

United Villages Mobile Commerce Interface

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Needs assessment – Required info

- Needs
 - Preliminary User Survey (Prashant)

- Context
 - Social Context (Dev)
 - Technology (Michael)
 - Economics of Technology (Michael)
 - User behavior (Anastasios)

- UV Economics
 - Questions for UV (Dev)



Legacy: Orissa (Behampur)

Population

- 36.7 million (2001 Census)

Urban/ Rural

- 87% of the population live in the villages
- In rural areas over 65% of the population have no access to safe drinking water

Education

- The average literacy rate in Orissa is 63.08% (2001)
- Male literacy rate is 75.95% and female literacy rate is 50.51% (2001)

Economy

- Size: \$18 billion (2004 estimate)



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Legacy: Orissa Case Study (2007)

Data extracted by **18** Kiosk locations:

3 Surveys conducted by UV

- 17 DakNet Service Providers (DSPs) –22 Questions
 - Demographics
 - Customer Satisfaction
 - Service Quality

Purpose: Determine traits common to successful DSPs

- 43 Customers – 19 Questions
 - 7 villages
 - Focused on 2 villages with high percentage of users

Purpose: Determine if current services provide customers a Cheaper means of performing activities like shopping and job Hunting - Savings Matrix.

- 17 Prospective Customers – 15 Questions
 - 7 villages

Purpose: Gather additional data for the Savings Matrix and understand why they have not used DakNet services yet.



Courtesy of PlaneMad. Used with permission.



Legacy: Orissa Case Study (2007)

Data extracted by **18** Kiosk locations:

Results

- DSPs share a strong entrepreneurial spirit
 - 53% of Kiosks are co-located with Public Call Offices – one-stop-shop for communications needs
- DSPs are well-educated (majority have completed grad studies)
 - 90% believe UV training is adequate for e-shop, email, SMS
 - They indicate that more than 50% of customers do not need assistance to use the kiosks.
- Only 55% of DSPs claim that DakNet services “always work”
 (“offline” kiosk status most common complaint)
- 82% claim that DakNet services “work half the time” or “always work”
- DSPs claim that marketing is the most difficult challenge
- There was wide variation in customer activity (0% - 100%) per kiosk (not using an account within 60 days)
- UV personnel claims that DSPs’ commitment varied with regard to building their kiosks – initiative required



Courtesy of PlaneMad. Used with permission.



Legacy: Orissa Case Study (2007)

Data extracted by **18** Kiosk locations:

Results

- DSPs claim that lengthy transmission time is a common customer gripe.
- Farmers were cited as the customer demographic they were not reaching.
- Customers stated to DSPs the following future services :
 - Loans
 - E-governance
 - Agriculture queries
 - Shaadi marriage
- DakNet Bandhus (DBs) have proven very successful signing up on average 6 new customers each as reported by DSPs:
 - E-shop
 - Email
 - Job search
- DSPs claim that health services and drinking water community needs could be met by UV in the future.



Courtesy of PlaneMad. Used with permission.



Legacy: Orissa Case Study (2007)

Data extracted by **18** Kiosk locations:

Results

- 59% of villages lack internet access
- Electricity is available 22 hours per day except on heavy rain periods
- 65% of villagers produce some form of handcraft



Courtesy of PlaneMad. Used with permission.

Service	Time Savings (Hrs)	Savings vs. Alts. (Rupees)
E-Shop	3.6 Hrs	40
Email	1.5 Hrs	23
Job Search	1.1 Hrs	14
Travel Booking	2.9 Hrs	14
Voicemail	.05 Hrs	7
SMS	.02 Hrs	.31



Courtesy of United Villages. Used with permission.

Legacy: Orissa Case Study (2007)

Data extracted by **18** Kiosk locations:

Results

(av. monthly personal income per customer: 3,550rps=
\$74)



Courtesy of PlaneMad. Used with permission.

Current Substitution Cost Savings per Customer	Current (Monthly)
Total E-Shop Cost Savings per Customer	\$1.00
Email Cost Savings per Customer	\$0.30
Job Search Cost Savings per Customer	\$0.91
Travel Bookings Cost Savings Customer	\$0.03
Voicemail Cost Savings per Customer	\$0.01
SMS Cost Savings per Customer	\$0.01
Substitution Cost Savings per Customer per Month	\$2.26



Legacy: Orissa Case Study (2007)

Data extracted by **18** Kiosk locations:

Results

Current Opportunity Cost Savings

	Current (Monthly)
E-Shop Time Savings per Customer	3.6 Hours
Email Time Savings per Customer	0.8 Hours
Job Search Time Savings per Customer	1.8 Hours
Travel Bookings Time Savings per Customer	0.2 Hours
Voicemail Time Savings per Customer	0.002 Hours
SMS Time Savings per Customer	0.02 Hours
Total Time Savings per Customer	6.38 Hours
Average Monthly Income per Customer	\$60
Average Hourly Income per Customer	\$0.34

**Opportunity Cost Savings
per Customer per Month***

\$2.19



Current Focus: Rajasthan - Jaipur

Population

- 56.5 million (2001 Census)

Urban/ Rural

- 78% Rural

Education

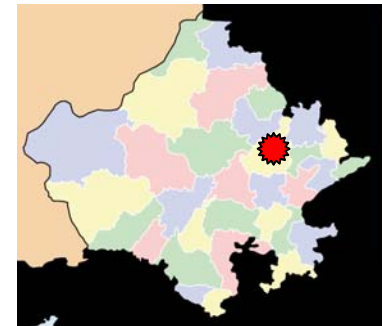
- Literacy: 61.03%

Economy

- Size: \$11.5 billion (2003). Growth: 6% Ten-year CAGR
- Mix: Services (45%), Manufacturing (32.5%) & Agriculture (22.5%)



Courtesy of PlaneMad. Used with permission.



