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# How to Design Online Models for Micro-lending in Developing Countries? Making Sense to MYC4 in Africa

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## *Abstract*

This article explores a micro-lending platform linking investors mostly located in developed countries and micro-entrepreneurs located in Africa. At the heart of this social and economic innovation is the online auction model, a concept that has been intensively investigated and used in developed countries. However, little knowledge exists about how these new models are used and implemented in developing countries, and about how existing theories are able to explain such an emerging innovative phenomenon. The article makes two main contributions. First, it applies a theoretical pluralist approach to further improve our understanding of MYC4, an online auction model for micro-lending purposes being applied in Africa and selected as our case study. Secondly, it uses the understanding produced from data analysis of MYC4 to validate propositions derived from three theoretical approaches. Our analysis shows that the three theoretical approaches differ in their basic assumptions – critical dimensions – and in the usefulness of their propositions, two of them being more valuable than the third one for drawing up guidelines for designing and implementing online auction markets and for identifying implications regarding the role of information, technology and the stakeholders involved.

## *Keywords*

Micro-lending, online auctions, business model, developing countries, design

## **1. Introduction**

Microcredit has been considered a powerful instrument to fight poverty and to create income opportunities for low-income populations, particularly in developing countries (Diniz et al. 2009). In the near future, microcredit is expected to move up from NGO-related (Non-Governmental Organizations) traditional operations to the mainstream of the financial markets (Diniz and Pozzebon 2010). This provides the opportunity to introduce and create new business models for microfinance and microcredit operations, such as: peer-to-peer markets, crowdfunding, and innovative auction markets. Enabled by web technologies, direct linkages

might be built between low-income borrowers, often located in developing countries, and lenders in developed regions (Robinson 2001). Each time a deal is made, it results in investments in business activities in poor regions of the world, which might stimulate local development and economic growth, and attract further investments.

Despite the optimistic perspective that this move from non-profit to for-profit markets might trigger in certain promoters of inclusive finance, we should be aware of the inherent risks. Any initiative regarding poverty reduction should be taken seriously and with social responsibility. We cannot ignore the advantages that new technologies might bring to less developed regions, but we cannot be naïve thinking that the use of those new technologies are necessarily beneficial to all parties. Financial and technological sectors have been for decades putting forward the idea that Western mechanisms might foster development, but an important number of projects' results show the opposite (Pozzebbon and Van Heck, 2006). Likewise, the area of ICT4D (information and communication technology for development) has shown that any unidirectional or purely instrumental attempt to “transfer” technologies from developed to less developed countries might be detrimental to the later if a true appropriation process does not take place (Avgerou, 2003).

This been said, we believe that online models that put borrowers and lenders directly in contact, eliminating onerous intermediaries, might be advantageous for both sides. However, from both an academic and practice perspective, there is a lack of knowledge about how online models are designed, implemented and used in emerging economies, and about how existing theories (usually developed in developed countries) are able to explain such a radical innovative phenomenon in emerging economies.

This article has two objectives. The first is to review academic literature on *online markets*, particularly online *auction* markets, to provide an overview and synthesis of leading theoretical approaches. These reviewed lenses are then deployed to produce a better understanding of one specific case of an online auction model being applied to micro-lending in developing countries in Africa. The second objective is to benefit from a deep understanding of such a specific case of the online auction market to validate a number of propositions drawn from the selected theoretical approaches. In brief, in our paper the connection between theory and empirical case is bi-directional: theory helping to understand empirics and empirics to validate theory.

The online auction model selected as our case study is known as MYC4<sup>1</sup>. Established in 2006, MYC4 is headquartered in Copenhagen and operates with around 30 employees through a business network of around 28 local providers and local lenders in Africa. The main contribution of our work is to investigate online auction markets through different theoretical lenses, trying to produce knowledge on how to improve conditions for successful micro-lending models and thereby increasing knowledge for financial and social inclusion and for organizing alternatives in emerging economies.

