Making Sense of Digital Disintermediation and Development: The Case of the Mombasa Tea Auction

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This is pre-publish chapter to appear in the edited volume Graham, M.(ed), Digital Economies at Global Margins, MIT Press.

Abstract

Firms in the Global South often suffer by being at the end of long value chains full of middlemen (intermediaries) who capture value and inhibit information flow. But as ever more of the world becomes digitally connected, digitally-driven disintermediation is seen as one of the key benefits of adoption of information and communication technology (ICT) and internet connectivity for firms in the Global South. However, few analyses have delved into the detail of disintermediation and potential uneven impacts that may emerge from such processes. To support such an analysis, we explore transaction cost theory in detail to highlight potential gaps in analysis of disintermediation related to institution-, norm- and power-driven analysis of transactions.

We do this by looking at the East African Tea sector. Within the sector, the Mombasa Tea Auction was seemingly a good candidate for digital disintermediation, but with strong resistance for well embedded institutions attempts to create an ‘e-auction’ have yet to fully come into being. At the same time new channels of disintermediation are emerging between well connected firms which are less inclusive.

This work then highlights key points in analysis and practice around disintermediation. Perspectives that privilege economic aspects of transactions may miss out on important processes as disintermediation emergers. We suggest that a greater awareness of the ways that actors exert power and strategically use institutional resources are important in understanding the wider developmental impacts of digital disintermediation.

Keywords: Digitization; Disintermediation; Internet; East Africa; Trade
Introduction

Tea is a key part of the economy in East Africa and a major export earner for countries such as Kenya and Rwanda. Twice a week buyers and sellers come together in the coastal city of Mombasa in Kenya to trade East Africa’s tea. They do so as part of the Mombasa tea auction, the key link between local tea from East Africa and international tea firms who sell their products throughout the world.

The tea auction emerged during the colonial era, and with its antiquated traditions, slow speed and frequent accusations of corruption, there has been strong demand for it to move online. The auction itself is relatively predictable and with falling costs of online access in the region, digitization of the auction seemed almost inevitable. An online auction offers the potential to speed up the processes of tea trading and bypass a variety of brokers, warehouses and traders. Reduced costs and improved efficiency would ensure that East Africa remains competitive with its rapidly advancing competitors in Asia.

Figure 1: The Mombasa auction. Source: Wikimedia commons.

Yet, processes of digitation and disintermediation have not taken place as expected in the East African tea sector. A proposed “e-auction” was abandoned. Only selected aspects of tea trading have been digitized, and it is only larger multinationals tea firms who appear to be moving towards disintermediation. The impacts on more marginal tea firms and producers have been limited, and they continue to trade in the Mombasa auction.

The case study presented in this chapter points towards a more complex picture of digital development than is usually presented, and offers a compelling case to reconsider how we tackle disintermediation in theory and practice. In the clamor to promote improvement of firms, digitization is becoming an end in itself, where issues of equality and impact have fallen off the agenda. Yet, they are vital in
making sense of digitally enabled disintermediation and development. This case prompts us to refocus on key considerations around the development impact of digitization projects. Does disintermediation lead to economic gains? Which firms are able to disintermediate digitally and who is excluded?

**Disintermediation and Transaction Costs**

*The Hopes of Disintermediation*

Digitally enabled disintermediation is the process by which digital or online systems allow the removal of intermediaries involved in transactions (Bambury 1998; Chircu and Kauffman 1999). It is a term often associated with digital networks, whereby product or service producers can link more directly to consumers or buyers in many sectors (Gellman 1996). Disintermediation has often been articulated as one of the key impacts of internet connectivity in lower income countries, centered on the idea that connectivity would disintermediate the old restraining monopolies, middlemen and incumbents to enable dynamic market activity (Graham 2011; UNCTAD 2001; World Bank 2016).

Earlier empirical work exploring disintermediation in lower income countries has suggested a fairly limited impact (e.g. Molla and Heeks 2007; Moodley 2003; Surborg 2009). Firms and producers often came up against barriers associated with the digital divide, such as the high costs of ownership of ICTs, the lack of access to the internet, low digital skills, and a lack of appropriate online services to support activity. With cheaper internet access in recent years (ITU 2017), alongside the emergence of connectivity-enabled applications for lower income users (i.e. mobile money, apps, SMS tools, online platforms) (UNCTAD 2015), the perceived barriers associated with the digital divide are reducing (Foster et al. Forthcoming). Thus, we have seen a second generation of research on disintermediation exploring the richer use of ICTs and connectivity (e.g. Aker 2010; Muto and Yamano 2009; Paunov and Rollo 2015; Zanello, Srinivasan, and Shankar 2014).

