



Cocoa marketing chain in developing countries: How do formal-informal linkages ensure its sustainability in Cameroon?



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ABSTRACT

Although liberalization of the cocoa sector has increased internal competition within the marketing chain it has also led to the emergence of informal market actors within the chain. Therefore, the aim of this paper is to analyse how the cocoa marketing chain operates by measuring and comparing the marketing margins of the formal and informal actors. Qualitative data were used to establish the structure of the marketing chain and quantitative data to estimate the marketing margins. A total sampling size of 76 cocoa market actors was obtained by using a multi-stage sampling technique: 15 for qualitative data and 61 for quantitative data. Descriptive analysis was used to map the marketing chain and economic analysis to compute the costs and margins for both informal and formal market intermediaries from the Centre and South-West regions in Cameroon. The results indicated three market intermediaries (one informal and two formal) and four marketing channels by which cocoa moves from the farmers to the exporters. The calculation of marketing costs indicated that informal actors incurred the highest costs in both regions. The results regarding the marketing margins were twofold: informal actors obtain low net marketing margins when they do not use illicit strategies, but high net marketing margins when illicit strategies are used. Given the significant role of informal actors, we suggest that their actions should be integrated in a suitable manner into those of formal actors to contribute to a better performance of the marketing chain and to the sustainability of the cocoa sector.

1. Introduction

Marketing plays a critical role in meeting the goals of food security, poverty alleviation, and sustainable agriculture, particularly among smallholder farmers in developing countries (Makhura, 2001). As in many other agricultural markets, the cocoa market is characterized by a multitude of marketing agents (Ogunleye and Oladeji, 2007) who all play important roles within the marketing chain (Gilbert, 2008). Cocoa beans, produced and processed into the fermented, dried marketable form, are bought from the farmers by one or more successive traders, transported, and then sold to the final consumers that can be the local

processors or the exporters¹. Nevertheless, since the liberalization of the cocoa market in African countries, some smallholder actors in the marketing chain still find it difficult to participate fully (Makhura, 2001). The price of cocoa as well as the margins of each actor in the marketing chain are determined by market forces (Kamdem et al., 2013). In fact, numerous studies have shown that the smallholder remains poorly linked to the agricultural market (Gebre-Madhin, 2009; Kamdem, 2016; Key et al., 2000) even though the liberalization of economies in developing countries was aimed at increasing the participation of economic agents in market activities (Castaño, 2001; Malan et al., 2015; Masuka, 2013).

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¹ It should be noted that although some of the Cameroonian cocoa is processed locally, more than 90% is exported to Europe, especially to the Netherlands, as a raw material for chocolate industry (Bagal, Belletti, and Marescotti 2013). Hence forth in the remainder of the article, exporters are considered to be the only final consumers of cocoa beans.

In Cameroon, before the liberalization of agricultural commodity chains, State agencies were established with a monopoly on the export trading of agricultural products. The ONCPB (*Office National de Commercialisation des Produits de Base*) was the main structure for the commercialization of cocoa with the role of a stabilization bank/fund; it provided direction for commercialization in zones where produce was bought and served as the only exporter. The ONCPB used to acquire produce through Licensed Buying Agents (LBAs) who it had mandated for the cocoa producing zones respecting the price and the quality level fixed by the Board. Cocoa producers were obliged to transport their produce to the collection centre of a divisional cooperative. From there, the product was handed over to LBAs mandated in each zone for each agricultural season (Inter-réseau, 2008). These agents which are remunerated by the Board, were also in charge of transporting the cocoa to the final destination (usually the port) where they were in charge of the conditioning of the produce for the subsequent export, and for effecting an insurance required by the regulations (Gbetnkoum and Khan, 2002). In addition, another state agency, the SODECAO (*Société de Développement du Cacao*), ensured direct support to the cocoa value chain (commercial functions upstream and downstream of the commodity chain, drying, storage, treatment, research & development, extension, and technical advice). The unions of cooperatives delivered many services such as the provision of inputs, allocation of loans, and social action for members, etc. These unions of cooperatives had the monopoly of buying the cocoa from the farmers and the producers' price was guaranteed by a price stabilization system (Alary, 1996). Unfortunately, the problems and shortcomings of the regulated marketing system (delays in payments by the Marketing Board to LBAs, delays in evacuation and marketing of the produce, and unavailability of agricultural inputs), as well as the specific need to conform to the principles of the structural adjustment programs², led, in January 1991, to the liberalization of some functions the ONCPB previously held (Gbetnkoum and Khan, 2002).

In the aftermath of liberalization, the activities of most agents in the cocoa market were dictated by private exporters, who are registered as Licensed Agents at the Ministry of Trade (Kamdem et al., 2013, Gbetnkoum and Khan, 2002). In this marketing system, two new organizations replaced the ONCPB: the ONCC (*Office National du Cacao et du Café*), a public establishment; and the CICC (*Conseil Interprofessionnel du Cacao et le Café*), which is the body of the sectoral organisation. The SODECAO withdrew progressively from its functions and transferred them to producers' organisations. The responsibilities of the ONCC are to ensure compliance with the respective rules and regulations, supervise export quality control, represent the interests of the stakeholder groups, and provide information on prices on the international market. The ONCC does not intervene in the financing of marketing and cocoa production as its predecessor used to do. Since it does not carry out price stabilization, there are no more guarantees on the prices (Inter-réseau, 2008). The exporters can now buy cocoa from any market actor who is willing to sell. However, they buy mostly from LBAs, a bit less from cooperatives, occasionally directly from farmers, as well as from informal buying agents called “coaxers” to an unknown extent. Although LBAs buy large amounts of their cocoa from coaxers, exporters prefer to buy from LBAs because LBAs are those who usually carry out the standardization, grading and packaging that are crucial for cocoa quality. In addition, exporters would incur high transaction costs when buying small quantities, so LBAs carry out the tedious work of collecting small amounts and selling large quantities within a short period. Local processors also buy cocoa only from exporters and LBAs and not from coaxers and farmers because of the need to grade and standardize the produce (Adubi and Okunmadewa, 1999).

²The liberalization of economies in the 1990s through the Structural Adjustment Programs in developing countries aimed at increasing the productivity and competitiveness of economic agents, and thereby their countries.