## 2. Three Theoretical Approaches

From the review of literature on online auction models, we identified three leading research streams that portray those markets as: (1) allocation practices, (2) definitional practices, and (3)

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<sup>1</sup> [www.myc4.com](http://www.myc4.com)

informational practices. These three theoretical approaches were chosen for the following reasons:

1. Each theoretical approach has potential explanatory power e.g. will be able to explain the design of (online) auctions;
2. The theoretical approaches are grounded in Western thinking but not much validated in a non-Western context;
3. The theoretical approaches have different backgrounds e.g. the first one is economic oriented, the second one is sociological oriented, and the third approach is information systems oriented.

## **2.1 Auction Markets as Allocation Practices**

From an economic perspective, auction markets are seen as *allocation practices*. The auction market is allocating the best buyers to the best sellers, or reverse in case of reverse auctions, and the value of the product or service is *only* reflected by the price of the product or service. The starting point is the groundbreaking 1961 article of Vickrey (Nobel Prize in economics in 1996). Vickrey (1961) designed a new type of auction: the so-called Vickrey auction. Bidders are placing bids; the winner is the one who offered the highest price, but the price that is paid by the highest bidder is the second highest bid ("second-price sealed bid auction"). Although this type of auction model was rarely used in the past (Rothkopf et al. 1990), recently, online auctions such as Overture and Google started to use it. In the period after the publication of the Vickrey article, a lot of research on auctions was carried out in micro-economics (e.g., Milgrom 1989; Klemperer 2002).

## **2.2 Auction Markets as Definitional Practices**

A very different lens is the sociological perspective on auction markets, wherein markets are viewed as *definitional practices*. Smith (1989) is the first one who has been investigating an auction from a sociological perspective. Based on close participation and observations in all kinds of auctions (art auctions, fish auctions, livestock auctions), he concludes: "Auctions do many things: They resolve ambiguities and uncertainties; they establish the value, identity, and ownership of items; they entertain; they shape social relationships; and they reallocate vast sums of money. They also tell us a great deal about economic life and social behavior. It is in this latter capacity, as a paradigm of human behavior, that they have had their greatest impact not only on how we think about the determinants of economic value and behavior but rational behavior in general" (Smith 1989:162). In a more recent article, Smith extended his results into a more detailed theory that was examined with two emerging online auction markets: the sponsored word/phrase Internet search engine markets and the equity option markets. Four propositions are central in his theory (Smith 2007:3): (1) Market practices are embedded in social meanings and generate social meanings; (2) The production/reproduction of market meanings is grounded in the interactive social practices of "taking the role of other" and mutual understanding; (3) Markets are evolving practice subject not only to changing external factors but also internal changes due to their own definitional practices; (4) Market ideations affect non-market practices as well as market practices insofar as market generated meanings and framings spill over into non-market practices. The four claims are illustrated by two ethnographic studies of two emerging markets

(Smith 2007).The social structure of auction markets has also been investigated by many other researchers (Baker 1984; Uzzi 1997).

### 2.3 Auction Markets as Informational Practices

In the third approach, located in management studies, auction markets are seen as information aggregation tools and considered as *informational practices*. The research on auctions starts from the practical situation and practical problems and thus is critical about economic research. An example of a critical analysis is the article of Rothkopf and Harstad (1994:381). They state: "However, in our view, bidding theory is still playing “catch up” in the sense that there are phenomena that experienced, thoughtful auction participants are aware of that are not well reflected in its models. Until the catching up is completed, the role of the theory in practical auction design will be limited". In brief, in their analysis economic auction theory has limited value in practice. There are several discussions in this approach dealing with online auction markets and the role of information systems and technology (Koppius 2002; Kambil and Van Heck 2002). In Table 1, we provide a number of propositions derived from the analysis of the three theoretical lenses. We believe that these propositions represent organizing mechanisms that might, in concrete situations, guide design and adjustments of online auction models. More importantly, we suggest that those propositions could be useful in the improvement of microlending auction models.