Yet for all the wealth of literature, detailed accounts of digital disintermediation tend to be unclear when it comes to discussions of the potential uneven impacts of disintermediation. Qualitative research rarely digs into the details of disintermediation, while quantitative research tends to build models that do not conceptualize uneven impacts (Foster et al. Forthcoming). Thus, it is appropriate to re-examine the concept of digital disintermediation in lower income countries to build a clearer knowledge of these processes.
*Introducing Transaction Cost Models*

To analyze digital disintermediation we draw on transaction cost models, a large field of economic study that explores the costs involved when firms transact. Transaction cost models underlie how digital disintermediation has been conceptualized (Humphrey et al. 2003; Molla and Heeks 2007). While often seen as a fairly homogeneous concept from outside the field, transaction costs models have been the subject of two differing perspectives, which Allen (1999) calls the “property rights” and the “neoclassical” perspectives. Exploring these two perspectives is useful as it provides a clear understanding of how transaction costs are used, and potential gaps around analysis of digital disintermediation.

In the “property rights” perspective, analysis tends to explore the legal and institutional underpinnings of transactions. Property rights perspectives thus focus on a wider set of “rights,” both formal (legal rules, organizational structures, contracts, partnerships) and informal (norms, trust), which orientate how transactions are undertaken. For instance, firms are more likely to undertake market transactions where enhanced protection (e.g. laws, regulation) reduces risks. Conversely, where these protections are not in place, firms may face high transaction costs in order to protect themselves. Indeed, they may prefer to transact in other ways, for example through contracts or internal firm exchange (Williamson and Winter 1993).

In contrast to the property rights perspective, the neoclassical approach is more focused, zoning in on analyzing the costs specifically related to the actual market transactions. This perspective tends to align with neoclassical economics. Key concerns of this literature have been exploring the drivers and characteristics of market transactions, for example exploring links between the volumes of market trade and transaction costs such as transportation, market discovery, contracting and so on (Benham, Benham, and others 2001). As such, the focus is often more narrowly on a set of factors, and how these influence market exchange (Allen 1999).
Figure 1: Different perspectives on transaction costs.

As shown in Figure 1, both perspectives on transaction costs cover broadly similar concepts. They both look to explore factors that influence transactions. However, they signal quite different ways to consider transactions, one exploring the direct drivers of exchange, the other a more holistic study of conditions under which transactions are orientated. As we will argue below, when it comes to digital disintermediation in lower income countries, there is a tendency to lean towards neoclassical approaches, which can lead to an incomplete analysis of the reality of digitally enabled disintermediation.

Transaction Costs, Information and Digital Technologies

Many aspects of transactions are information rich (e.g. communication between firms, search, contracting, monitoring). Thus, an important component of transaction costs are the costs of finding, gathering and using information, referred to as information costs.

Digital technologies have been seen to facilitate a reduction in information costs and thus to impact transaction costs. Digital information flows allow rapid discovery of buyers and sellers and facilitate communication amongst transactions, even at a distance (Allen 1999). Beyond digitally enabled information flows, digital platforms\(^1\) can play an important role in transactions. Digital platforms can

\(^1\) A range of terms is used in the literature to describe digitally enabled platforms for transactions: electronic marketplaces, cybermediaries, infomediaries, information exchanges, e-business systems, and platforms. In this chapter we use the term digital platforms.
impact transaction costs by aggregating buyers and sellers, and reduce coordination costs by facilitating transactions online (Sarkar, Butler, and Steinfield 1995; Wigand 1997).

Enhanced digital information also impacts the role of intermediaries. Intermediaries are often conceptualized to exist due to high information costs in transactions. They emerge when knowledge and information are scarce and provide services to reduce information costs (Sarkar, Butler, and Steinfield 1995). For example, a broker with knowledge of an industry can save costs for firms when it is difficult to search for suppliers (Malone, Yates, and Benjamin 1987). With the growth of digital information and particularly digital platforms, the reduction of information costs can lead to a state where intermediaries and their knowledge are less crucial.