Although the shift towards liberalized markets aimed at increasing efficiency and competition within the Cameroon cocoa sector in general, and in the marketing chain in particular, it has been claimed that, in some cases, the abolition of Marketing Boards slowed down the performance of the supply chain regarding the quality of the output and the share of margins among market actors within the chain (Gilbert, 2008). The Cameroonian law N°95/11 of 27 July 1995 states that every intermediary agent in the cocoa marketing chain must sign a statement of existence. Nevertheless, it is widely observed, that apart from the formal market intermediary agents—LBAs and Cooperatives—there are informal buying agents³ (*coaxers*), small travelling traders who operate mostly with the farmers and deal directly with them. They trade in small volumes at a time, use limited amounts of money, and utilize simple means of transport, such as bicycles, motor bikes and cars (Lenou, 2017). They principally buy from farmers who are dispersed in rural areas that are difficult to access and are poorly organized. The low level of organisation allows them to buy cocoa at low prices. The most significant factor is that coaxers perform pre-financing and, in addition, pay at the moment of purchase which is usually not the case for LBAs, cooperatives nor exporters. Coaxers lend money to producers at the beginning of the agricultural season, obliging farmers to sell their harvests to them. According to Bagal et al., (2013) and Inter-réseau (2008), this flexibility offered to producers explains the prevalence of coaxers in the marketing system despite the fact that they often misinform the producers on the quantity and quality of their cocoa. Some estimations state that about 70% of the cocoa beans exported are bought by coaxers at the farm gate (Inter-réseau, 2008).

Owing to the important changes that took place in the aftermath of market liberalisation, an in-depth study of the prevailing market linkages is essential. However, meaningful understanding of the sector is still incomplete. Thus, in this paper, we investigate the presence and importance of formal and informal market intermediaries within the cocoa marketing chain in Cameroon. The study on coaxers is of particular importance because they execute significant economic and social functions. Therefore, the aim is to analyse the marketing chain by measuring and comparing the costs and margins of the two types of market intermediaries (formal versus informal). The paper proceeds with Section 2, which presents a literature review on the linkages between formal and informal actors. Section 3 portrays the study areas, the data used, and the methods of analysis. The results are outlined in Section 4. Section 5 discusses the main findings of this research, focusing on market linkages between formal and informal actors as well as on how costs and marketing margins are shared among them. The conclusions are featured presented in Section 6.

2. Formal and informal linkages and the development of economic activities

According to Hart (1973), an informal economy is mostly prevalent where official arrangements are not capable of providing essential functions. This happens either because the regulations are inadequate or because of weak enforcement resulting in evasive behaviour (Brown and McGranahan, 2016; Sinha and Kanbur, 2012; Williams and Nadin, 2010). Illicit action in market exchange arises when pecuniary transactions are hidden. Such economic activities involving illicit goods and services are not considered as informal but instead as part of the separate criminal economy (Smith and McElwee, 2013; Williams, 2016). Literature on the concept of informality in Africa on the one hand asserts that the informal sector in developing countries would disappear once sufficient levels of economic growth were achieved (Sallah, 2016).

³According to law N°95/11 of 27 July 1995 on the organization and the commercialization of cocoa, every intermediary acting in the cocoa market is called to sign a statement of existence and should have a trader's card issued by the Cocoa and Coffee Inter-professional Council (CICC).

On the other hand, the literature also points out that economic development could take a different perspective when the expansion of informal economic activities (North, 1990) is taken into account.

Literature on informality provides evidence on various views of formal-informal linkages and economic development (Portes et al., 1989). The first, the *regulation-based view*, which comprises *dualist* and *legalist* theoretical interpretations, sees the emergence of an informal economy as a consequence of barriers to formality and a legal status. For *dualists* (Hart, 1973; ILO, 2002) in a formal economy, a sector may have persisted for some time but undergoes profound changes which causes a brief excess supply of labour (Lewis, 1954). This excess labour force acts in the economic space between the established formal system and complete unemployment (Brown and McGranahan, 2016). The informal sector is concentrated on activities of subsistence. The informal entrepreneurs are excluded from the formal economy and from participating in associations (Dimova and Nordman, 2014; ILO, 2002). Following the arguments of the *legalist* (Alina, 1994; Sauvy, 1984), the informal sector helps to avoid the negative effects of excessive regulation (Chen, 2012). In that sense, the informal economy is an answer to the excessive official regulation of markets (Brown and McGranahan, 2016). Entrepreneurs engage in an informal economy because they profit from a higher degree of autonomy, flexibility, and freedom as compared to the formal sector (Gerxhani, 2004).

The second viewpoint, the *structuralist school*, does not separate the economy into informal and formal, but sees the informal economy as a by-product of the formal economy (Sallah, 2016). For the *structuralist school* the informal economy is growing rather than decreasing because, following this argument, the informal and formal economy are inherently linked rather than separate (Castells and Portes, 1989; Moser, 1978). The expansion of the informal sector is an attempt by capitalists, in connivance with the State, to reduce input and labour costs by adopting informal work arrangements with private contractors, and thereby increasing their competitiveness (Brown and McGranahan, 2016; Chen, 2012). This standpoint highlights the linkages between informal and formal economic activities, as the former are, in practice, completely dependent on the latter without enjoying any of the advantages of formal regulation (Anyidoho and Steel, 2016).

The third and final view, a more *integrated perspective*, sees the informal economy as a complement to the formal economy (Sallah, 2016). The formal and informal economies are represented as complementary to an extent as they grow or decline simultaneously; one does not fall when the other expands (Williams, 2004; Williams and Windebak, 2002). In this sense, the informal economy possesses large positive attributes and influences economic development (North, 1990). Wealthy economic agents are the main beneficiaries in formal economic activities as they are also seen as the principal recipients of the benefits of informal activities. They benefit more from unpaid community exchanges, paid informal work, and rewarding forms of informal work than economic agents excluded from the formal economy (Nelson and Smith, 2009; Sallah, 2016; Slack and Jensen, 2009; Williams, 2004). As a consequence, economic development is thus portrayed, not merely as a process of formalization but also in terms of the capabilities of economic agents to engage in both the formal and informal economy (Williams, 2004).