**Table 1.** Propositions of Three Theoretical Lenses.

	<b>Auction Markets as Allocation Practices</b>	<b>Auction Markets as Definitional Practices</b>	<b>Auction Markets as Informational Practices</b>
<b>Propositions derived from theories</b>	<p>P1a: The choice of the auction model needs to be close to Vickrey’s model and will generate the best allocative efficiency and Pareto optimality.</p> <p>P1b: Rational bidding leads to the best outcome for individual bidders.</p> <p>P1c: Extremely asymmetric information and signaling will have a negative impact on the outcome of the auction market.</p>	<p>P2a: Online auction market practices are embedded in social meaning and generate social meanings.</p> <p>P2b: Online auction markets are evolving practices subject to external factors and internal changes.</p> <p>P2c: Online auction markets are influenced by external practices and in turn influence them.</p>	<p>P3a: Online auction market must create value for all the participants involved.</p> <p>P3b: Richer information architecture (with more information feedback over a longer period of time) will lead to a better auction market outcome.</p> <p>P3c: Online auction markets that are designed around human interactions supported by technology in a social context will survive over time.</p>

## 2.4 Comparing the Three Research Lenses

The careful analysis of these three theoretical approaches allowed us to recognize a number of critical dimensions that help to understand similarities and differences between them. In Table 2, we provide a summary of the critical dimensions of the three research lenses.

**Table 2.** Overview of the Three Theoretical Lenses.

	<b>Auction Markets as Allocation Practices</b>	<b>Auction Markets as Definitional Practices</b>	<b>Auction Markets as Informational Practices</b>
<b>Context</b>	Context is not considered.	Context is very important and it encompasses the mutual interaction of the auction market with the outside world.	Context is considered in terms of buyer and seller characteristics.
<b>Participants' roles and Processes</b>	Bidders behave in a rational way. Interaction among different bidding strategies is a key component of the bidding process.	Individuals are socially characterized and embedded in social meaning systems. Interactive social practices of "taking the role of the other" and mutual understanding.	Stakeholders are "bounded" rational. Market processes (such as search, pricing, logistics etc.) among different stakeholders. Information exchange among processes and feedback are important components.
<b>Outcomes</b>	Price and allocation are the main outcome parameters. Value is mostly one-dimensional (price). Outcomes are based on allocative efficiency and Pareto optimality.	Meanings/rules and allocations. Meaning/rules that determine the parameters of the goods.	Price, allocation, and information are the main outcome parameters. Value is considered multi-dimensional (price, quality, delivery time, etc.).
<b>Role of technology</b>	Asymmetric information among bidders (private/public information) is an important determinant for market outcome but information is not related to its context. Information technology is not considered to play an important role.	Information as element of social interaction, meaning, rules. Information technology interacts with the auction market and information technology itself is the outcome of social interaction.	Information architecture is key determinant in explaining stakeholder decisions, behavior, and outcome of the market. Information is sometimes related to context. Information technology is seen as an important enabler of the online auction market.

The first stream is grounded in the micro-economics-based auction theory. The outcome of the auction market is based on the bidding strategies of the participating bidders, the private and public available information, and the type of auction used. The second research stream builds on the field of sociology and is developing into a theory of markets as definitional practices. The key

element in this theory is the social construction of value of the auctioned products or services. The third research stream is about an emerging stream in the information systems field built on information processing models, transaction costs theory, and agent and social exchange theory. The outcome of the auction market is the result of a complex information exchanging and aggregation process among buyers and sellers. The quality of information is a key factor that is a crucial component of the information architecture.

### **3. Research Methodology**

#### **3.1 Single Case Study**

The empirical design was based in a single case study: the online auction model for microlending called MYC4. Based on the terminology of Stake (1995), MYC4 can be seen as both an intrinsic and an instrumental case study: intrinsic because draws attention by its particular features, described later, and itself represents a rich object of investigation; instrumental because MYC4 helps to develop a better understanding of online auction models and to validate three theoretical approaches. This use of three theoretical lenses in a case study design was inspired by the well known study published by Lynne Markus (1983) comparing three resistance theories for the implementation of management information systems.

