United Villages: M-Commerce Solutions

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Overview

• Our team is developing mobile solutions to increase supply chain efficiencies in the developing world.

Developed World

Figures by MIT OpenCourseWare.
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Developed World

Advantages:
- Business saves times
- Business can make more informed decisions
- Software solutions are scalable
- More choice for consumer
- Cheaper goods through competition and efficiency
- Anticipate market trends and supply problems
- Customer tracking and targeting
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Proposal for Developing World
• MIT Startup founded in 2003
• Empower two billion rural people by delivering information, communication, goods, and services.
• Started with store and forward, drive-by wifi for rural connectivity
• Evolved into rural information and goods distributor
United Villages E-Shop

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Problems with Current Situation

• **Expensive**
  – Airtime & staff operators
  – Catalog is expensive to print

• **Error Prone**
  – Transcription of order by UV operator

• **Inefficient**
  – Time consuming
  – Not optimized for reoccurring orders
  – Searching catalog is not intuitive

• **Not Scalable**

• **Record-less**
  – No persistent record of transaction

• **Hard to support UV’s future plans**
Needs Assessment

- Technological requirements:
  - J2ME for phone application
  - SMS for transport layer
  - Appropriate tech. with ability to support advanced features

- Catalog updates required
  - Prices and products require monthly updates

- English literacy is high across mDSPs
Needs Assessment

• 75% of mDSPs do not own a J2ME-enabled phone
  – Solution: incentivize purchase of J2ME-enabled phone

• At $75 for a phone, the average mDSP can break even after 2 months
  – Assuming $46 monthly profit and various travel expenses (see Appendix)
Our Solution

• Design a J2ME application with tested e-commerce modalities:
  – Search by product code
  – Search in product name and description
  – Shopping basket
    • Order multiple products per order (per SMS)
  – Order confirmation
  – Order history
    • Data on costs and profit
    • Ability to reorder a past order
System Diagram

- mDSP
  - Local DB
    - Categories
    - Catalog
    - Order History
  - Compiled Order

- Cellular Network (SMS)
  - Compiled Order
  - Order Confirmation
  - SMS Server + DB interface

- UV Hub
  - Supplier DB
Sustainability Overview

- No upfront costs for United Villages, low continuing costs of operations
- Mobile DSP break even on new phone purchases within two months
- Utilizing Open Source and industry standards
- Recommendations to engage developer or future NextLab teams
- Focus on clear documentation and training materials

- Identified key behavioral changes needed
- Defining process and documentation to ensure sustainability

- Focused on building and strengthening relationships with key stakeholders at all levels of the United Villages organization
Pilot Plans

• 3 team members are traveling to Rajasthan in January for a pilot
  – Funding generously provided by nextlab and UV

• 10-day pilot:
  – Iterate over the design of the new system
  – Compare the new system to the old workflow
  – Test the robustness of the SMS layer
  – Begin working on hand-off to UV
Conclusions

• Successful in developing a system that meets the needs of United Villages.

• Broader impact because the system is open-source and can be adopted by other parties.

• Will the system be embraced by mDSPs?
Future Plans

• Develop system into a fully-featured m-commerce platform:
  – Access to customer information
  – Business analysis features for mDSPs
  – Pre-paid card support for payment
  – Targeting sales and promotions
  – Anticipate supply problems

• Develop solutions for end-customers (villagers)
Financial Mobile DSPs Economics
Key Question # 1: Will mDSPs purchase J2ME phones?

- J2ME-enabled phone: $75
- Training costs: $17 (5 hours for travel and training at $3.50 / hour)\(^1\)
- SMS: $0.04 ($0.02 per message x 2 orders per month)
- Monthly catalog updates: $14.00
  - 4 hour round trip (travel + time in head office)
  - Average hourly salary $3.50
- Average Monthly Gross Profit = $45.96

\[
\text{Monthly Gross Profit} \times \text{Months} = \text{Upfront Costs}
\]
\[
$45.96 \times M = $92.50
\]
\[
M = \frac{$92.50}{M}
\]
\[
M = 2.01
\]

months to break even