It is this simple idea of digital information flows and platforms reducing information costs that underlies disintermediation. However, this is not the complete picture, and the transaction cost literature, particularly when taking a property rights perspective has explored a set of broader considerations around transactions. Below we highlight three aspects discussed in the literature that are particularly relevant to this study:

**The nature of the transaction.** It is important to consider the conditions of transactions which influence whether firms decide to trade internally or buy externally (Benjamin and Wigand 1995; Malone, Yates, and Benjamin 1987). Key aspects relate to properties of the transaction and its complexity, often discussed in the transaction cost literature using the terminology of *asset specificity* (referring to the interdependency of assets in production such as resources, time limitations, skills) and *complexity of product specificity* (referring to the costs of ascertaining product information such as in requirements and monitoring).

Thus, even where transaction costs reduce with improved information flows, the underlying nature of the goods or services being transacted may impact on how a transaction is undertaken (Malone, Yates, and Benjamin 1987). Firms may continue with non-market transactions, or alternatively may only use digital forms where they are in a trusted relationship (Clemons, Reddi, and Row 1993; Dedrick, Xu, and Zhu 2008). An example of how the properties of transactions can impact on digitization has been highlighted previously in the garments sector in low-income countries. Even with a number of digital initiatives, this sector is quite resilient to being integrated into market-based platforms. One reason is that clothing quality is often determined by the “feel” of goods, and this complexity in assessing goods limits digital platforms and disintermediation. Buyer firms will thus only transact at a distance with trusted suppliers, continuing to use intermediaries when this is not possible (Humphrey et al. 2003).
Institutional frameworks of transactions. As mentioned above, property rights approaches to transactions pay closer attention to the institutional contexts underlying transactions. One common aspect that can orient transactions in lower income countries is the lack of institutional frameworks to support transactions. For example, the risk that one side may break a transaction without any consequences can reduce trust. A lack of such institutions may limit the potential of market-based exchange on digital platforms, or lead to firms needing to make additional investments in monitoring or contracting (Clemons, Reddi, and Row 1993).

However, it is not only the lack of institutions that impacts on the form of transactions. Strong or well-established institutions may also orient transactions, potentially making them resilient to change even when information costs are falling. Such cases have been documented with respect to the introduction of mobile-based platforms amongst lower-income groups. For example, mobile platforms among farmers often do not lead to disintermediation where strong informal institutions are present. Intermediaries still hold power in key institutional bodies or possess high social capital, including rich relationships with farmers over long periods (e.g. by training them or providing loans) (Kumar 2014; Srinivasan and Burrell 2013).

Externalities of digitizing transactions. Potential new challenges can emerge when digitally enabled transactions are implemented. While digitally enabled transactions may reduce some informational aspects of transaction costs (such as search costs), their introduction can also lead to what Cordella (2006) describes as “externalities” where new transaction costs emerge. For example, platforms reduce direct search costs by providing a way to interact amongst a wider array of transactors. However, a resulting externality is that not all of these transactors will be known, and there may be higher risks in transacting and evaluating buyers and sellers as their numbers grow. The emergence of digital platforms often leads to a wider geographical spread of firms undertaking transactions. This can result in additional externalities where transaction costs emerge around exporting and logistics (Cordella 2006).

Thus, even in the case where digital resources facilitate transactions and reduce costs, it is important to explore the externalities; that is, the spillover effects that come from digitization. Most notably, for our interest in disintermediation, the literature suggests that it is common to see reintermediation rather than disintermediation where externalities lead to evolving roles for intermediaries as a consequence of digitization (Agrawal, Agrawal, and Singh 2006; Sarkar, Butler, and Steinfield 1995).
Summary

How do these theoretical perspectives relate to discussions of digital disintermediation and transaction costs in the Global South? (e.g. Aker 2010; Jensen 2007; Muto and Yamano 2009; Nirvikar Singh 2008; UNCTAD 2001; World Bank 2016). In general, we argue that accounts of disintermediation tend to more closely follow the neoclassical model. While there is certainly some discussion of the balance of market & nonmarket exchanges and sectoral institutions with relation to digitization, the focus of discussion rarely digs in detail into the wider conditions shaping market transactions such as those presented in the previous section. This is problematic, as we argue that integrating property rights approaches is liable to be particularly important for exploring digitally facilitated exchange amongst more marginal actors, where cultural norms, trust and power have been well documented as key aspects orientating activity (Harriss, Hunter, and Lewis 2003).