The selection of MYC4 as our case study was guided by two main criteria. First, the combination of auction mechanisms with an online platform resulted in a dynamic and interactive model, an innovation, whose implications in the long run are still poorly known. The second was the opportunity to investigate in real time an emergent online auction market in the micro-finance/micro-lending industry. MYC4 is one of the few markets in micro-finance that is using an advanced auction format and therefore almost unique in its business model. MYC4 is open for analysis by researchers.

Empirical data was collected by two main methods: analysis of online documents (reports, blogs, chats and other material) and online participant observation (real time participation in the online auction market and in the forum of discussions). One of the researchers observed and interacted on a very frequent (sometimes daily) basis in the MYC4 web-based case study from June 2009 until December 2012. The researcher carried out observations of running auctions and bidding processes and also participated actively in trading in the online auction market. This role might be seen as observer-as-participant, i.e., the researchers assumes the role of an observer through social interaction with the informants but the intent is not interfere or to develop into a relationship with the other participants (Nørskov and Rask, 2011). Because the intent is to learn, it implies more observation than participation, although a minimal level of participation is a condition for performing the observation. In online observations, the “observational data are equivalent to the recorded data, since the social interaction and behaviors exist in a written form. Consequently, data are easily separated from interpretation, which is rarely the case in offline observations. This is likely to have a positive impact on dependability in online observation making” (Nørskov and Rask, 2011). Although other dimensions might have a negative impact on the accuracy of data and interpretation, online observations can be always complemented with offline data, each contributing with different aspects and providing different levels of details.

The data collection included participation in the market, reviewing forum discussions, analyzing reports, blogs, and other secondary material. The absence of primary data gathered from interviews was not a limitation of our research design, due to the richness of the data collected from the two main strategies: documents and online observations.

### **3.2 The Online Marketplace MYC4**

MYC4 is an online marketplace that connects investors directly with African entrepreneurs, who lack capital to develop their business (Bahra 2008). The core of the online marketplace is a reverse auction concept. The target of MYC4 is “to be a significant tool in reaching the United Nations Millennium Development Goals”. These UN Goals were set for 2015 and the counter on the web site of MYC4 is counting to 2015 (United Nations 2009). As of December 2012, a total of 19,445 investors from 117 countries had invested €18,028,531 in 11,582 businesses in 7 African countries. The average interest rate for investors is 13.1% p.a. before defaults and currency loss or gain (MYC4 2009). The minimum investment for an investor is €5. MYC4 has a business network of sixteen *local providers* and twelve *local lenders* in Africa. The *local providers* (that sometimes can be also lenders) select healthy businesses with a need for capital. Examples are Growth Africa Capital in Kenya, Birima in Senegal, Premier Resource Consulting (PRC) in Ghana. The *local lenders* handle the financial transactions: contracts, disbursements and repayments. Examples of local lenders are Tujijenge in Tanzania, Ivoir Credit in Cote D’Ivoire, and Capital Micro Credit (CMC) in Uganda. The business model of MYC4 is based on transaction fees. MYC4 uses a reverse auction with many bidders (that are the potential investors into the auctioned loan. There are many bids and the combination of the lowest bids (by one or many bidders) that is able to fulfill the demand (in this case the total loan) will be the winners of the auction.

## **4. Results**

### **4.1 Using the Three Lenses to Build a Better Understanding of MYC4**

The analysis of MYC4 through three theoretical lenses allowed us to produce a number of results. It is clear that the MYC4 is a loan auction using an innovative online business model. Value is constructed by auctioning of investment proposals and a combination of investors (the one with the lowest bid in terms of interest rates) will be able to invest in the loan. In terms of allocation MYC4 is doing an excellent job. On average 93% of the loans will get funded (Chemin and de Laat 2009). This percentage is much higher than other online markets such as Prosper.com. It seems to indicate that investors have a sufficient level of trust in the proposed business proposals and the African entrepreneurs. It also indicates that working with local providers and lenders that are reviewing the business plans of the potential borrowers seems to work.

