19. (P1)	P1, P5, P10
<b>(10) Re-shape social interactions processes (e.g. logistic, meeting, negotiation)*</b>	<p>According to local decree, we cannot use the full bus, only 50% of its capacity can be used to enable a little more distance between people. (P1)</p> <p>It changed in terms of the relationship with the suppliers of inputs, to visit the property it has to be booked, scheduled beforehand. The staff have avoided attending. Even technical assistance in this period of the pandemic is more restricted. (P3)</p> <p>I usually receive negotiators at the headquarters and we serve a coffee. Today, for example, some people came and I received wearing a mask. No coffee. (P4)</p> <p>We decided to try to send [to buyers] as much as we could. [...] We have shipped more coffee [to ensure the supply] (P10).</p> <p>We slowly closed the doors of the farm to receive people. We are very restricted with receiving visits, both from suppliers, customers and people who go there to visit, to try to do some negotiation (P11)</p>	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12	<p>We try, as much as possible, to avoid visits here on the farm. This is suspended. It's all over the phone, email or WhatsApp [...] the protocol is people call to book. (P2)</p> <p>We decided to join the fully mechanized harvest to avoid crowding because there would be 40 more people here on the farm. This, unfortunately, affects coffee production a little for next year, but it is a precautionary measure against the pandemic. (P11)</p>	P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11

**(11) Social awareness of employees and community\*\***

Non existent.

We set up a booklet with instructions for employees on hygiene and cleaning procedures for us to try to prevent the virus from proliferating. So, this was done in an informative way for use at several points in the farm, including the entrance for administrators, meal stations, the cafeteria, all the points with taps, washbasins, as well as, drinking points. (P4)

P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11

We created a safe harvest plan. Our cooperative, together with various agencies, created a booklet to guide the members, workers, customers and we made this material available digitally to all entities in the region. (P5)

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Legend: \* new initiatives from scenario 2. \*\* new initiatives from scenario 3.

### 4.3 Scenario 3: Supplier-centred outbreak peak

The findings during the third contact with suppliers showed continued development of SC sustainability-related initiatives, since they faced the initial infection peak in Brazil and any contamination on their farms could hamper the harvest leading to significant financial losses. At this point, there was no significant change in the environmental sustainability initiatives and so the main areas of evolution continued to be on the social side. Thus, the focus on training was on social awareness, i.e., during interviews, managers did not mention issues about recycling or environmental protection any more, but instead they emphasised the need to improve the knowledge of employees and the community about infection prevention. A new initiative (initiative 11) was thereby identified, as included in Table 3. Also, the two initiatives that began in the buyer-centred outbreak peak scenario – ‘Community support during COVID-19’ and ‘Re-shape social interactions processes’ – continued to be developed.

The interview evidence showed that for the majority of participants, the certification was a main driver to guide their activities during scenario 3, as also observed in scenario 1, since this had been the source of learning about prevention and other procedures. This demonstrates that for SC sustainability learning, even during an unprecedented outbreak, the use of exploitation capabilities to apply certification rules can be really effective. However, managers did not limit themselves to ideas generated from this source, and instead expanded on some of their own initiatives. For example, in the context of the ‘health and safety’ initiative, actions were intensified by all managers, as exemplified by P2: *“We hired a nursing technician to give specific training on measures to combat and mitigate the coronavirus in order to raise awareness, not in the sense of making too much fanfare, but really raising awareness”*. According to P1, the measures increased since *“We also bought thermometers to measure the workers’ temperature when they get on the bus and when they leave. [...] We also had to hire more buses to provide services because we are at harvest time and we have many people working on the farm.”* In addition, he claimed: *“We took out a life insurance policy for each employee so that they would be more relaxed to work at that time, considering the difficulty of this pandemic period. The psychologist also intensified assistance to the staff to provide greater support.”* This demonstrates that exploration capabilities were being used, leading to deep levels of learning about social awareness as an important sustainability initiative. Table 3 shows additional information about SC sustainability learning in scenario 3.

In addition, at this point, the findings identified a closer interaction with other SC members, mainly the buyers. In this scenario, most of the managers said that buyers’ companies sent new guidelines to follow in the context of the pandemic, but only one participant mentioned changes in certifiers’ advice, albeit not embedded in its rules. For example, P6 and P2 described buyers’ actions: *“Buyer A, via the cooperative, forwarded some procedures to customers and suppliers. They also did some live training with us. Buyer B also sent some guidelines by email”* (P6). *“Buyer A and Buyer C are running an educational campaign on local radio stations with guidance”* (P2). This change seems to indicate that at first buyers were more focused on their own activities and maybe they were learning about how to act during this unprecedented outbreak, with suppliers being a second priority. However, by this stage, they were engaging more in supporting suppliers.

It is important to mention that increased mechanisation of the harvest process has led to lower levels of employment in some cases. However, some companies still faced problems with worker recruitment, partly due to a reduced number of migrant workers and partly as an unexpected consequence from government financial support during the pandemic. This support was available for the unemployed and led to some potential workers preferring not to work and use government support instead, even though it was set at 60% of the Brazilian minimum wage (P7, P9, P10). In

some cases, companies then had to pay higher salaries to recruit migrant workers (P7, P10). For instance, P10 claimed that they “*had to increase wages to compensate for the amount they would be receiving from the government*”. In addition, in relation to the forthcoming negotiation process of coffee prices from the current harvest P10 states:

We offered a different price proposal this year with some reduction, understanding that it is a difficult time for everyone [...] so, we carried out a study on what we could offer. We listened to buyers about what they need. Some need to extend the payment time. We are being much more customized to serve each client.

Based on this statement and the other data analysis during this phase, it seems that the suppliers have learned how to maintain/refine (via exploitation capabilities) and develop (via exploration capabilities) their SC sustainability initiatives. Their concern is not only related to their own survival, but also that of other coffee SC members in different countries. It can also be concluded that the number of changes to the initiatives was high and participants managed them effectively. The main modification was in relation to sustainability-related priorities with the emphasis moving from environmental sustainability to social sustainability for all managers interviewed. It was also observed that even though buyer/certifier requirements are considered a guide to sustainability, supplier sustainability initiatives are not centred only on those requirements. Thus, suppliers demonstrated an important pro-active role in SC sustainability, suggesting that their needs and learning processes should be considered by buyers given that these suppliers can be important contributors to the sustainability of the entire SC.