In the cocoa marketing chain, the informal intermediaries (*coaxers*) exist alongside the formal intermediaries (LBAs and cooperatives) either on their own initiative or as employed by the formal intermediaries to buy cocoa from the producers at the lowest price. In fact, amongst all the market intermediaries, the *coaxers* are the ones that are closest to (smallholder) farmers; as a result, their emergence since the liberalization of the cocoa market seems to be explained theoretically more by the *legalist* and *structuralist* representations than by the *dualist* and *integrated* representations. It is therefore important to get better insights into how costs and values are shared among the market intermediaries in order to clearly portray informal-formal linkages in the marketing chain, and thereby propose some policy options that align better with

reality.

3. Methodology

3.1. Study areas

The study was carried out in Centre and South-West regions of Cameroon, precisely in four Divisions, Ayos and Ngomedzap in the Centre as well as Muyuka and Konye in the South-West. These Divisions were selected mainly due to their location within the ProCISA⁴ intervention zones, a project promoting sustainable value chains. In addition, these localities belong to the three regions with the highest cocoa production in Cameroon. The Centre region is the main production area with around 90,000 tons/year, while the South-West is in the third place contributing 46,000 tons, just below the South region with 48,000 tons/year (NCCB, 2014; Mukete et al., 2018). Fig. 1 displays the study area.

3.2. Methods of data collection

The data for this article were collected during the 2016–2017 cocoa season. A multi-stage sampling technique was used to select the respondents, which means that, at the first step, four Divisions were purposively selected: Ayos and Ngomedzap (Center region), and Muyuka and Konye (South West region). This first selection was based on ProCISA project intervention zones. As a second step, six villages in Ayos, five in Ngomedzap, six in Muyuka, and five in Konye were deliberately selected, based on the presence of cooperatives and/or cocoa buyers in these villages. Thirdly, at the village level, cooperatives and buyers (*coaxers* and LBAs) were randomly selected and interviewed.

Data were obtained in two steps. In the first step, qualitative data were collected face to face with actors from the cocoa market (Board Members of cocoa farmers' cooperatives and cocoa buyers). The main objective was to scrutinise how the cocoa market in Cameroon is structured. Therefore, 15 market actors were retained. That is five executive members of cooperatives, five *coaxers*, and five LBAs. In the second step, we collected quantitative data on costs and the margins of cocoa marketing as segregated by the groups of actors. These data from primary sources were obtained through structured pre-tested questionnaires administered to the market intermediaries (*coaxers*, LBAs, and cooperatives). The questionnaires were designed for each category of market intermediary. Thus, 61 cocoa market actors were randomly chosen and a semi-structured questionnaire was administered to 10 cooperatives, 24 *coaxers*, and 27 LBAs. As a result, a total sample size of 76 cocoa market actors was obtained. It is worth noting that the questionnaire of cocoa growers' cooperatives was administered to executive members in the cooperative. The distribution of the respondents for the study areas is revealed in Table 1.

3.3. Data Analysis

Data entry, coding, and cleaning were executed in Microsoft Excel 2013. Data were then exported to the Statistical Package for the Social Sciences (SPSS) version 20 for descriptive and economic analyses. The descriptive analysis consisted of mapping the cocoa marketing chain. This exercise was performed in qualitative terms whereby a graphic presentation gives a clear understanding of the sequence of activities, the key actors, and their relationships within the marketing chain (Tola and Ketema, 2014).

For the economic analyses, the marketing costs and margins for

⁴ ProCISA stands for the project "Promotion of Green Innovation Centres for the Agricultural and Food Sector" which was funded by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) and implemented in collaboration with the International Institute of Tropical Agriculture (IITA).

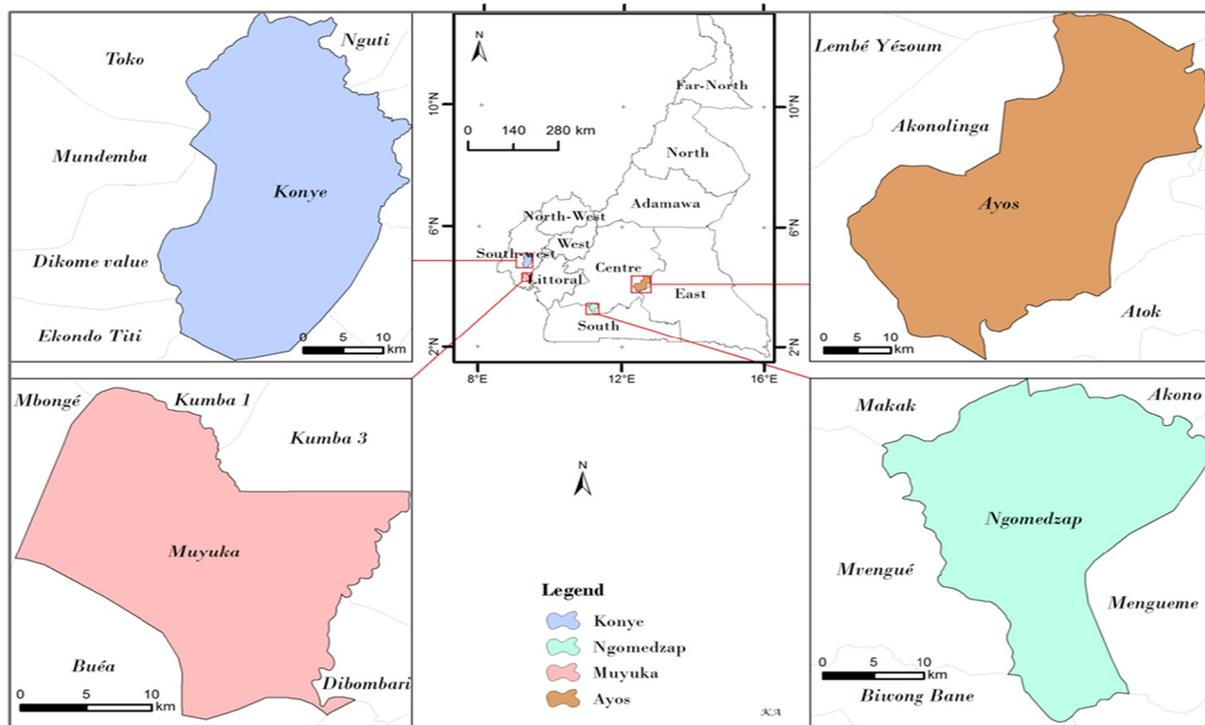


Fig. 1. The study area.

Table 1
Geographical distribution of respondents for qualitative and quantitative data.