The *microfinance* element (possibility of making quite small loans) is a strong characteristic in MYC4 due to the fact that people can bid for €5 or higher. Given the setup of the auction, many investors combine their investment offers to fulfill a loan. For example, in one auction event the loan of €1600 could be provided by 30 investors, ranging from €5 to €500. Together, this group of 30 investors is taking care of the requested loan.

Table 3 provides the results of the first part of our analysis, i.e., the application of the critical dimensions of the three research approaches in order to make sense and produce a deeper understanding of the empirical case MYC4.

**Table 3.** Applying the three theoretical lenses to understand MYC4

	<b>Auction Markets as Allocation Practices</b>	<b>Auction Markets as Definitional Practices</b>	<b>Auction Markets as Informational Practices</b>
<b>Context</b>	Context is not taken into account.	Context is fully is taken into account as mutual interaction.	Context is partially taken into account.
<b>Participants’ Roles and Processes</b>	Dutch auction model close to advantages of Vickrey auction. Charity bidders do not bid in a rational way. Interaction among investment bidders and charity bidders not taken into account.	Interaction between forum and auction market improves “taking the role of the other” (investor) and mutual understanding. Difference among investor bidders and charity bidders is taken into account. Social meaning by bidders (outcome, interaction, embedded in social meaning systems; Changing rules of participation governance are envisioned.	Market processes (such as risk management, regulations, and dispute resolution) are critical for auction markets Bounded rationality of charity bidders. Difference among investor bidders and charity bidders is taken into account.
<b>Outcomes</b>	Very high level of allocation (93%) and relatively medium level of interest prices (around 12.6%). Bid is two- dimensional (interest, amount). High level of currency risks not always reflected in interest prices.	Very high level of allocation (93%) and relatively medium level of interest prices (around 12.6%) has meaning for participants Intense discussion of high levels of Annual Percentage Rates (APR) <sup>2</sup> and risks shows that meaning/rules are discussed and (re)formulated.	Very high level of allocation (93%) and relatively medium level of interest prices (around 12.6%). Bid is two-dimensional (interest, amount). Very high APR indicate very different stakeholder benefits Real time information updates of bidding event outcomes impact investors behavior
<b>Role of Technology</b>	Disclosure of private bidding information will impact auction outcome. Information from	Information feedback of bidding events and reputation of participants (indicated by the level of investors, lenders, and providers) is a crucial component. Information exchange via forums, blogs, wiki’s, twitter	

<sup>2</sup> The Annual Percentage Rate (APR) converts all fees (closing fees as well as interest) associated with a loan, to an interest paid with an annual frequency on the decreasing outstanding balance.

	discussion forum (and other outside events) is not taken into account to impact auction events.	etc. is taken into account.
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In brief, these findings from the use of the three theoretical lenses to build a global understanding of MYC4 show that each of the research streams has its strengths and weaknesses in terms of capturing important aspects of the evolving online auction model in investigation. However, it emerged clearly that the first approach – allocation practices – is the one that offers the least help in the understanding of MYC4 whereas the second – definitional practices – is the one that explains best. However, the third approach –informational practices – seems to have strong potential for being more specific in guiding the design and adjustments phases of auction model implementation.

## 4.2 Using MYC4 to Investigate the Explanatory Power of the Lenses

In the first part of the analyses, described in the previous section, we used the three theoretical lenses to develop an initial understanding of the MYC4 micro-lending platform. In the second part of the analysis, presented in this section, we propose to invert the role between empirical evidence and theory: we use empirical data gathered from MYC4 to see how much of the case each of the theoretical lenses are able to explain (Table 4).

None of the propositions of the allocation perspective were confirmed. Although the Dutch model (the one adopted by MYC4) exhibits some similarities to Vickrey’s model regarding its characteristic of stimulating so-called “truth revealing” bidding strategies, we could not confirm from the MYC4 data that the choice of that model will generate the best allocative efficiency and Pareto optimality. Although the allocation is very high (93% of the loans are funded), it is difficult to evaluate if the right bidder is allocated to the right lender for the right price. Similarly, we could not confirm that rational bidding leads to the best outcome for individual bidders. On the contrary, the motivations for taking part in MYC4 cannot be characterized as purely rational, as proposed by theory. Finally, we could not confirm that asymmetric information would have a negative impact on the outcome of the auction market. Given investors’ belief in a “cause”, this amount of information could be less important compared to other situations.