#### *4.4 SC sustainability learning during COVID-19 outbreak*

Table 4 summarises and provides further evidence of the SC sustainability learning during the COVID-19 outbreak. During scenario 2, seven managers claimed that they had not learnt anything new, whilst the other five indicated many changes. However, by scenario 3, all participants described some learning. Therefore, it can be argued that it was possible to observe learning loops guiding the SC sustainability trajectory of all of the participants during this changing environment. At each of the three different levels of learning related to the sustainability initiatives i.e. the individual, organisational and supply chain levels, the following sub-categories were identified: planning; new procedures; and social awareness, as indicated in Table 4 and discussed in turn below.

Table 4. SC sustainability learning

	Level	Sample of key quotations	Evidence	Analysis
Planning	Individual level	<p>I learned that I need to see the future without fear. If I think about the future by imagining what can happen from science, from research, from concrete facts, I cannot plan the things to come soon. (P10)</p> <p>I was worried about drought, hailstorms and now there is one more thing that we didn't expect. So, I need to worry and plan for that too. (P12)</p>	P1, P3, P4, P7, P8, P10, P12	Managers learned the importance of intensifying planning, mainly in relation to considering this unprecedented outbreak during their working life.
	Organisational level	<p>As we improved on the certification aspects, we also became more prepared for this moment that we are living in. (P1)</p> <p>We saw the importance of having balanced cash flow and diversified assets, not staying in a monoculture. So, we could see also the importance of creating a financial reserve. (P1)</p> <p>We learned that something can always come that we do not even know now, not always linked to farming, but that you need to be prepared for, mainly, financially. (P8)</p> <p>We are learning that we cannot make one decision that will last a long time. We might make one decision today and it may be that in 20 days we will have to change [...] we need to plan, plan and plan, building possible scenarios. (P10)</p>	P1, P2, P4, P6, P7, P8, P9, P10, P11	Even though certifications had already guided them to implement initiatives, and by providing the necessary knowledge to face this unprecedented outbreak, organisations still realised the importance of planning flexibly because of the outbreak. Given the world scenario has changed so fast during recent months, they need to be prepared, mainly financially.
	Supply Chain level	<p>I think that the pandemic highlighted the sustainability issue more strongly. I believe that the entire chain is seeing and, more than that, the supply chain has realized that it has to guarantee itself and that its supplier has to be sustainable and correct. So, in that sense, it only reinforces the need to be really sustainable. (P10)</p>	P1, P5, P10, P11, P12	During this period a greater awareness about SC sustainability emerged. This may be supported by certification and planning of different initiatives.
New procedures	Individual level	<p>I see that more hygiene is a very important point of learning. (P6)</p> <p>I think a lot has changed. Regarding hygiene, wash your hands more, use alcohol gel. [...]</p> <p>I think this is here to stay. After it passes, I think we will continue doing this. (P7)</p> <p>We learn to have more patience, to respect more, we learn to take more precautions, more care for ourselves, with our physical body. (P12)</p>	P1, P2, P3, P4, P5, P6, P7, P8, P12	More hygiene, health care and improvement in relational aspects were emphasized.
	Organisational level	<p>We learned more about the importance of food security, of traceability, of producing even with quality and safety. After all, our final product is food. (P5)</p> <p>We are using more technology, social networks to chat with our buyers. They always ask for photos, videos of coffee drying, harvesting. As they cannot come here to visit, so we share everything online. In this I see an opportunity to open more markets. So, there may be a potential customer I do not know, who never came here, so I can send to him too. (P11)</p>	<p>P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12</p> <p>P6, P7, P8, P10, P11, P12</p>	<p>More attention is now being to food security, due to learning about hygiene.</p> <p>Improvement in use of technology to better advertise their product and production as a possible way to access new buyers.</p>

	<b>Supply Chain level</b>	<p>We changed the coffee tasting process and visits. The tasting will involve more restrictions and hygiene. It was very common to receive buyers from other countries, especially at harvest time, because many have never seen a coffee harvest. Now we have to take more precautions and restrict visits. (P2)</p> <p>We are using technology to our advantage. Many things that we needed to do in person, nowadays technology delivers [...] I am using technology to advantage today, video calls, video meetings. (P11)</p>	<p>P1, P2, P3, P4, P5, P6, P7, P8, P9, P10, P11, P12</p> <p>P4, P7, P8, P10, P11, P12</p>	<p>The interaction with SC members changed given new hygiene restrictions related to receiving buyers.</p> <p>Technology solutions and uses were intensified. Thus, new procedures for SC meetings and negotiation emerged.</p>
<b>Social awareness</b>	<b>Individual level</b>	<p>We saw the even greater importance of valuing people, teams. We saw that the human being does not work alone, one needs the other and also that each one has to take care of himself because if a team member gets contaminated, he can contaminate many people. (P1)</p> <p>Much more awareness regarding science, the planet, much more. [...] that we also need to meet social needs so that people do not die. (P10)</p>	<p>P1, P4, P6, P7, P8, P10, P11</p>	<p>Through interviews it was clear that the majority learnt the importance of working in groups and for the people. They recognised the importance of care of each person (community) and the environment to health.</p>
	<b>Organisational level</b>	<p>This crisis showed that I need to keep our employees' jobs, try to help the situation a little to maintain social balance. (P5)</p> <p>I saw that nobody can do anything alone. We need a team for everything. So, I have my employees there, every year, every day, as having machinery to harvest is not enough. We still need people working with us, even with this much technology. We have a dryer, washer, harvester, yet we still need people. It is not enough to mechanize 100% and not have people. Still, labour is very necessary. That was what I felt most this year, a difference from other years for this one. (P7)</p> <p>The first learning is that in a moment of despair you [as managers] think outside the box and you are willing to face the issues to continue producing. (P10)</p>	<p>P1, P5, P6, P7, P8, P10, P11</p>	<p>The importance of people increased in the company, mainly because the previous focus was on environmental measures. However, now managers understand the importance of maintaining workers jobs for broader social reasons. The outbreak also helped organisations to become creative to innovate during an unprecedented outbreak.</p>
	<b>Supply Chain level</b>	<p>That connection between people. The coffee has a very connected supply chain. I think everyone wants to help each other. I think it is super cool. [...] I talked to several producers from different regions and we are always talking, exchanging experiences about the difficulties that each one is facing. It is knowing that everyone is in the same boat, that you are not alone. Everyone was not sure what to do. It is all very uncertain. So, I think this support shows that everyone is together in this. (P7)</p> <p>The only thing we did not stop thinking about was sustainability. We are increasingly realizing how essential this is going to be and I am not talking from a commercial point of view, but from the point of view of food security, security of supply. This pandemic showed just how fragile we are. (P10)</p>	<p>P2, P5, P7, P10, P11</p>	<p>During the outbreak, there was a greater recognition by SC members of their roles in supporting each other and building relationships. It seems that a more consistent perception of who is in contact with managers emerged. Inter-organisational relationships became more evident as well as its importance to achieve sustainability.</p>