Regions	Localities	Respondents					
		Coaxers		LBAs		Cooperatives	
		Qltative ^a	Qtative ^b	Qltative	Qtative	Qltative	Qtative
Center	Ayos	02	07	02	08	02	03
	Ngomedzap	00	07	01	08	01	02
South- West	Muyuka	01	07	01	08	01	04
	Konye	01	03	01	03	01	01
Total		05	24	05	27	05	10

NB: (a) refers to qualitative and (b) to quantitative.

each market intermediary were calculated. The gross margin for market intermediaries is the difference between their selling price and the buying price of one kg of cocoa. The net margin is obtained after deducting the total marketing costs from the gross margin. Since cooperatives are specific market intermediaries that do not buy cocoa, their gross marketing margin is computed in a rather different way. In this case, the gross margin refers to the average amount of money deduced by the cooperatives per kg of cocoa collected from their farmers. For *coaxers* and LBAs, the Gross Marketing Margin (GMM) and the Net Marketing Margin (NMM) were estimated using the following formulas (Hussainet al., 2013).

$$GMM = P_s - P_b \tag{1}$$

GMM represents the gross marketing margin, P_s the selling price, and P_b the buying price.

$$NMM = GMM - TMC \tag{2}$$

NMM represents the net marketing margin, GMM the gross marketing margin, and TMC the total marketing costs.

4. Results

This section, first, displays the results from the mapping of the cocoa

marketing chain in Cameroon. Afterwards, it illustrates the findings regarding the costs and margins of market intermediaries by elaborating on two possible alternatives: 1) when informal actors do not use illicit strategies and 2) when informal actors are using illicit strategies.

4.1. Structure of the cocoa marketing chain

Fig. 2 reveals the map of the cocoa marketing chain in Cameroon which describes the activities as well as the actors and their linkages within the market chain.

The structure of the marketing chain at the national level evidenced the cocoa sector to be a competitive market in which many different markets actors exchange the produce as observed in Fig. 2. Although there are no data yet available to indicate the magnitude of the diverse cocoa marketing channels in Cameroon, based on the different relations that exist among the market actors it could be noted that four variant marketing channels exist for cocoa beans: **Marketing channel 1:** Farmers – Coaxer – LBAs – Exporters; **Marketing channel 2:** Farmers – LBAs – Exporters; **Marketing channel 3:** Farmers – Cooperatives – LBAs – Exporters; and **Marketing channel 4:** Farmers – Cooperatives – Exporters. It can be noted that although only the first marketing channel contains the informal market intermediaries (*coaxers*), it the

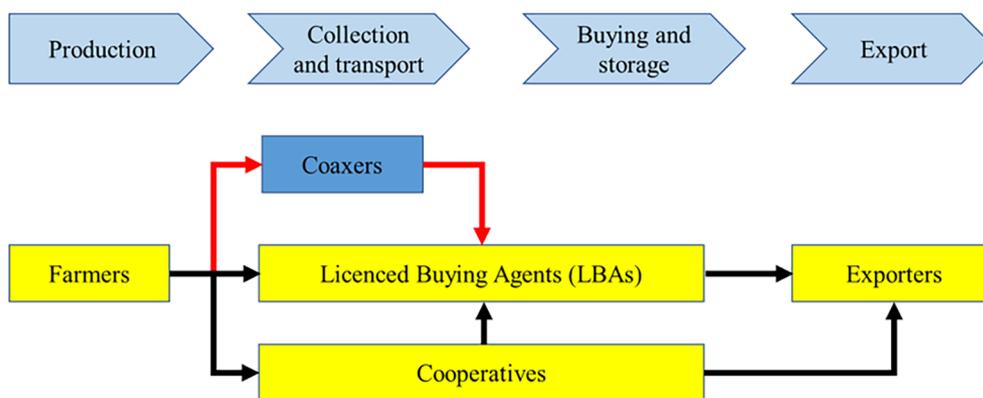


Fig. 2. Structure of the cocoa marketing chain in Cameroon.

most common. The others consist only of formal market intermediaries (LBAs and cooperatives). In each step of the marketing channel, a market intermediary will process and refine cocoa to a homogenous quality before delivering it to another buyer or to the end point that is the sea port from where cocoa is exported.

Marketing channel 1 is the most common channel in cocoa buying areas, especially in the Centre region. In this channel, *coaxers* approach farmers to buy their cocoa. The *coaxers* travel from village to village looking for cocoa producers who are ready to sell. It is important to note that farmers sometimes opt to sell cocoa that is not sufficiently dried, i.e. according to the required standard (humidity content of maximum 8%). Although transactions of this kind are illegal since they are prohibited by the law, they exist because each of the two market actors benefit from them. On the one hand, farmers are able to sell wet cocoa beans when they are particularly in need of immediate cash, even if they know that they will receive a price lower than the market price from the *coaxers*. On the other hand, the *coaxers* benefit from buying cocoa beans that are still humid because this reduces the time they spend on their journey and it equally reduces the fuel costs incurred travelling from village to village. The *coaxers* further make a profit from the farmers, who are not aware of appropriate deductions for an elevated humidity content, by effectuating increased deductions for humidity in cocoa beans.

Another form of relationship between farmers and informal buyers (*coaxers*) is the provision of credit. The type of credit offered depends on the period of provision. During the production periods, credit is offered to farmers in the form of advance payments. Additionally during periods where the management of the plantations is required, credit is offered mostly in the form of agricultural inputs to enable farmers to invest in their farms. However, farmers can ask for credit in cash at any time to resolve an urgent family issue (illness, payment of children's school fees, etc). The credit is meant to be paid back during the harvest period by selling their produce to the *coaxers* who offered the service. The buyers (more often *coaxers* than LBAs) use this practice intensively to attract farmers to sell to them.

Among the market intermediaries, the relationship between *coaxers* and LBAs is based on the informal contract they conclude. In such contracts, the *coaxers* take the initiative to deliver a given quantity of cocoa to the LBA in a defined period. Sometimes, the LBA grant credits to the *coaxers* to proceed with the purchases.

In **marketing channel 2**, farmers with large quantities of cocoa sell directly to the LBAs. These farmers can sometimes benefit from other services, such as transportation, apart from the offers of credit previously described. LBAs hire out their vehicles to farmers to enable them to transport cocoa from their farms to the warehouse at a cheap rate. This is indeed another way of attracting farmers to sell primarily to them. In general, even big farmers do not have adequate personal means of transportation for evacuating their cocoa from the farm to the market.