Table 1 brings together the aspects of transaction costs discussed previously into a framework that can be used for a more systematic analysis of transactions. Certainly the nature of the actual transaction and information costs in market exchanges are an important component of exploring disintermediation and digital technologies. The literature from the property rights approach highlights additional directions that allow a deeper scrutiny of the role of digital technologies in terms of the nature of transactions, underlying institutions and digitally driven externalities, which will be crucial in orientating how disintermediation plays out in practice (Foster and Graham 2016).

<table>
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<th>Underlying approach</th>
<th>Key concepts</th>
<th>Perspectives on digital information, transactions and disintermediation</th>
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| Neoclassical        | Drivers and constraints of market exchange | Exploring changing transaction costs of market exchanges due to improved information flows  
• Information costs impacted by digital information flows  
• Ability of ICT/digital connectivity to disintermediate  
• Disintermediation through digital platforms |
| Property rights     | Nature of the transaction | Underlying properties of transactions and how they impact digitally enabled transactions.  
• Shared resources, product requirements  
• Complexity of transactions and ability to ascertain and monitor quality |
| Institutional frameworks | Exploring digital information within a constellation of rules, rights and norms that orientate transactions  
• Underlying rights and norms that orientate exchange, which will impact on digitally enabled transactions  
• Nature of institutional bodies and makeup  
• Potential use of strategy and power in orientating digital transactions |
| Externalities       | Exploring the spillover effects of digital information flows and platforms  
• Impact on other elements of transaction costs  
• Digital disintermediation and reintermediation |
Methodology

In order to highlight aspects of this framework and explore disintermediation in more depth, we discuss the case study of the tea auction in Mombasa, Kenya, that was introduced earlier. Our interest in the Mombasa tea auction stems from a research study exploring the impacts of internet connectivity in East Africa on three economic sectors—exploring how digitalization impacts a material export-oriented chain (tea), a material service-oriented chain (tourism), and a more immaterial chain (business process outsourcing). During our research in the tea sector, a number of respondents spoke at length about the attempted introduction of a Mombasa “e-auction” and this case provides substantial explanatory insight into disintermediation (following Miles and Huberman 1994).

The research on the tea sector occurred between September 2012 and March 2014, and involved 75 semi-structured interviews in the tea sector and four focus groups, analyzing how different actors (farmers, intermediaries, and large firms) were using digital networks to improve production. Our focus in this chapter on the Mombasa auction means we have drawn particularly on 15 interviews with actors who discussed the history of the auction at length (e.g. tea auction brokers, tea auction buyers, tea warehousers in Mombasa, large firms involved in East African tea and policy-making actors in both Kenya and Rwanda). In the next section, we focus on some of the empirical findings around the tea auction, before using these findings for a more conceptual analysis.

The Evolution of the Mombasa Tea Auction

Over the last decade, the tea sector has been in a process of change in East Africa. Historically the key link between regional tea processors (sellers) and international buyers has been the Mombasa tea auction, an auction in the coastal city that mainly sells unpackaged but processed loose black tea which is produced in highland areas of East Africa, selling to buyers most of whom work for firms based outside of the region (as illustrated in Figure 2).
Tensions in the Auction

From the time of colonialism, the tea auction system has been the core institution for the buying and selling of East African tea, but it is increasingly struggling under the demands that are being placed on it. Goods are transported from the factories of tea processors in the region (sellers of tea mainly located in highland regions of Kenya, Uganda and Rwanda) to be stored in warehouses in Mombasa while they wait to be auctioned. The auction occurs twice weekly, and auction selling can only be done by nominated sellers (brokers). Once the tea is sold, buyers make payments to the auction, at which point they are able to collect tea to be exported. This whole process takes a minimum of a few days, but tea often remains in warehouses longer, accruing costs.\(^2\) Intermediaries around the auction provide useful services by linking between the tea buyers and sellers, particularly by supplying tea samples to buyers for tasting prior to the auction (to determine quality) and by ensuring that full payment is undertaken after sales (some intermediary roles are shown in Figure 3).

However, increasingly, international tea buyers consider elements of the auction to be “backwards” or “quaint” in the modern market, as outlined by one large exporter in Mombasa:

“For me they [brokers] are a complication (…) what is happening is we cannot buy directly from the producer at the auction, we have to buy from a broker. The brokers are the only people who sell tea at the auction, so they actually control the auction. That is why there is the perception of a cartel.”

\(^2\) A minimum of 3% of the tea cost is paid in brokerage and warehousing fees, but once indirect costs are taken into account this is likely to be higher; probably in the region of 5–10% of the auction price.
Such mistrust also occurs in the relationship between tea processors (sellers) and brokers. For instance, during recent price declines, tea processors wished to understand the reason behind price drops of their goods, but, as outlined by one manager of a tea processor in Rwanda, they mistrust the information they get back from brokers:

“It’s nice to know what’s happening in the market (...) the last two years have been bad. Last year’s been very poor and it’s going further down this year. So, I wonder why. We do keep getting information from people, but sometimes I think its rubbish that comes. What everybody does is justifies his position.”

Concerns about the suitability of the auction have been raised with particular reference to the growing demands for data. Tea buyers want to better track auction prices, and specifically the availability of particular tea grades (i.e. quality) for internal planning, including integrating with information systems, so that they purchase the right amount of each grade of tea at the best price. Further, with the increasing importance of tea origin and ethical production marks to value-added tea, firms would like to receive complete information that they can digitize to aid their planning.

Thus, there is growing pressure to reform the auction; and in a competitive global tea market where there is an excess supply of tea (Mintel 2007), there has been pressure to replace the auction with an agile electronic system. Online tea auctions already take place in competitor countries in Asia (for example, in India and Sri Lanka). As outlined by an East African consultant, the e-auction would allow more integrated and agile engagement for international buyers and would be crucial for the region’s competitiveness in tea:

“[W]hat will change is that with the online auction breaks the boundaries so people in the US will be able to access the information (...) so they don’t have to come all the way to Mombasa to buy tea, they can access our tea from our systems, trading can be done online and [we] will ship the tea and they will wait for the tea on the other side.”

The Emergence of the e-Auction

In 2012 the East Africa Tea Trade Association (EATTA) attempted to introduce an electronic auction system, called the auction management information system (AMIS), including running a full trial of the system with key tea actors. The system introduced an online auction of tea to replace the face-to-face activity. Many intermediary firms vehemently opposed the e-auction and continue to do so today.

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3 Our findings showed that many brokers, processors in the region now use the internet regularly in their activities, so such limitations around lack of access were likely to be less problematic.
For instance, brokers have argued for the importance of the auction’s face-to-face exchange, as outlined by one manager in a brokerage firm who was directly involved in auction activity:

“[M]y business is much better when I can see physically, I can know whether you are giving two or three dollars but if I can sit [in the office] here I can’t know your body language—to know if by looking at you I can get that one more dollar. I think that this is something we’re going to lose if we go that way.”

Further criticism of the e-auction has sprung from a fear that a lack of presence might imply collusion of tea buyers behind closed doors. One manager of a brokerage firm described this common fear:

“[T]he resistance [to the e-auction] was based on the fear that the buyers may collude, you know they are seated behind a machine like this (...) in an office somewhere. Being traders they may want to buy teas at the lowest prices possible and it is easy for five of them to come together and say, “Hey, you buy for us we are not going to push you,” and then tomorrow somebody else does the same and the next week somebody else does the same.”

However, international buyers remain less convinced by the brokers’ arguments. This was best put by a manager of one of the largest exporters in Mombasa, who jokingly suggested that these risks were overstated for commodity trading:

“They were saying the human factor, negotiating a price cannot be replaced (...) like you would find if you are selling a piece of art and everyone is raising their bids, or people are looking excited just from the facial expression. You would think that this piece of art is very expensive and they would give probably a very high bid on it. So they [brokers] are using the same kind of logic.”

Extensive consultation with stakeholders throughout the value chain took place to explain the form of the new e-auction and to run and evaluate the trial. However, subsequent to the trial, members of the EATTA voted by a majority against the implementation of the e-auction on a permanent basis (EATTA 2012). While there isn’t a transparent record of the voting choices, our research suggests that opposition was highest amongst intermediaries—tea agents, brokers, and warehousers—all based in Mombasa. Not only were these groups most vocal in resisting the e-auction reform, but they were most active in campaigning against the e-auction. This campaigning seemed to influence in particular those on the supply side in East Africa (i.e. tea producers and tea processors) whose main linkage into the value chain is through their relationships with brokers. These actors also mainly voted against the e-auction. Opposition came especially from smaller associations, representing growers in the
Eastern regions of Kenya, as well as from Rwanda and Uganda. In discussions, the fears of these groups often mirrored those of the brokers—fear of collusion in the e-auction, concerns about the viability of online systems, and expressions of the value of face-to-face trade. Thus, the face-to-face auction in Mombasa survived.