*Planning:* Since the first contact with managers pre-outbreak, it was evident from their answers that certifications provide an important guide for their sustainability initiatives. However, the pandemic intensified that learning, at the individual and organisational level, about the importance of being prepared for unprecedented outbreak by being flexible and having the necessary knowledge. Although it is an on-going issue to advance SC sustainability, in some cases the suppliers had not sufficiently planned specific aspects such as a secure and balanced cash flow. In facing the outbreak, they identified the need to have better planning concerning the coming harvest and negotiation period. At the SC level, the learning was more related to placing a greater emphasis on planning for sustainability to facilitate better outcomes in further crises.

*New procedures:* Two main elements influenced the development of new procedures, i.e. hygiene issues and intensification in the use of technology. For both issues changes were necessary and learning emerged at the three levels. For instance, food security was highlighted as a main reason for new hygiene procedures. In addition, new technological solutions became more widespread to support process continuation with the required social distancing. The use of technology also improved their connection with other SC members and possible new buyers, since the suppliers developed new ways for the market to see their product and production process.

*Social awareness:* The main learning at the individual and organizational levels in this category related to recognising the importance of people and health. Since the environmental issues were always the most required by certifications, social sustainability was a lower priority before the outbreak, as previously explained. At the SC level, learning related to the pertinence of relationships with other producers and throughout the SC, which were strengthened to ensure ongoing global SC activities. As presented in Table 4, it seems that they started to see more the human side of the SC, which helps to achieve sustainability. It is important to highlight that this learning happened during the second and third scenario rather than the first one.

It is therefore concluded that SC sustainability learning is an ongoing process that companies and SC members need to follow during their daily operations. In comparison to other sectors (e.g., clothing in South Asia; Majumdar et al., 2020), Brazilian coffee production did not experience huge disruptions since the harvest period did not occur at the beginning of the outbreak. However, the findings show that during the outbreak, Brazilian coffee suppliers learned about themselves (individually, organisationally and at the SC level), in a manner that went beyond the buyer/certifier requirements.

## 5. Discussion

To study supplier SC sustainability learning during the COVID-19 outbreak, this paper compared sustainability initiatives during three scenarios (pre-outbreak, buyer-centred initial peak, and supplier-centred initial peak), showing how suppliers are dealing with the changes in the institutional environment as well as how their sustainability initiatives have evolved. Figure 1 summarises and conceptualises the findings, illustrating how the learning capabilities evolved within three learning loops, each of which represents one of the data collection scenarios. Initially, the primary source of learning was external to the emerging economy suppliers and the learning capabilities were exploitation based. However, as the pandemic began to unfold, new exploration learning capabilities emerged, with evidence of this capability in all of the cases in the third scenario. In terms of the subsequent specific learning outcomes, the prior literature related to the outbreak has suggested that to maintain their competitiveness, companies in all sectors have to improve their operational resilience, value chain digitization and adopt more remote work, reinventing their sustainable operations (e.g. Jabbour et al., 2020; Verma and Gustafsson, 2020).

In contrast, this study demonstrates that Brazilian coffee producers did not need to make all of these improvements, but instead were concerned about other crucial issues i.e. planning, the introduction of new procedures and social awareness. These findings corroborate the extant literature understanding of the need for new learning to emerge following an unprecedented event (Smith and Wenger, 2007). In addition, Figure 1 illustrates the evolving nature of the buyer-supplier relationship and which of the multiple levels of learning were impacted by the changes in the emerging economy supplier initiatives during each scenario. This paper then makes three main contributions to the literature by revealing: (a) insights into buyer-supplier relationship governance during an unprecedented event; (b) changes in SC sustainability priorities, sources of learning and learning capabilities, and (c) the key role that emerging economy supplier learning plays, at multiple levels of learning, in improving overall SC sustainability. Each of these three main areas of contribution is discussed in turn below, along with the development of associated propositions.