In **marketing channel 3**, farmers sell their cocoa via their cooperative. The cooperatives receive and assemble cocoa beans from the farmers and organize markets where LBAs come to bargain and buy. The price mechanism used by the cooperatives, the minimum selling price, is set before the market day in agreement with the members. In general, this minimum price already set can only increase since the cooperative is in a monopolistic situation during market days. The cooperative, in that specific area, is the unique seller in front of many buyers. As the bargaining power of the cooperative is high, farmers receive better selling prices than the price received when selling individually.

However, because of a lack of adequate means of transportation for collecting and gathering cocoa from their members, some cooperatives (e.g., Ngomedzap) hire vehicles from LBAs to transport their produce; as a result in return, they are sometimes obliged to sell their produce to the buyers from whom they hired the vehicle. By doing this, cooperatives sometimes lose the opportunity of selling at better prices when they are obliged to accept the price offered by the buyer who has offered the vehicle rental service. Another form of relationship, though not common, in this marketing channel is sales contracts between the cooperatives and the LBAs for delivering a given quantity of cocoa at a particular period and at a price that is stated in the contract. In such contracts, the price received by the farmers is generally higher than the price in normal markets.

In **marketing channel 4**, the cooperatives sell the cocoa directly to exporters. Although this channel exists, it has not really common since cooperatives, mostly those without adequate means of transportation, face difficulties in getting exporters who are ready to come and buy cocoa on the spot. Another reason is that cooperatives do not always have sufficient volumes of cocoa to offer to the exporters who prefer large quantities. Indeed, the relationship between farmers and cooperatives relies on trust. Farmers have confidence in their cooperatives that this guarantee their interests and in turn, they must sell their produce only through their cooperatives. However, this is not always the case since some members sometimes decide to sell to other buyers, mainly to *coaxers*, because of delays in the process of selling, evacuating and particularly of receiving the payments.

The description of the cocoa marketing chain illustrates the significance of the different market strategies used by the market actors. Four main strategies were identified within the marketing chain.

4.2. Marketing cost estimation for market intermediaries

Results in the previous section indicate that there are three market intermediaries, two formal (LBAs and Cooperatives) and one informal (*coaxers*), that enable cocoa to be moved from the farmer to the exporter. Estimation of the marketing costs incurred by these intermediaries depends on the activities they carry out. For intermediaries that buy and sell cocoa in the country (*coaxers* and LBAs), the main

Table 2
Major marketing costs of cocoa market intermediaries (in XAF per delivery and per kg) in the Centre and South-West regions.

Costs per delivery	Centre Region			South-West Region		
	Informal		Formal	Informal		Formal
	Coaxers	LBAs	Coop.	Coaxers	LBAs	Coop.
Average quantity	1,268	14,712	5,965	2,950	19,182	17,033
Transport for buying	39,471	126,015	9,500	17,100	104,959	19,165
Storage cost	0	19,951	14,600	1,888	18,343	29,805
Labour	12,046	157,706	76,916	7,170	71,577	73,710
Taxes	85,642	236,500	0	150,000	198,000	0
Personal expenses	13,321	20,843	0	12,950	30,272	0
Transport for selling	0	207,525	0	3,333	195,000	0
Other cost (bribes)	1,785	197,500	0	0	7,636	31,822
Total cost/delivery	152,266	966,041	101,016	192,441	625,788	154,502
Total cost/kg	120	65	16	65	32	9

expenses comprise transportation costs for buying or collecting, the storage cost (for those who have a warehouse), the payment of taxes, costs of labour, personal expenditures, transportation costs for selling to the final buyer and other expenses. For cooperatives, the intermediary which carries out only the activity of selling, the expenses only take into account the costs of evacuating the cocoa from the farmer's fields and storage in the cooperatives' warehouses while awaiting the market day. The data that we collected from the field, indicate that, on average, the costs are not the same for each market intermediary and they also vary by locality, as can be seen in Table 2.

Table 2 displays the total costs per delivery and per kg. A delivery refers to a given quantity of cocoa assembled and sold by an intermediary during a given period of time (usually daily or every three days, depending on the intermediary and/or the availability of cocoa on the market).

The results indicate generally that irrespective of the market intermediary, marketing costs are almost twice as high in the Centre region than in the South-West (except labour for cooperatives). The trend is the same even when the marketing costs of *coaxers* are considered where in the South-West region they support costs of storage (1,888.8 XAF) and transportation (3,333 XAF) while in the Centre region they do not. This latter difference can be explained by the fact that *coaxers* in the Centre region are in more of a partnership with their buyers (LBAs). These buyers cover some of their expenses, particularly the costs of storage and transportation.

The second major result shows that, irrespective of the region, informal market intermediaries support higher marketing costs than formal intermediaries. *Coaxers* have the highest marketing costs/kg in both regions (120 XAF and 65 XAF), followed by LBAs (65 XAF and 32 XAF) and lastly, by cooperatives (16 XAF and 9 XAF) for the Centre and South-West regions. A major reason for this difference is that the market intermediaries do not incur the same categories of costs. Similar findings were pointed out by Murthy et al., (2007) on the banana marketing chain where cooperatives were found to be the market intermediary with the least marketing costs compared to the costs of wholesalers and retailers. One reason put forward by the author is that cooperatives procure directly from farmers and sell directly to consumers. By doing this, they eliminate market intermediaries and substantially reduce marketing costs. Indeed, retailers in the banana marketing chain can be seen, to some extent, as similar to *coaxers* in the cocoa marketing chain. Another explanation may be linked to the fact that *coaxers* manipulate smaller quantities and, as a result, they do not benefit from the economies of scale like LBAs and cooperatives that deal

Table 3
Gross and net marketing margins of *coaxers* and LBAs (in XAF per delivery and per kg).

Items	Centre region			South-West region		
	Informal		Formal	Informal		Formal
	Coaxers	LBAs	Coop.	Coaxers	LBAs	Coop.
Average buying price	1,042	1,064	–	1,040	1,047	–
Average selling price	1,085	1,186	1,111	1,090	1,172	1,095
Gross marketing margin	43	122	67.78	50	125	11
Marketing cost	120	65	16	65	32	9
Net marketing margin	–77	57	52	–15	93	2

with larger quantities. Additionally, the accessibility cost are high as *coaxers* operate in isolated areas with roads that are only accessible by foot or motorbikes.

Finally, when the shares of the various costs in the total marketing costs are considered, it was observed that, in both regions, the most important costs appear to be taxes and transportation costs for *coaxers* and LBAs, and labour for Cooperatives. These results are similar to that of Kiran et al., (2014) on the tea marketing chain. In their study, transportation costs, for most market intermediaries, represent at least 20% of the total marketing cost. Transportation was also revealed by Kiran et al., (2014) to have the highest marketing costs for wholesalers and retailers in the rice market, as they represented about 56% of the total marketing cost for these intermediaries.

4.3. Estimation of market intermediaries' marketing margins

Table 3 shows the marketing margins of the intermediaries (*coaxers*, LBAs, and cooperatives). Average buying and selling prices were used to estimate the marketing margins of the intermediaries and were calculated from the data collected in the field.

Results from Table 3 indicate that the net marketing margin (NMM) for cocoa market intermediaries differs in both regions. Apart from cooperatives where the NMM is higher in the Centre region than in the South-West; market intermediaries have a higher NMM in the South-West region than those in the Centre. In the South-West, the NMM is equal to –15 XAF/kg for *coaxers*, 93 XAF/kg for LBAs, and 2 XAF/kg for cooperatives, while in the Centre region it is –77 XAF/kg, 57 XAF/kg, and 51.78 XAF/kg respectively. *Coaxers* have a negative NMM in both regions due to the high marketing costs that the informal market actors support in the marketing chain. These results are contrary to that of the study carried out by Iyabano et al. (2012) in the South and South-West regions of Cameroon. The findings of this study revealed that *coaxers* had, on average, an NMM of 104.44 XAF/kg. Moreover, according to our results, LBAs realize profits within the cocoa marketing chain as they have an NMM of 57 XAF/Kg in the Centre region and 95 XAF/kg in the South-West. These findings are in line with those of Iyabano et al. (2012) which revealed that LBAs, on average, had a positive margin of 140.58 XAF/kg.

As *coaxers* have been found to have the highest marketing costs, they have also been found to have a negative NMM. However, from the field, there are some illegal strategies such as “rigged scales” and “false humidity content level” actually used by *coaxers* to avoid the negative NMM that they would face otherwise.

4.4. “Rigged scales” and “Humidity content level”: Two illegal strategies used by the informal market intermediaries for avoiding a negative NMM

According to the *homo economicus*, the fact that *coaxers* incur negative marketing margins and still perform well in the cocoa marketing chain seems to be a paradox. Actually, to avoid negative marketing margins, they may use one or both of two “illegal” strategies. These

Table 4
Implementation of illegal strategies for 100 kg of cocoa buying by *coaxers* from farmers (Centre and South-West regions).

Variables	Centre region			South-West region	
	Quantities (kg)	Unit Price (CFA)	Amount	Unit Price (CFA)	Amount
Gross weight of farmer's cocoa	100	1,042	104,200	1040	104,000
Reduction due to rigged scale by <i>coaxers</i>	5	1,042	5,210	1040	5,200
Reduction due to HC by <i>coaxers</i>	20	1,042	20,840	1040	20,800
Net quantity paid for by <i>coaxers</i>	75	1,042	78,150	1040	78,000
Real unit price	781.5			780	

Table 5
Implementation of illegal strategies for 100 kg of cocoa selling by *coaxers* to LBA (Centre and South-West regions).

Variables	Centre region			South-West region		
	Quantities (kg)	Unit Price (CFA)	Amount	Quantities (kg)	Unit Price (CFA)	Amount
Gross weight of <i>coaxer's</i> cocoa	100	1,085	108,500	100	1,090	109,000
Reduction due to rigged scale by <i>coaxers</i>	0	1,085	0	0	1,090	0
Reduction by LBAs	10	1,085	10,850	10	1,090	10,900
Net quantity paid for by LBAs	90	1,085	97,650	90	1,090	98,100
Real unit price for cocoa sold by <i>coaxers</i>	976.5			981		

strategies are operationalized in transactions in two stages. In the first, the transactions are between *coaxers* and farmers, and *coaxers* come out with some “illegal” gains. In general, when they buy cocoa from farmers, *coaxers* use either the “rigged scale” strategy, “humidity content (HC) level” strategy, or even a combination of both strategies to deceive the vigilance of farmers. As far as “rigged scales” are concerned, some farmers are becoming more and more vigilant by insiting on the use of their own weighing scales; in many cases unfortunately, *coaxers* continue to give wrong weights to farmers. Concerning the HC level, the strategy is mainly based in reporting a higher level than the actual level in the cocoa beans. The recommended HC level in cocoa beans suitable for market is a maximum of 8%. This level is normally checked by a humidity testing machine but *coaxers* buy cocoa from farmers without this testing machine in order to estimate the quality of cocoa beans as poor. With data from the field, the implication of these “illegal” strategies can be illustrated in Tables 4 and 5 as follows.

Table 4 shows for example that, for 100 kg of cocoa really owned by the farmers, the *coaxers* make a reduction of 5 kg, on average, during the weighing process since their scales are rigged. Moreover, they also reduce, on average, 20 kg of cocoa from the real weight supposedly because the cocoa is not dried to the recommended HC level of 8%. The final quantity that the *coaxers* pay for becomes 75 kg instead of 100 kg. This indicates that the real price/kg at which the *coaxers* are buying cocoa is 781.5 XAF/kg instead of 1042 XAF/kg in the Centre region and 780 XAF/kg instead of 1040 XAF/kg in the South-West region. Therefore, taking advantage of the asymmetry of information, *coaxers* increase substantially their profit to the detriment of smallholders. For example, *coaxers* can gain dishonestly up to 260 XAF/kg of cocoa from the farmers.