Regarding the definitional perspective, our analysis of MYC4 led us to confirm the three propositions. First, the online auction market practices of MYC4 are embedded in social meanings and generate social meanings. This provides a different regard on this kind of phenomenon, leaving behind the assumption of technological determinism where the material properties determine the outcomes. From a more constructivist perspective, the meaning attached to material artifacts, co-constructed by the social actors, plays an important role. Second, online auction markets like MYC4 are evolving practices subject to external factors and internal changes. This assertion stimulates openness regarding the changing and adaptable dimension of online marketplaces, which is suitable for the specific purpose of micro-lending. Micro-finance is a still evolving area, quite recent, and open to integrating new business models. Seeing microlending platforms as evolving practices open to change increases the possibilities of unintended adaptations that could improve their chances of success. Third, MYC4 is influenced by external practices and in turn influence them. For example, the exchange rates from the

European currency (Euro) to local (African) currencies have to strong impact the conversion of the loan to local currencies and have an economic impact both to the lender and the borrower. Conversion rates are determined outside the MYC4 market. The direct linkages between lenders and borrowers are also questioning the role and function of traditional intermediaries in the financial industry. So, MYC4 is also influencing the financial industry.

The three propositions of the informational perspective were also confirmed. First, the online auction market must create value for all the participants involved. The implication of this proposition is that, in order to be successful, MYC4 should provide benefits to all stakeholders: investors, local providers and lenders, borrowers, and market-makers like the MYC4 coordinators. In the case of micro-lending platforms, it means that their long-term sustainability depends on providing benefits to all, including the target stakeholders in terms of social purposes: the borrowers. Second, richer information architecture (with more information feedback over a longer period of time) will lead a better auction market outcome. This is also an important aspect, because it replaces short-term views of “information asymmetry” assumptions with long-term views. In those long-term views, we recall the importance of the feedback provided over a longer period of time and the formulation of long-term goals, like contribution to social development and achievement of Millennium goals. Third, online auction markets like MYC4 that are designed around human interactions supported by technology in a social context will survive over time. Complementary to the two previous propositions, the focus on human interactions supported by technology instead of on technological platforms that shape human interactions is of crucial importance. The informational perspective provides an opportunity for micro-lending platforms to be shaped, adapted and transformed in a way that could provide higher benefits to social and economic development of micro-entrepreneurs in developing countries, as is the case with MYC4.

**Table 4.** Validation of the Propositions of Three Theoretical Lenses.

	<b>Auction Markets as Allocation Practices</b>	<b>Auction Markets as Definitional Practices</b>	<b>Auction Markets as Informational Practices</b>
<b>Propositions derived from theories</b>	P1a: do not confirmed P1b: do not confirmed P1c: do not confirmed	P2a: confirmed P2b: confirmed P2c: confirmed	P3a: confirmed P3b: confirmed P3c: confirmed

## 5. Conclusions and Implications

This article explores a social and economic innovation: an *online micro-lending model*. At the heart of this radical innovation is the online *auction* model, a concept that has been intensively investigated and used in developed countries. However, little knowledge is available about how these types of models are used and implemented in emerging economies, how these types of models are used for social purposes like micro-finance and how existing theories can be applied to explain such radically innovative phenomena.

This article makes two main contributions. First, it applies a synthesis of three theoretical approaches to increase our understanding of a particular online auction model in the micro-lending market – MYC4 – being applied in Africa. Second, we suggest that the adoption of sociological and management perspectives, instead of the more often applied economic view, could bring a different and relevant understanding to emerging business marketplaces based on online action models in a non-Western context.

Future research could deepen the use of these perspectives in the understanding of similar and different types of online auction models, particularly those designed for social purposes, in order to consolidate and enrich the findings of our research

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