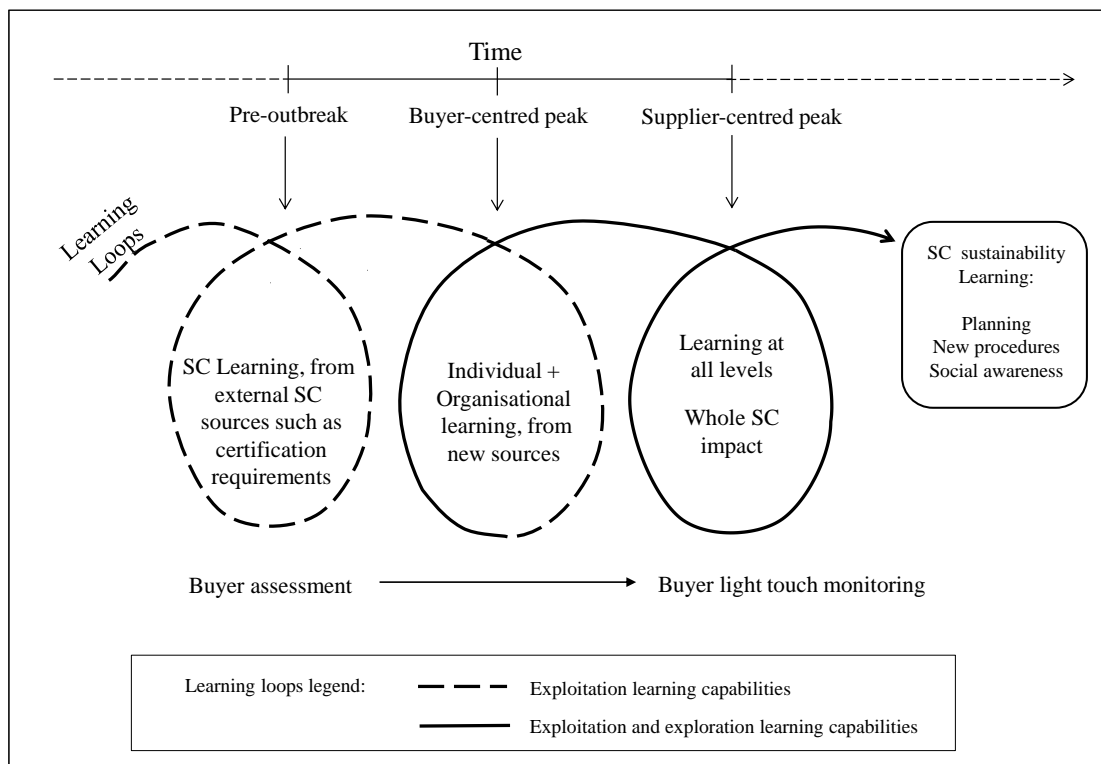


Figure 1: Emerging Economy Supplier Learning Trajectories during COVID-19

Firstly, the learning observed in this paper contrasts with Gosling et al.'s (2017) discussion, since they consider the primary impact of leadership (from a buyer's perspective) in SC learning. However, the findings described above show that in the context of the COVID-19 outbreak, supplier sustainability-oriented learning emerged pro-actively since no information was shared by buyers in the first months of the crisis, and supplier assessment was postponed. Later the relationship between buyers and suppliers was strengthened, with buyer influence re-emerging through a different type of monitoring process. According to Gimenez and Tachizawa (2012), to extend sustainability to suppliers, assessment and collaboration are the main governance mechanisms. However, given the findings in this research, it is argued that an alternative form of governance emerged during the crisis, with a more natural SC relationship involving mutual



respect. Thus, a more ‘light touch’ monitoring approach was used as a governance mechanism since assessment had not been possible during the outbreak and collaboration did not exist initially with global buyers. This is a new finding in the context of sustainability research, but confirms a similar finding from the context of humanitarian logistics (see Chandes and Paché, 2010). This has led to a stronger coffee SC emerging given that levels of communication and trust had increased by the time of the last scenario of analysis. Thus, a pair of propositions follow that are linked to the buyer-supplier relationship:

*P1a: SC sustainability learning will accelerate during unprecedented events (e.g. the COVID-19 pandemic), when suppliers operate pro-actively in a sustainability-oriented manner in the absence of buyer governance.*

*P1b: During unprecedented events, light-touch monitoring of suppliers is more conducive to SC sustainability learning than traditional assessment mechanisms.*

Secondly, in terms of SC sustainability initiative priorities, the findings suggest that social sustainability received more attention from suppliers during the outbreak, which reinforces the findings of Barreiro-Gen et al. (2020) who drew the same conclusion in the context of medium and large-sized organisations. However, these findings contrast with those related to the clothing SC (Majumdar et al., 2020) and the agricultural SC (Chowdhury et al., 2020) in South Asia as the coffee producers studied further introduced a set of quality of life activities and benefits, as described in the interviews. This paper therefore provides evidence of workforce development during the COVID-19 pandemic (Queiroz et al., 2020) by illustrating that social awareness was one of the main points of SC sustainability learning (see also Geldermann et al., 2007). This demonstrates also the need to do more than just meet sustainability standards and certifications (Hakovirta and Denuwara, 2020). It also reinforces the need to develop both exploration and exploitation learning capabilities, particularly within a changing environment (March, 1991); with a balance between both types of capabilities providing greater potential for sustainability that takes a long term perspective. In particular, in terms of the social side, it is necessary to assume a set of social inequalities, vulnerabilities and problems that goes beyond what is currently studied in the literature (Majumdar et al., 2020; Trautrimis et al., 2020). For example, one of the suppliers studied had concerns relating to government support which was hampering companies in recruiting migrant workers and hence required alternative actions (e.g., increasing worker pay). This leads to a further pair of propositions illustrating changes in the supplier’s sustainability-related priorities, sources of learning and learning capabilities:

*P2a: Emerging economy supplier learning is informed by certification requirements, which is applied using exploitation learning capabilities. However, during an unprecedented outbreak, this learning is not limited to this source of knowledge as other pro-active sources of learning emerge via the development of exploration capabilities.*

*P2b: SC sustainability learning will have a greater focus on social sustainability related initiatives during an unprecedented outbreak.*

Thirdly, the outbreak revealed new nuances on how sustainability should be developed and required throughout the SC. However, it can be argued that the findings are not limited to unprecedented outbreaks, but can be more broadly linked to the SC sustainability learning process.

For example, Barreiro-Gen et al. (2020) concluded that this pandemic has influenced priorities, which in turn will impact SC sustainability learning in the long run. In particular, this study demonstrates that SC sustainability learning should be analysed using a multiple level approach, thereby addressing a current research gap. This multi-level learning is aligned with the paths followed by companies and SCs in developing capabilities over time (Silvestre, 2015; Silvestre et al., 2020). The findings therefore reinforce the literature regarding SC learning (e.g. Knoppen et al., 2010; Ojha et al., 2018; Yang et al., 2018); and also extend this literature by adding further clarity and definitions previously not empirically verified within the context of SC sustainability. For instance, this study highlights the important impact of individual, organisational and SC level supplier learning on overall SC sustainability learning (Azadegan et al., 2008; Haq et al., 2020; Wieland et al., 2016). It thereby adds to the conclusions of Gong et al. (2018), who discuss the focal company's influence on learning, by showing that suppliers can also have an impact on the overall SC learning. These findings therefore lead to a third proposition, as follows:

*P3: Emerging economy supplier sustainability-oriented learning occurs at multiple levels – the individual, organisational and SC levels – and plays a key role in improving overall SC sustainability.*

Therefore as a consequence of the outbreak societies are learning how to become more sustainable (Sarkis et al., 2020), with new priorities being adopted in both companies and SC contexts. Therefore, the COVID-19 outbreak has affected the way of doing business, providing new insights for studying sustainability learning and initiatives.