In the second stage, the *coaxers* sell cocoa to the LBAs and there is no more asymmetric information. Both actors have a perfect knowledge on the quality of scales and HC level in the cocoa beans. As in the first stage, the same procedure is carried out, but with the slight difference that now the transactions are more transparent. Rigged scales can no longer be used and the HC level is adequately evaluated. In general, the HC levels measured in the second stage are far lower than those expressed by *coaxers* in the first stage since they use it to mislead farmers. Table 5 completes the analyses of Table 4 and points out that *coaxers* face a reduction only if cocoa beans are wet. After control of the quality and of the HC level on 100 kg of cocoa in gross weight, the LBAs finally reduce only 10 kg of cocoa, on average, due to high HC level. Consequently, the *coaxers* finally sell at a net weight of 90 kg, on average. In

fact, the results indicate that the real price at which the *coaxers* are really selling cocoa is 976.5 XAF/kg instead of 1085 XAF/kg in the Centre region and 981 XAF/kg instead of 1090 XAF/kg in the South-West region.

Considering the transparency of information between *coaxers* and LBAs in the second stage, *coaxers* lose some benefits from the poor quality of the cocoa they are selling. They can lose up to 109 XAF/kg. Considering the average price at which *coaxers* buy cocoa in the first stage and the average price at which they sell it in the second stage, suggests that *coaxers* can only make profit if they pay lower prices at farm gate level, receive higher prices from LBAs or use illicit strategies. Illegal strategies enable *coaxers* on average to make a gross margin of $976.5 - 781.5 = 195$ XAF/kg in the Centre region and of $981 - 780 = 201$ XAF/kg in the South-West (Table 6).

Considering the marketing costs of 120 XAF/kg in the Centre region and of 65 XAF/kg in the South-West determined in Table 1, the NMM/kg from the transactions resulting from “illegal” strategies is then $195 - 120 = 75$ XAF in the Centre region and $201 - 65 = 136$ XAF/kg in the South-West, on average (see Table 6). It is these “illegal” strategies that enable the *coaxers* in the both regions to obtain a positive NMM. Comparatively, transactions with illegal strategies enable *coaxers* to obtain gains of $75 - (-77) = 152$ XAF/kg in the Centre region and $136 - (-15) = 147$ XAF/kg in the South-West more than the gains issuing from the transactions without illegal strategies. Indeed, when considering the NMM of LBAs and cooperatives computed in Table 3 together with the NMM of *coaxers* from illegal transactions (see Table 6), the *coaxers* appear now as those with high gains: the average NMM is equal to 75 XAF/kg for *coaxers*, 57 XAF/kg for LBAs, and 52

Table 6
Comparison of *coaxers'* market margins with and without illegal strategies in the Centre and South-West regions.

Variables	Centre region		South-West region	
	Without illegal strategies	With illegal strategies	Without illegal strategies	With illegal strategies
Buying price	1,042	781	1,040	780
Selling price	1,085	976	1,090	981
Gross margin	43	195	50	201
Marketing cost	120	120	65	65
Net margin	-77	75	-15	136

XAF/kg for cooperatives in the Centre and around 136 XAF/kg, 93 XAF/kg, and 2 XAF/kg, respectively, in the South-West.

5. Discussion

Our results indicate that the informality within the cocoa marketing chain in Cameroon can be explained by a lack of adequate regulation of the market, specifically when *coaxers* deal with producers (Brown and McGranahan, 2016; Chen, 2012). Indeed, putting aside the fact that *coaxers* misinform cocoa farmers, the gains obtained by both actors in such transactions explain largely the decision to opt for informality. In such interactions, farmers find more independence, flexibility, and autonomy as compared to dealing with formal market intermediaries (LBAs and cooperatives); *coaxers* reduce the costs, time, and pains that would arise from following the rules. According to Sallah (2016), the informality within the marketing chain can also be seen as a by-product of the liberalization of the cocoa market since the provision of the majority of support services to production and commercialization has stopped. This has led formal as well as informal agents to provide farmers with certain support services (Inter-réseau, 2008). For example, *coaxers* provide farmers with credits but, in return, the farmers are obliged to sell their cocoa to them first of all at low prices.

The way informal arrangements are built up between formal and informal market intermediaries, explains, to a large extent, why marketing costs are higher for informal market actors and why they adopt, some subterfuges to gain some profits. The more cocoa farmers produce at a small-scale and are dispersed over large areas that are difficult to reach, the higher the marketing costs for the *coaxers*. Taxes, bribes and transportation costs have the most important shares in the total marketing costs of these informal actors. As a consequence, they also seem to earn the least among the market intermediaries. Clearly, with data from the field, they even appear to have a negative NMM. This result, being contrary to economic rationality, is paradoxical in explaining the existence and longevity (since the liberalization in 1991 until now) of informal actors in the marketing chain. In reality, informal actors adopt strategies to create substantial gains. These strategies, at the end, even lead them to obtain, on average, higher NMMs than the formal market intermediaries. For example, Ruf (2001) pointed out that buyers cheating in the South-West region can reach up to 20 or 30% of the weight of cocoa and thus the price paid/kg.

Literature states that the marketing channel in which informality is observed is the most widespread in Cameroon (Bagal et al., 2013; Kamdem 2016), even though this study did not provide empirical evidence on cocoa quantities within the different market channels identified to support this assertion. The magnitude of informality within the marketing chain endangers the quality of cocoa beans in particular and the sustainability of the sector in general. For example, the lower prices paid by *coaxers* on the spot may discourage smallholder farmers and lead, in the long run, to a decrease in the quantity and quality of cocoa produced. Besides, buying wet cocoa from farmers could lead to a high level of moisture content in cocoa to be exported. Bagal et al. (2013) supported this assertion by pointing out that the moisture content in cocoa from Cameroon is generally excessive. In Cameroon, the HC level reaches up to 10% but in Côte d'Ivoire, thanks to the better organization of the marketing chain, the moisture content is only around 5%. The importance of fermentation to cocoa quality has been well established (Ardhana and Fleet 2003). While in Ghana, fermentation is preferably done in trays, cages or on leaves for 6–7 days with a single turning of the beans during the second or third days (Baker et al. 1994); in the South West region of Cameroon, 52% of farmers do not ferment their beans. Fermentation was considered as simply an easy way to remove the pulp to facilitate drying. But when fermentation is conducted, the beans are fermented in bags for 4–6 days and are not turned; indeed, these farmers focus more on beans weight and less on cocoa beans quality including during the drying treatment (Levai et al. 2015). As a result, in 2013, for example, 2000 tons of cocoa from

Cameroon were rejected from European ports because of high content of Polycyclic Aromatic Hydrocarbons. During the 2012 and 2013 campaigns, deliveries suffered from penalties in the range of £40 to £80/ton due to their non-compliant quality. The quality premium “Good Fermented” has disappeared in favour of bulk cocoa (NCCB, 2014). By doing so, the name and reputation of cocoa from Cameroon are being degraded. Nevertheless, cocoa farmers in Cameroon are not fundamentally sensitized to produce quality cocoa which means at least improvement of postharvest treatments (fermentation and drying). The latter implies investments in equipment such as effective fermentation boxes, solar dryers or other technologies, and because most of the cooperatives are weak and not able to provide such services, this would result in individual investments. Some farmers even sell their cocoa beans to other farmers with drying systems (Tardzenyuy et al., 2020). Additionally, cocoa farmers produce in small quantity (84% of farmers produce on less than 3 ha (Lescuyer et al., 2019)) and up to date there is no significant price differentiation for quality cocoa to encourage cocoa farmers to invest in post-harvest-technologies and exclusively sell in formal market chains. Knowing this context, *coaxer* services remain a significant alternative for smallholder cocoa farmers.