We do not discount the genuine concerns about the e-auction. However, during our research, it was noteworthy to see how similar views had become widespread. Our research suggests that the influential role of intermediaries was a key factor in the decision to not implement the e-auction. Intermediaries, particularly the brokerage organizations, also play a key role in the governance of EATTA, the governing institution for tea in East Africa.

Commercial pressures for a more agile Mombasa auction remain. Over time there have been incremental additions of digital technologies that have supplemented the face-to-face auction, all of which were initially opposed by intermediaries. Two examples are the provision of online catalogues from the auction that had previously only been available as paper copies, and the creation of an electronic payment system for quick payment of auction costs, simplifying management and logistics. The direct benefit of these innovations is not negligible, for instance, several tea processors told us that electronic payments from the auction had led to direct savings due to lower warehousing costs in Mombasa owing to improved efficiency of payment. The innovations did not disrupt the long-standing form and institutions of the auction; however, there have been some shifts in the roles of intermediaries such as brokers, even if they have not been fully disintermediated. With the electronic auction payment system, brokers have less work to do related to payments and they have begun to play an important role in other areas such as in collecting and sharing price and auction information with tea processors.

New Channels of Disintermediation

The slow digitization of the e-auction has led to the growth of alternative channels of tea trading. In the past, virtually all the tea trade in East Africa would go through the Mombasa auction, but in recent years private sales of tea between tea processors and international firms buyers have grown, in order to sidestep the limitations of the auction. This is referred to in the trade as direct sales. The channel of direct sales is shown in Figure .

Tea statistics are extremely difficult to interpret; nevertheless, a number of indicators suggest a growth of direct sales. For instance, Rwandan statistics suggest that direct sales have grown to around 23–24% of tea being sold outside the auction in 2012 and 2013 (NAEB 2013). Amalgamating Kenyan
Tea Board data with Mombasa data statistics suggests that direct selling has grown, fluctuating between 33–47% between 2010 and 2014 in Kenya (Africa Tea Brokers 2015; TBK 2015).

For many tea processors (sellers) in East Africa, direct sales are advantageous and thus processors are keen to increase direct sales. The price paid for direct sales is likely to be higher than the auction price. Equally as important is that processors involved in direct sales will receive quicker payment in comparison to the sluggish turnaround time of the auction. Direct sales are also desirable in that they reduce the costs of brokerage and warehousing fees associated with the auction.

When examining who was selling through these more disintermediated channels, we found that most direct sales occurred in tea processors who were subsidiaries of international tea firms, or who operated in close partnership with them. As the tea sector has become increasingly led by the private sector in East Africa, multinational firms (such as Unilever, McCleod Russell, and Jay Shree) have pushed into the region, taking control of certain local tea processors. Subsidiary tea processors tend to be more integrated with their parent firms, and there is a move for more integrated digital processing and tracking in many of these subsidiary firms. Direct sales also fulfill the needs of international buyers. They can quickly gain information about what types of tea are being processed, and in the future will be able to dynamically plan and manage direct sales, aided by integrated digital systems. As outlined by one regional tea manager of a multinational firm, some firms are even

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4 East African tea was traditionally organized where farmers would receive a fixed “farm gate price” for tea as specified by the government. Processing factories were run by the government, with state owned marketing boards responsible for international sales. Privatization has led to factories or shareholdings being sold to the private sector, where farm gate and processed tea prices are determined by the market. Government now takes a back seat, with a supporting role through development boards.
considering going further. One is thinking of building an internal auction system that mirrors the idea of the e-auction:

“We’ve been debating on the idea of selling all our product online. We would have an [internal] auction as well (...) We would have it on a portal where you know, this is the type of tea we have. And we send samples to so many buyers worldwide anyway.”