## **6. Conclusions and further studies**

This paper has investigated how emerging economy global suppliers' sustainability initiatives have been affected by the COVID-19 pandemic with a focus on their learning. Understanding that these initiatives arise according to specific sustainability learning trajectories that guide SC members to new behaviour and develop their sustainability learning orientation, it can be concluded that this unprecedented outbreak has positively affected Brazilian coffee producers' social sustainability initiatives. Thus, this paper contributes to the literature regarding the COVID-19 pandemic and more broadly, since the findings reveal a set of insights that are not limited to the outbreak but also provide evidence of suppliers' sustainability learning in itself, as new initiatives were introduced and developed. This paper therefore highlights the need to advance studies of emerging economy supplier learning in global SCs.

*Theoretical implications* emerged during this research. Firstly, a better understanding emerged of how the COVID-19 pandemic has impacted global SCs' governance mechanisms. Thus, under specific unprecedented outbreak conditions, buyers move from supplier assessment to a more 'light touch' monitoring approach as part of their global supplier management process. This constitutes a new source of sustainability related governance in global SCs, which better appreciates how suppliers learn as well as entailing a higher level of buyer-supplier communication and trust. Secondly, understanding has been advanced in terms of how emerging economy suppliers learn sustainability, especially when facing an unprecedented outbreak. This was shown to have accelerated during the pandemic, with a change of sustainability focus towards social issues. In particular, the findings show that whilst certification is a rich source of knowledge and learning for emerging economy suppliers, this learning is not limited to guidance provided by this source during an unprecedented outbreak. Thus a balance between exploitation and exploration learning

capabilities has been shown to be needed for a long term sustainability perspective. Thirdly, through defining multiple levels of SC sustainability learning, and then providing empirical evidence for each of these levels, this paper reinforces that SC learning is more than the sum of individual and organisational learning. This generates *teaching implications* as it suggests that the study of SC sustainability should follow a more holistic approach by showing that both exploitation and exploration capabilities can shape SC sustainability initiatives and learning through multiple levels within turbulent environments.

*Managerial implications* are centred on supplier behaviour within the relationship. The findings suggest a renewed social awareness that requires not only a rethink of the role of workers during the outbreak, but also the process of interaction with multiple stakeholder involved in the SC. Thus, managers may leverage learning strategies to incorporate a coherent recovery plan for future disruption, but also to develop a plan on how to consider social sustainability in their normal activities, i.e. without the influence of the outbreak. Also, the findings indicate that buyers need to consider more the needs and expectations of suppliers as well as their learning process outcomes, which in turn will support them to develop better SC strategies. Hence, following the outbreak, buyers need to consider what suppliers have learned and use this information in their own recovery plans. In addition, the use of more ‘light touch’ monitoring strategies may strengthen the SC relationship since this level of governance sits somewhere between the two extremes previously discussed (i.e. assessment or collaboration). SC managers may reflect on what type of governance mechanism has been used to date and consider developing a better or different relationship with their suppliers as appropriate.

The research also has both *policy and social implications*. In terms of *policy implications* government support is potentially an important source of guidance for companies during an unprecedented outbreak, but in this case it was neither effective nor timely in supporting supplier needs. Thus, public managers need to better recognise their influence on SCs and develop policies that can support companies in the development of recovery plans. In particular, governments need to provide explorative learning opportunities by engaging global suppliers in the development of SC sustainability policies and initiatives. In doing so, for example, social sustainability capabilities may then be developed not only in response to unprecedented outbreaks, but also as part of more routine organisational operations. In terms of *social implications*, the results demonstrate additional supplier engagement with social sustainability initiatives. This highlights the importance of emerging economy supplier social awareness and actions given the turbulent environment in which they operate with social inequalities and vulnerabilities. Thus, the findings of this study provide motivation for companies in these countries to strengthen their social sustainability initiatives, thereby having a positive impact on local development. Therefore, a SC sustainability-orientation helps SC members to understand that their role can extend beyond transactional decisions, allowing them to share strategies and experiences to generate engagement that is more widespread than their immediate SC.

The research has three main limitations: (i) the case study method cannot provide a generalisation to the whole population of coffee suppliers in Brazil; however it is a rich source of theory elaboration on SC sustainability learning which justifies its use; (ii) given the chosen context, export-oriented members of global supply chains were studied and thus import-oriented organisations were excluded; and (iii) the perspective of emerging economy supplier managers was studied, thus data was not gathered from other SC stakeholders (e.g., employees, buyers) who could aid in further understanding the SC sustainability learning process. As this study focused on scenarios pre and during the outbreak, it would be interesting to conduct a further study after the outbreak or to extend the research as the process of the outbreak unfolds into the second peak. This

would enable firms and SCs to reflect on this unprecedented outbreak and its total impact in their learning related to sustainability. Further research should consider different SC stakeholders, including import-oriented members of global SCs, as well as the impact of the pandemic on local SCs. A longitudinal research method could be used to analyse the influence of the COVID-19 pandemic over a longer period of time in different SC operations (e.g., in various countries and sectors). Concerning SC sustainability learning further studies should be conducted in order to uncover nuances of the multiple level learning perspective worldwide, which is still underexplored.

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### **Appendix 3 - Interviews Script sample**

#### **Questions: Scenario 1**

1. What do you understand by sustainability?
2. Do you consider your company to be sustainable? If yes, could you cite some examples. If not, why not?
3. What are the main supply chain sustainability initiatives developed by your company?
4. What are the motivations to have these initiatives?
5. Is there any influence from buyer companies in your current initiatives?
6. How long have you been working on these initiatives?
7. How do you manage sustainability internally and with supply chain members?
8. How did you learn to manage these initiatives?