Map: Wikipedia User: Mkeranat



Technological Context

- Mobile DSPs have their own cell phones
 - Next week we will receive more info on the models
 - DPS have their own mobile plans
- Conflicting information regarding signal strength
 - CTO: Many villages have poor cell reception
 - CEO: Partnering with TATA Mobile to use their data plan
- 20/200 DSPs have computers
- J2ME Applications
 - CEO believes it will not be hard to install applications
- SMS + cue sheet was piloted but proved unpopular
 - CEO: Maybe not pushed hard enough vs. voice
 - Need more info



Possible Solutions

- J2ME apps that includes catalog
- SMS + Catalog
- Internet Portal (WAP)
- Interactive voice response (IVR)
- Voice operator and Call Center



J2ME Application

Pros:

- Rich user experience
 - Graphics: pictures of products
- Local error handling
- Catalog on phone?

Cons:

- Requires more advanced phone
- Development and portability issues
- Installing application requires Internet connection or computer + cable (or Bluetooth)
- Updating application requires reinstall
- Acclimation time for new modality
- Cost?
 - May require multiple SMS messages



SMS + Paper Catalog

Pros:

- Lowest common denominator technology
- Existing Modality
 - Tried but failed, why?

Cons:

- Cost:
- Catalogue required:
- Catalog has SMS format, instructions, and products
- Non-local error handling
- Multiple SMS messages
- Not guaranteed delivery
- Must acknowledge everything



Internet Portal (WAP)

Pros:

- Centralized solution
 - Easy to update application and catalog
- Probably the future of mobile commerce
- Rich user experience
- Personalization of content

Cons:

- Requires data coverage and data plan
- Expensive for users



Interactive Voice Response

Pros:

- Targets illiterate
- Works with any phone
- Does not require human operators

Cons:

- Development difficult
 - Language issues
 - IVR system difficult to program and maintain
- Requires voice signal strength
- New modality?
 - Requires adaptation
 - History of annoying developed-world users



Voice Operators and Call Center

Pros:

- Targets illiterate
- Works with any phone
- DSPs are accustomed to speaking with UV
- Easy to convey additional information
- Allows for personalized interaction
- Might attract more users
- Error detection and correction done with operator

Cons:

- Have to pay for operators
- Might still require a paper catalog
- Requires voice signal strength
- Cost?
- Possibility of busy signal



A Recent (Unpublished) Study*

- Goal: Compare data entry error rates and costs for
 - J2ME Forms Application
 - SMS + cue sheet
 - Voice operator
- Location: Gujarat, India
- Participants: 13 healthworkers
 - 7 owned cell phones
 - All but 2 had used cell phones in the past
 - Education level ranged from 10 years to BA
- Participants were trained on each modality

* Thies et al., *Evaluating the Accuracy of Data Collection on Mobile Phones: A Study of Forms, SMS, and Voice.*



Results of Study: Error Rate

- Task required 11 fields to be completed
- Error rates (per field) across everyone:
 - J2ME: 4.2%
 - SMS + cue sheet: 4.5%
 - Voice Operator: 0.45%
- Error rates (per field) across phone owners:
 - J2ME: 2.6%
 - SMS + cue sheet: 3.3%
 - Voice Operator: 0%
- Average interaction time:
 - J2ME: 1:39
 - SMS + cue sheet: 1:37
 - Voice: 2:20



Technological Context

- Cell phone subscribers:
 - Orissa: 6.1 Million (1.1 Million CDMA)
 - Rajasthan: 16.4 Million (4.2 Million CDMA)
- Olufemi Omojola, CTO UV:
 - Many villages don't have a strong enough signal to support voice (Olufemi Omojola, CTO UV)
 - Not many villagers have cell phones
 - Most village stores did not have computers but did have cells
 - J2ME apps do exist and infrastructure exists to run apps on phone
 - Stores with computer and cables for phone



Technological Context

- Cell phone penetration among villagers in target villages?
- Are shared phones popular?
 - If so, who is providing the phones?
- Cell phone reception in target villages?
- What is the popularity of each of these modalities?
 - SMS
 - J2ME applications
 - Voice
 - Internet / WAP



Cost of Technologies

- How much is a cheap phone?
 - J2ME capable?
- What is the cost of the following services?
 - SMS
 - Voice
 - Internet



Cost Considerations

- In Gujarat costs are the following:
 - 3 RS per 3 minute phone call
 - 1.5 RS per SMS
- Voice operator solution has seemingly largest cost
 - Operators
 - Cost for call
- But could the Operator model attract the most users
 - Illiterate users
 - Existing and comforting modality to speak with a person
 - Users with basic phones (don't support J2ME)
 - SMS could require many messages (J2ME and SMS)
 - Acknowledgement messages
 - Order multiple products
 - Error correction



- Need Assessment Questions
- General Demographics
 - Age
 - Male/Female?
 - Education Level
 - Type of work
 - Family size
- Buying Pattern
 - Daily/weekly Needs – small items (food items, music, movies etc.)
 - Monthly Needs – bulk/large/infrequent items (fertilizer, clothes, etc.)
 - Money spent on UV related services (daily, weekly, monthly)
- Financial Capacity
 - Daily/Monthly income
- Technical Capabilities
 - Own a phone?
 - If so, how much did you pay for it?
 - Do you plan to buy a new phone soon?
If so, why?
More features?
 - Type of Phone
 - GSM or CDMA? (Who is your carrier?)
 - Does the phone support any of the following:
Java applications
Internet access
 - Are you able to send and receive SMSs from your dwelling?
 - Are you able to make a voice call from your dwelling?
 - Do you share your phone with others?
 - If so, who?
 - