



# The Computerworld Honors Program

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## Final Copy of Case Study

YEAR:  
*2012*

STATUS:  
*Laureate*

**Organization:**  
Ethiopia Commodity Exchange

**Organization URL:**  
[www.ecx.com.et](http://www.ecx.com.et)

**Project Name:**  
Ethiopia Commodity Exchange

**What social/humanitarian issue was the project designed to address? What specific metrics did you use to measure the project's success?**

Ethiopia's marketing system, like its agriculture, is based on age-old tradition. To date, agricultural markets have been characterized by high costs and high risks of transacting. With only one-third of output reaching the market, commodity buyers and sellers tend to trade with those they know, to avoid risk of being cheated or defaulted on. Trade is done on the basis of visual inspection, for there is no assurance of product quality or quantity, thus driving up marketing costs, leading to high consumer prices. Small-scale farmers, who produce 95% of Ethiopia's output, sell within a 12 KM radius from their farm and come to market without reliable and current market information and are at the mercy of merchants and middlemen at the nearest and only market they know, unable to negotiate better prices or reduce their market risk. Small-scale farmers have no regional, national or international market access. About 60% of trades result in payment, quality or delivery defaults. Such an inefficient and non-transparent system attributes to the low GDP contribution of tax -- i.e., 8.5% (2009/10) as compared to the African average of 24%. Furthermore, central payment systems, electronic links among existing banks, and clearinghouses did not exist in the country to facilitate efficient financial transactions. To address these issues, a bold new approach was required to: provide market integrity, by guaranteeing commodity grade and quantity and establishing and operating a system of daily clearing and settling of contracts; enhance market efficiency by operating a trading system where buyers and sellers coordinate in a seamless way on the basis of standard contracts; enable market transparency by disseminating real-time market

information to all market players; provide risk management by offering contracts for future delivery, providing sellers and buyers a way to hedge against price risks.

**Please describe the technologies used and how those technologies were deployed in an innovative way. Also, please include any technical or other challenges that were overcome for the successful implementation of the project.**

Major challenges faced include lack of reliable power/telecom infrastructure, inexistence of central payment system/clearinghouse, absence of viable collateral management/warehouse operators, and lack of skilled technical workforce in enterprise development. Exchange trading platforms/products in the market supported Future trading (not Spot) and did not include non-core components/services including warehouse receipting, Automated Clearing House (ACH), and solution to integrate partner banks and enable execution of electronic bank instructions. Building this unique end-to-end platform in-house became the only option, no matter the high risk and challenges expected. Cornerstone to our solution was building redundancy to overcome the frequent power outages through use of an APC centralized power management solution and generators. The overall application was built to operate with minimal bandwidth (dial-up) to accommodate the unreliable telecom infrastructure -- secure and encrypted USB drives are used when telecom service is down. Core capabilities built include: clearing/settlement system based on e-signature; bi-directional/secure partner bank gateway to securely transport settlement instructions including interbank transfers linking 10 banks/ECX in the country's first electronic payment network utilizing public/private key cryptography, digital signatures and biometric access; Central Depository (CD), i.e., the "nerve center" of the warehouse receipting operations where all deposits/deliveries into/out-of over 30 warehouses are recorded -- at trade settlement, CD transfers ownership of warehouse receipt from seller to buyer, in a tightly integrated delivery versus payment (DvP) model controlled by ECX ACH, resulting in a delivery notice for the buyer/warehouses; member/trading system; real-time market data dissemination via SMS, IVR, Website, price tickers integrated w/GSM modems as failover for ADSL; data center, .Net framework and Cisco devices for WAN/network security. Result: zero default, \$2 billion traded, and no system downtime on any trade session.

**Please list the specific humanitarian benefits the project has yielded so far.**

Guaranteed settlement of all trades eliminated trade defaults, which mainly hurt farmers and aggregators. For small-scale farmers, such default meant loss of their annual income. Availability of reliable and timely market data enabled farmers to negotiate fair prices for their harvest and significantly improve their income level. Continual awareness creation in educating growers about standardized contract and commodity grading system has empowered them to find ways and place extra effort to produce improved quality harvest thereby improving their income potential.

**Please provide the best example of how the project has benefited a specific individual, enterprise or organization. Feel free to include personal quotes from individuals who have directly benefited from the work.**

Cloud-based electronic warehouse receipting system and establishment of rural ECX warehouses enabled farmers to deposit their commodities and get full access and sell at national markets without leaving their farm. Over 2.8 million farmers are represented in our system through co-operative unions. Multi-mode and near real-time market data dissemination empowers farmers and all market actors to get instant and reliable market prices via SMS, price ticker boards, IVR and prints. Over 50,000 IVR calls received daily from rural areas. Over 60 price tickers deployed in rural areas with 150 more planned for FY 2012/13. Guaranteed T+1 payment assures sellers, including farmers, on-time payment. To date, over US\$2 billion have been traded and settled with zero default. Guaranteed transactions assure buyers of quality, quantity and delivery of all trades

while sellers are assured of payment, thus creating efficiency and market integrity. Due to price transparency, farmers are able to see the premium paid for better quality/commodity grade. Thus, commodity grades have consistently improved year over year, resulting in more income to the farmer while contributing to the increase in foreign currency earnings for the country. Through the transparent system and fully automated reporting system, tax collections/reporting from these transactions have been streamlined and efficient, thus providing much needed tax revenue contributing towards the country's goal for self-sufficiency. Part of the senior management's (recruited from overseas) mission was to build local capacity and hand-over. Local staff has now been able to handle day-to-day operations and deputies for each senior management positions have been named. Unlike many projects in developing countries, ECX will sustain itself using local capacity and revenue generated from its operations to expand its services, including trading new commodities.