#### **Questions: Scenario 2**

1. What are the main supply chain sustainability initiatives developed by your company?
2. Is there any change regarding sustainability following the COVID-19 outbreak?
3. Are there changes regarding sustainability requirements from your buyers? Please, provide examples.
4. Did you change your operations during the outbreak? Please provide examples.
5. Is there any learning related to supply chain sustainability initiatives?

#### **Questions: Scenario 3**

1. Have there been any changes regarding sustainability requirements from your buyers since April? Please provide examples.
2. Did you identify changes concerning sustainability initiatives during the outbreak?
3. What has changed in your operations since April? Please provide examples.
4. As an organization, have you learned during this pandemic? If so, what have you learned? Could you give examples?
5. Did your learning relate to supply chain sustainability initiatives during the outbreak since April? Please provide examples.

## THIRD PART

### 3. CONCLUSION AND IMPLICATIONS

As this thesis overall aim was to investigate how emerging economy global suppliers manage sustainability and how their sustainability initiatives affects themselves and the Sustainable Supply Chain Management (SSCM), specifically the global SC sustainability, through this study it was improved the understanding of this issue also explaining how it has happened in a Brazilian coffee industry context. The thesis took some different approaches to this topic, tackling it from the suppliers' perspective by employing qualitative methodologies to satisfy the aims of each study and to give richer and more valid insights into the topic under research. The four studies, reported in four papers, contribute together to a more complete understanding of the how the SSCM have been in emerging economies according to previous literature and the analysed empirical field – both by the suppliers' viewpoint. While they are embedded in the SSCM studies, the findings also have practical implications for strategies of sustainability management in global SCs in general and particularly for emerging economy suppliers.

#### 3.1. Summary of findings

The paper 1 consists of a systematic literature review which analysed publications on empirical studies with global suppliers (e.g., those using questionnaires or interviews). From this study it was possible to reflect about the little is known about suppliers' activities and their sustainability initiatives in emerging countries as well as advance on this understanding (Jia et al., 2018). Thus, it was scanned what has been previously empirically studied on emerging country global suppliers' perspective and the main characteristics of sustainability operation of these suppliers on their own perspective.

A theoretical framework was proposed connecting the main drivers, mechanisms, barriers, remedies, outcomes and how these results have acted as new motivators for these suppliers to act sustainably. The contextual differences between buyers and suppliers' contexts were found as barrier for these suppliers' sustainability initiatives demonstrating the institutional distance between both sides which indicates that buyer companies need to increase their awareness about what has been done by suppliers and how the contextual difference affects the management of

sustainability. The findings related to improvement of interorganizational relationships used as a remedy by these suppliers to surpass barriers emphasize SC collaboration as one of the main issues to manage suppliers' sustainability what also ratify that suppliers need to be heard from their own practices and expectations. Additionally, as cultural and institutional outcomes emerged in the analysed studies, it provides a new analysis of sustainability (TBL+) that assumes the need for looking not only for the environmental, economic and social impact of global SCs, but also to consider the way that they produce influences and is influenced by the local culture/traditions and institutional aspects. The evidence of information/feedback about performance acting as a new driver to sustainability initiatives contributes to a more dynamic analysis of sustainability in GSCs mainly considering the information have flowed in two directions. This first paper study is timely and contributively mainly due to it has reflected and analysed sustainability dynamic of suppliers from their viewpoint and it challenges the field to increase awareness about requirements imposed to suppliers beyond focusing only buyers' needs, which can help to reduce the distance in global SCs.

As identified in the paper 1, the strengthening of interorganizational relationships seems crucial to emerging country suppliers' sustainability operation in global SCs and it guided the study presentend on paper 2 which analysed how collaborative practices affect emerging economy global suppliers' sustainability initiatives and their relational rents.

The second paper therefore analysed empirically how collaborative practices influence sustainability initiatives and the relational rents of emerging country global suppliers, specifically Brazilian coffee companies. The results indicated that collaborative practices lead to significant improvements within the supplier's sustainability initiatives and consequently within their processes related to the exportation of goods. This study suggests that collaborative practices provide a strong foundation for sustainability initiatives, internationalization and relational rents for the foreign market. The findings suggest that global SC relationships depend on the involvement of key partners for the implementation of strategies related to sustainability initiatives in international markets. The data shows the tenets of the relational view (Dyer and Singh, 1998) are adequate to explain the mechanisms for creating relational rents and improving sustainability initiatives by emerging country global suppliers. From this evidence in the Brazilian coffee growing industry, it is suggested that the adoption of collaborative practices contributes to successful export processes and improvement in their sustainability initiatives. The paper 2

findings also demonstrate the relationship between collaborative practices and relational capabilities as relevant for sustainability, for internationalization and for creating value for such actors in global SCs.

From literature findings in the paper 1 about the adoption of certification programs as the main mechanisms practiced by suppliers to improve sustainability and the positive outcomes obtained by these suppliers from their sustainability initiatives as well as the relevance of collaboration found in paper 2, the third paper explained how sustainability certification programs adoption by these suppliers affects their operations and sustainability competences.

In this sense, paper 3 analysed suppliers' certification programs adoption and competences were spotted going beyond the Triple Bottom Line sustainability dimensions. In doing so, these paper findings show that suppliers improved their culture to sustainability, the processes management and their relationships with buyers. Suppliers initially improved sustainability in their operations as part of the certification programs adoption, moreover competences at individual, organisational and SC level were evidenced. In addition, cooperation and collaboration were crucial in facilitating greater SC sustainability. These findings also reveal the role of certification beyond a tool of buyers assess suppliers but as a rich source of knowledge and competences for managers, organizations and SCs. It evidenced emerging country global suppliers have been benefited by certifications what corroborates with Bloom (2015), Hajjar et al. (2019) and Köksal et al. (2018) studies that also found certified companies improving management aspects and trust what have affected the entire SC sustainability. Thus, certifications have acted in this context as source of knowledge guiding suppliers' sustainability leading them to develop competences and be motivated to engage in more strategies in this sense.

From these three papers findings and the changings on empirical context due to COVID-19 pandemic emerged the interest to study the impact of this pandemic on SC sustainability learning. Thus, sustainability learning was the focus of the fourth paper as the pandemic has been posing new challenges for many different SC players worldwide in terms of their learning and the adaptation of their activities (Ivanov, 2020; Pantano et al., 2020). In this context, the fourth paper analysed how the emerging economy global suppliers' sustainability initiatives and SC sustainability learning have been affected by COVID-19 pandemic.

Through studying three scenarios (pre-outbreak, buyer-centred peak, and supplier-centred peak), the paper 4 presented the findings related to the learning of export-oriented Brazilian coffee

producers, using both exploitation and exploration capabilities. This paper contributes to the literature regarding the COVID-19 pandemic and more broadly, since the findings revealed a set of insights that are not limited to the outbreak but also provide evidence of suppliers' sustainability learning in itself, as new initiatives were introduced and developed. Social sustainability was observed to be the main priority by studied suppliers facing this unprecedented outbreak, in ways that go beyond sustainability certification requirements. Suppliers initially developed their sustainability initiatives during the outbreak without any support from global buyers, certification bodies or government but guided by certification principles and learning they have had through it until that point. Moreover, stronger relationships with buyers ultimately emerged facilitating greater SC sustainability. Consequently, by using both exploitation and exploration learning capabilities, multiple levels of learning were observed (i.e., individual, organisational and supply chain) as related to planning, new procedures and social awareness.

### **3.2 Theoretical contributions**

From the four studies' findings, this thesis contributes to previous knowledge by providing insights that *through interorganizational relationships, the adoption of sustainability certification programs has enabled emerging economy suppliers to develop resources, learning and competences in their operations in global SCs albeit in a global crisis context*. This thesis underlines the importance of considering the sustainability certification programs for beyond been tools of buyers select, train and assess their suppliers. As certifications were evidenced working as guides to these suppliers' sustainability management and improvement of their resources, learning and competences – from their own perspective – these programs and the outcomes from their adoption were found as relevant to SSCM studies. Its is mainly in terms of better understanding these certifications' role to management of sustainability in global SCs. Thus this thesis contributes theoretically showing the relevance of sustainability certifications programs adoption by emerging economy global suppliers as a governance mechanism on improvement of their resources, learning and competences to sustainability as well as sustainability in global SCs even though during a worldwide crisis context. Specifically and according to each one of the four papers, this research contributes to SSCM studies:

i. Adding a new approach by showing the main elements that may be used to manage global SCs and reduce the distance between buyers in developed countries and suppliers in emerging countries which influences SC sustainability and causes misunderstandings/operational difficulties.

ii. Consolidating use of the relational view theory by supporting empirically and theoretically the constructs proposed by the theory and expanding its key tenets. The adoption of the relational view in emerging country global suppliers' sustainability was unique and appropriate in supporting the discussions regarding horizontal relationships between suppliers as well as the relationships between them and institutions who have influenced their sustainability.

iii. Showing that despite emerging country global suppliers face barriers to achieve/maintain certifications, they strength interorganizational relationships to achieve the necessary knowledge to be certified what was found as a relevant strategy and mechanism of sustainability competences building. It was also clarified the benefits they have obtained from certification what demonstrated a strengthen on their sustainability in terms of all TBL+ dimensions what has feedbacked motivations to improve their sustainability strategic orientation and continue certified.

iv. Improving the understanding on how under specific worldwide crisis conditions, buyers modify their global supplier management process. It also improves understanding on how emerging economy suppliers learn sustainability, especially when facing an unprecedented outbreak showing an accelerated learning during the pandemic and changes on their sustainability focus. In addition, this study shows that whilst certification is a rich source of knowledge and learning for these suppliers, their learning is not limited to guidance provided by this source during an unprecedented outbreak.

### **3.3 Managerial implications**

As managerial implications, beyond it be centred on supplier behaviour within the SC relationship and it has found empirically the relevance of certification programs adoption by emerging economy global suppliers for SSCM, this research contributes in terms of:

i. Highlighting the positive outcomes from sustainability initiatives what indicates that despite barriers, emerging economy global suppliers have been finding remedies to overcome them improving their sustainability performance. The positive outcomes motivating more sustainability strategies demonstrated the importance of assessment of suppliers and SC sustainability initiatives

outcomes guiding suppliers and focal companies in the new strategies for them and for the SC based on real information.

ii. Showing how global buyers requirements lead to collaborative practices by suppliers in the aim of sustainability improvements and how these improvements in turn lead to relational rents. It leads to a greater understanding on how international market demand can boost improvements in sustainability initiatives that would not be achieved if they acted alone and the findings can support suppliers and focal companies' formulation of sustainability strategies as it shows the relevance of collaborative practices on generation of relational rents in global SCs and as enablers of emerging country suppliers' sustainability.

iii. Indicating the certifications relevance in emerging economy suppliers' context mainly enabling sustainability competences development. Beyond knowledge and skills, this research indicates changes on mentalities, culture and behaviours in these companies what seen beneficial for all SC members as these changes also enable interorganizational relationships and trust among them. Thus, it suggests that managers may reinforce strategies of sustainability and interorganizational cooperation/collaboration to strength their current competences and build additional ones to better face the barrier of lack of knowledge as well increase their sustainability and reputation.

iv. Suggesting a renewed social awareness that requires a rethink of the workers' role and a process of interaction with multiple stakeholders involved in the SC. This study indicates the relevance of leverage learning strategies to incorporate a coherent recovery plan for this current disruption (i.e. COVID-19 pandemic) and other future ones through the plans considering social sustainability in their normal activities. Also, this research indicates that buyers should consider more the needs and expectations of suppliers as well as their learning process outcomes, which in turn will support them to develop better SC strategies.

### **3.4 Limitations and future research**

This study has some limitations. The first is about generalization as despite case studies be a plentiful source of theory expansion on SC sustainability, they cannot lead to generalisation of all coffee suppliers in Brazil. The second limitation is that only managers' perspective was analysed, while other SC stakeholders could add other relevant viewpoint improving the understanding on how certifications programs adoption by emerging economy global suppliers



affects their sustainability initiatives as well as the SC sustainability. The third is related to the systematic literature review which the findings were dependent on the adopted criteria to papers searches/selection thus other aspects about sustainability initiatives of emerging economy suppliers in global SCs might be covered. However, it is believed that the results set of this doctoral thesis constitute an important contribution to the studies of sustainability supply chain management within emerging economy global suppliers' context since pointed out by Jia et al. (2018) they are scarce, mainly by suppliers' viewpoint. In addition, this research approached theories as relational view as well as the learning and the competences approaches analysing them at the individual, organizational and supply chain levels.