In sum, as shown in Figure , tea sales channels have become divided between direct sales and the Mombasa auction. Direct selling revolves around disintermediated trade and tends to be for goods at a premium, such as ethical teas. A driver of direct sales is the growth of information systems and digital data, and there is a clear trajectory towards automation and potentially new auction platforms. The Mombasa auction continues to take place every week, with tea lots sold in an open face-to-face auction. It still facilitates an access point for tea processors to access global buyers, but the auction can be unpredictable, particularly in recent years as the global oversupply of tea has increased (Mintel 2007). Thus, we predict that (in contrast to direct sales), the auction channel may become a channel for lower grade, bulk “commodity” tea sold at lower prices in the longer term.

Inevitably, direct selling is not for all tea producers. Direct selling is emerging out of privatization policies in East Africa, where global tea producers have bought stakes in more lucrative tea processors. It is in these relationships that digitally facilitated disintermediation emerges—in larger tea processors who have built trust, who have invested in meeting the requirements of tea quality or certification, and who are integrating digitally with their parent companies.

Epilogue

Ironically, given the brokers’ insistence that the e-auction would lead to collusion, there has been a recent controversy in the tea sector around collusion in the face-to-face auction:

“I want the Chairperson to state whether he is aware that the Kenya Tea Development Agency (KTDA) as reported in the Tea Industry Status Report of May, 2014, is accused of the following acts: (1) Colluding with cartels to manipulate tea prices. (2) Conducting direct sales with big markets outside auction venues. (3) Buying tea directly from factories at lower prices and then importing cheap tea. (4) Colluding with various players to create the impression that there is excess tea in the market in order to maintain low prices.”

(Statement by Kennedy Mong’are Okong’o, MP for Nyamira in the Kenyan Parliament, August 2014)
The above accusations, made in the Kenyan Parliament in 2014, was picked up by the regional press and led to fierce criticism and recrimination amongst Kenyan politicians. The accusation made in the aforementioned report (which it should be noted is unpublished and not publicly available) was that a number of bodies, including the influential KTDA, a large umbrella organization that supposedly represents Kenyan smallholder tea farmers, had been engaging in practices that reduced the prices for tea smallholders. One regional governor even launched a Ksh83bn (US$1m) lawsuit on behalf of his smallholder tea producing constituents following these accusations (Kenyan Standard 2015).

While these accusations remain unproven, suspicion of the Mombasa tea auction has been reignited, exacerbated by the perceived lack of reform, and activities that remain shrouded in mystery to the outsider. The ensuing fallout of these accusations has reignited political pressure for the tea auction to become digitized, which for politicians would remove corrupt elements through transparency. Members of the EATTA and the Kenyan Tea Board were summoned to appear before Kenyan Ministers. However, to date, they have resisted any move toward an e-auction, but have undertaken to digitize additional aspects of the auction to improve transparency. For instance, the EATTA has recently made live webcam coverage of the Mombasa auction available online (In2EastAfrica 2014).

**Discussion**

*Constraints in Transactions*

Using the transaction cost framework introduced previously we can highlight the key drivers and constraints to disintermediation in the Mombasa tea auction case. From a more *economic perspective of market transitions*, the e-auction seemed, on the surface, to be viable. Allowing more efficient buyer/seller discovery, transactions and exchange in tea markets appear to be a key step for regional competitiveness. Introducing a digital platform would reduce transaction costs by disintermediating broker intermediaries, warehousing and other costs associated with the auction in Mombasa. Overall the nature of market exchanges also appears coherent in terms of formal rules and contracts in the transaction, which are guided by the regional tea body EATTA with strong interest from national export boards. Economic theory would suggest these regular and fairly controlled transactions would be suitable for a digital platform.

In terms of the underlying *nature of the transaction*, tea can be regarded as a relatively standardized commodity good. Compared to more complex goods or innovations, it is relatively simple to ascertain its quality. However, with the recent growth in value-added tea and interest in the quality of tea, successful platforms are likely to need to digitize and integrate a wider range of parameters and properties.
A deeper analysis of the nature of underlying institutions has highlighted institutional path dependency and well-established rules that conflict with the goals of disintermediation. In the tea sector, the close alignment between intermediaries and sectoral governance is a particular concern, and these have been an important factor in resistance to the e-auction.

We have highlighted a number of externalities from digital technologies that have emerged in this case. We saw that even as some intermediaries were being marginalized from the growth of digital payments in the auction, they were able to use their social capital to reintermediate themselves into aspects of transactions that were becoming more information intensive. This came in the way that brokers were able to become key providers of information and intelligence that supported the increasing market focus of tea growers and processors in East Africa.