To another extent, however, informality in the sector contributes to a certain degree to the overall longevity of production and thus, to its sustainability. *Coaxers* are the most important market intermediaries dealing directly with the smallholder producers, providing them with useful services for their cocoa activities as well as for their social life. *Coaxers* cover long distances, particularly in areas that are difficult to access, to collect cocoa from the smallholder farmers and deliver it to the LBAs (Lenou, 2017). In fact, it is doubtful that other, formal actors could perform these services, especially the evacuation of cocoa from areas that are difficult to access, at similarly low costs as the *coaxers* currently do. To support the argument that *coaxers* contribute to the sustainability of the cocoa sector through providing market proximity opportunities and reducing uncertainties for farmers, as an example, one cocoa farmer stated: « *Je préfère vendre mon cacao même chez le coxeur, même s'il me trompe car c'est l'argent que je cherche et lui il peut de temps en temps me faire des prêts. J'aimerais bien sécher le cacao mais je suis pour la vente à domicile pour plus de sécurité* »⁵ (cocoa farmer, Centre Region). Bagal et al. (2013) pointed out that since cocoa farmers are scattered, unorganized, and do not trust their cooperatives, they prefer to sell their cocoa individually and most often to *coaxers* to benefit from the multiple services provided (input provision, loans, fast cash selling, transportation, final drying). Informal transactions are also present between *coaxers* and LBAs. In such transactions, LBAs get involved in informal labour agreements with *coaxers* in order to reduce their costs significantly and increase their profits to the detriment of the latter which supports the idea that the *coaxers* in the Cameroonian cocoa sector support the *structuralist* point of view on informal sectors.

6. Conclusions and recommendations

The main effect of liberalization of the cocoa sector was an increase of the uncertainty in rural areas about price security and so, the sale of cocoa was no longer assured (Alary, 1996). Most importantly, it allowed a number of private actors to emerge in the marketing chain, notably informal actors (Bagal et al., 2013; Kamdem, 2016; NCCB, 2014). Since the liberalization, the importance of the informal market intermediaries in the marketing chain seems to be widely acknowledged, although criticized. Thus, in this paper, the analysis of the cocoa marketing chain was carried out through the measuring and comparing of marketing margins of the formal and informal market intermediaries.

The results indicated that informal actors are present in the most

⁵ *I prefer to sell my cocoa to the coaxers, even if he cheats me because it is the money I am looking for and he can from time to time give me loans. I would like to dry the cocoa but I am in favour of selling it from home for security reasons*

widespread marketing channel and are the intermediaries nearest to the smallholder farmers who are spread over large areas that are difficult to access. This situation explains why the informal actors incur the highest marketing costs in comparison to formal marketing actors and why the marketing costs in the Centre region are almost the double of those in the South-West. As a result, irrespective of the region, informal actors opt for illicit practices to avoid losses.

The role and the functions of the informal actors within the marketing chain, already widely recognized, could even increase in importance, given the fact that public authorities are largely absent from the sector and that farmers benefit few services from formal actors or formal service providers. Indeed, in that sense, exporters may struggle more and more to obtain a satisfactory quality of cocoa since establishing traceability will be difficult with the enlargement of formal and informal linkages of this type (Gilbert, 2009). However, as an export commodity, the marketing of cocoa from Cameroon must meet the sanitary and phytosanitary requirements of the major export markets, notably markets of the countries in the European Union. Since the quality of the final product is related to the quality of cocoa beans, practices such as improper fermentation and drying as well as imperfect moisture management throughout the marketing chain need to be improved if a long-term sustainability is envisaged.

Informality in the cocoa marketing chain is a fact, and it will not disappear overnight simply by forbidding. Further, it is questionable whether its disappearance would contribute to the better performances of the cocoa marketing chain. However, if informality should disappear, a number of interventions may be considered. For example, cooperatives need to improve their performance in better managing their internal organisation as well as in providing the necessary services that are currently predominantly provided by *coaxers*. Cooperatives could integrate the competencies of *coaxers* by incorporating them as collecting agents with a substantial salary per month. By doing so, the farmers will be less exposed to the risk of being cheated by *coaxers* while at the same time the quality control would be done at the cooperatives. Apart from this more immediate formalisation of *coaxers*, more global interventions can be designed based on our findings. They all need to be directed toward finding new ways of providing the services that are currently provided by the *coaxers*. These include services to the cocoa producers, the formal intermediaries and the exporters, and the new service delivery needs to be superior to the current one, otherwise they will not be selected. The Government would need to assist cooperatives to boost their performance. The hitherto assistance for example in strengthening their technical capacities is in view of our results entirely inadequate. It clearly lacks the realistic consideration of the role and performance of the *coaxers*. It lacks a realistic appraisal of the current significant defects in the cocoa sector (for example the all-pervading mistrust in the entire sector). Instead of demanding the Government should improve the road conditions, what is needed is a comprehensive understanding of the services and on the performance of the services delivery which would provide the necessary basis for designing measures that actually work.

Author contributions

M.G., L.L.N and D.E.F conceptualized the research idea. L.L.N was in charge of the investigation. M.G. and S.M. was involved in the project administration. M.G., S.M. and D.E.F supervised the research investigation and the data analysis, and validated the findings. L.L.N analysed the data. A.A.M, L.L.N, S.M., D.E.F. and M.G. wrote, revised and edited the manuscript. All the authors have read and agreed to the published version of the manuscript.

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