For future studies, as this study focused on certified coffee producers, it would be interesting to conduct studies with non-certified ones to analyse the differences/similarities of competences building and SC sustainability learning. This would enable companies and SCs to reflect on certifications meaning and strategies to improve them as well as better manage their effects. Further research should also consider different GSC stakeholders, including buyers, certifiers, employees, other partners to obtain multiple perspectives on how suppliers' certification programs adoption has affected their sustainability as well as the SC sustainability. Forthcoming studies should be conducted in other industries in order to reveal different emerging economy suppliers' perspectives, especially to better understand the contextual distance between global SC's actors and their effects on SC sustainability. Further studies could also use additional sustainability dimensions such as the TBL+ (Fritz & Silva, 2018) to study SC sustainability in other emerging economy global suppliers' contexts.

## Appendix 4 - Informed Consent Form



**UNIVERSIDADE FEDERAL DE LAVRAS**  
Departamento de Administração e Economia  
Programa de Pós-graduação em Administração

### Termo de Consentimento Livre e Esclarecido - TCLE

Prezado(a) Senhor(a), você está sendo convidado(a) a participar da pesquisa de forma totalmente voluntária da Universidade Federal de Lavras. Antes de concordar, é importante que você compreenda as informações e instruções contidas neste documento. Será garantida, durante todas as fases da pesquisa: sigilo; privacidade; e acesso aos resultados.

**Título do trabalho experimental:** ATUAÇÃO SUSTENTÁVEL DE FORNECEDORES DE ECONOMIAS EMERGENTES EM CADEIAS DE SUPRIMENTOS GLOBAIS: UM ESTUDO COM CAFEICULTORES DA REGIÃO DO CERRADO MINEIRO

**Pesquisador(es) responsável(is):** Michele Morais Oliveira Pereira e Luiz Marcelo Antonialli

**Cargo/Função:** Doutoranda e orientador

**Instituição/Departamento:** Administração e Economia

**Telefone para contato:** 34 992345447

**Local da coleta de dados:** Rio Paranaíba, Carmo do Paranaíba, Ibiá, Patrocínio e Monte Carmelo (todas cidades do estado de Minas Gerais)

#### II - OBJETIVOS

Compreender o processo de adoção de práticas sustentáveis por cafeicultores da Região do Cerrado Mineiro (RCM) buscando atender as exigências das cadeias de suprimentos globais.

#### III – JUSTIFICATIVA

Nas cadeias de suprimentos globais de café a maior parte do fornecimento mundial provém de empresas brasileiras, pois o Brasil é o maior produtor do item. O estado de Minas Gerais é o maior produtor e a Região do Cerrado Mineiro é representativa neste contexto.

#### IV - PROCEDIMENTOS DO EXPERIMENTO

##### AMOSTRA

Será definido o número de participantes pelo critério de saturação (quando as repostas não apresentarem mais dados novos).

##### EXAMES

Serão realizadas entrevistas semiestruturadas com os gestores das empresas cafeicultoras. A pesquisa será conduzida de forma a não estendê-la demasiadamente e será realizada em local reservado e com agendamento prévio. As entrevistas serão gravadas se houver permissão do participante.

##### V - RISCOS ESPERADOS

Há previsão de raros riscos associados à participação na pesquisa, pois as informações levantadas durante a entrevista não são de cunho pessoal ou relacionados à história de vida. Contudo, pode haver algum constrangimento, desconforto ou estresse do participante. Caso ocorram, ele poderá, a qualquer momento, se recusar a responder alguma pergunta ou interromper a entrevista. Para amenizar estes riscos, a pesquisa será conduzida de forma a não estendê-la demasiadamente e será realizada em local reservado e com agendamento prévio.

##### VI – BENEFÍCIOS

Como benefício aos participantes, será um momento para falarem e refletirem sobre o assunto. Um momento de dar voz aos fornecedores de países emergentes. Poderão falar sobre suas dificuldades na gestão sustentável de seus empreendimentos. Os dados da pesquisa (após analisados) poderão ser utilizados como base para ferramentas de gestão que poderão ser aplicadas por eles e também como fontes de informações para embasar políticas públicas de apoio a atuação sustentável de fornecedores brasileiros, não só na cafeicultura como em outros ramos de atuação.

## VII – CRITÉRIOS PARA SUSPENDER OU ENCERRAR A PESQUISA

A pesquisa (de forma total) será encerrada quando se obtiver as informações necessárias. Durante a entrevista, se o participante não quiser continuar ou se sentir constrangido, ela será interrompida para que nenhum dano seja causado a ele.

## VIII - CONSENTIMENTO PÓS-INFORMAÇÃO

Após convenientemente esclarecido pelo pesquisador e ter entendido o que me foi explicado, consinto em participar do presente Projeto de Pesquisa.

Lavras, \_\_\_\_ de \_\_\_\_\_ de 20 \_\_\_\_.

\_\_\_\_\_

Nome (legível) / RG

\_\_\_\_\_

Assinatura

**ATENÇÃO!** Por sua participação, você: não terá nenhum custo, nem receberá qualquer vantagem financeira; será ressarcido de despesas que eventualmente ocorrerem; será indenizado em caso de eventuais danos decorrentes da pesquisa; e terá o direito de desistir a qualquer momento, retirando o consentimento sem nenhuma penalidade e sem perder quaisquer benefícios. Em caso de dúvida quanto aos seus direitos, escreva para o Comitê de Ética em Pesquisa em seres humanos da UFLA. Endereço – Campus Universitário da UFLA, Pró-reitoria de pesquisa, COEP, caixa postal 3037. Telefone: 3829-5182.

**Este termo de consentimento encontra-se impresso em duas vias, sendo que uma cópia será arquivada com o pesquisador responsável e a outra será fornecida a você.**

*No caso de qualquer emergência entrar em contato com o pesquisador responsável no Departamento de Administração e Economia Telefones de contato: 34 99234-5447.*