The categories from the framework also highlight policy approaches that could support future initiatives that look to reduce information costs. In the case of the Mombasa auction there remains a set of constraints related to the nature of transactions and the growing complexity of exchange. Stakeholders doubted it was possible for online systems to codify face-to-face activities, for instance the quality and grading of tea. Such concerns need to be considered as part of design decisions in a digital platform (i.e. by making quality and ethical-mark data visible in the exchanges). There are also offline activities such as quality testing by a trusted party that might support disintermediation.

Constraints around institutions suggest that the e-auction may only emerge in hand with wider institutional reform, and with a strong political push by national tea boards for reform. Many concerns by actors related to fears around maintenance of quality and trust. It could be that there is need for clearer rules around contracting related to the auction, or embedding anti-collusion detection algorithms within the software as further steps to supporting full disintermediation.

**Strategic Actions and Transaction Costs**

In the Mombasa auction, the empirical outcome of digitization has not been desirable for all. We found evidence of disintermediation in direct sales, and disintermediation was, in part, facilitated by online access, with the improved ability for buyers and sellers to interlink. Transactions in direct trade were marked by greater trust, clearer expectations on quality and potentially ongoing contracts between specific buyers and sellers. Thus, digitally supported disintermediation did occur but only for certain actors under certain conditions. Some processors thus trade through disintermediated private channels while others continue to trade in auction markets—indeed some firms simultaneously use both. The properties of these different channels—and who is disintermediated—are constantly in flux as channels are refined and improved.
Direct sales are liable to benefit only the best linked and highest quality tea producers. In the longer term, without an agile and efficient digital platform for trade (that is also open to all) marginal producers may miss out on the potential to make international linkages and reduce their ability to trade in value-added tea. These differential outcomes should prompt us to further reflect on the variation in trust, skills and power of different actors in these transactions, and how this has led to differential outcomes of digitization in the tea sector. Key firms and those powerful intermediaries being disintermediated were not passive—they formed strategic coalitions that were strong enough to resist the introduction of the e-auction. Indeed, we can argue that resistance came from the strategic use of institutional and transaction weaknesses (e.g. notions of collusion, role in EATTA) in order to defend themselves from disintermediation.

This perspective aligns with a direction taken by the “new institutional” literature, which looks to move institutional analysis and transaction costs towards exploring power, politics and strategic activity as a key component that is shaping institutions and driving institutional resistance (Khan 2010; North, Wallis, and Weingast 2009; Oliver 1991). However, it is rare that one sees disintermediation linked to the complexities of strategic and institutional analysis in the literature on digital connectivity and disintermediation. Such work would help to introduce some clear concepts of power back into understandings of transactions and digital connectivity.

**Conclusion**

As we have shown in the East African tea sector, in-depth analysis of transaction costs highlights complexities that are rarely detailed in the literature on digital technology and disintermediation. Theoretically, mainstream approaches to transaction costs highlight key drivers and restraints of digitally enabled exchange in markets, and thus highlight recommendations in transactions (i.e. rules, contracts) that can support more agile market exchange. Models of transaction costs from a property rights perspective supplement this analysis by supporting a clearer understanding of the nature of transactions, the institutional basis of transactions, and the ways that digitally enabled disintermediation may become an additional constraint for market participation. We have also highlighted constraints to efficient e-auction platforms around certain aspects of trust and quality that contributed to suspicions and rejection of an e-auction.

Our empirical findings have highlighted the more privileged digitally enhanced direct sales implemented for smaller groups of buyers and sellers; reintermediation as intermediaries evolve; and institutional resistance. As shown in the East African tea sector, it may be that the eventual benefits of disintermediation are liable to come to those already in privileged relations. Thus, we suggest that a greater awareness of the ways that actors exert power and strategically use institutional resources
are important in understanding the wider developmental impacts of digital disintermediation. In the Mombasa case, digitally enabled transactions are at present not transforming the tea sector, but rather through the strategic activities of more powerful actors they are solidifying the relationships of those who are already well linked and able to capture resources.

**Acknowledgments**

We would like to acknowledge Dr Laura Mann and Charles Katua who played a key role in the fieldwork connected with this chapter. The chapter was based on research funded by the UK Economic and Social Research Council (ESRC) and the Department for International Development (DFID). Grant reference (RES-167-25-0701) and ESRC reference (ES/I033777/1).

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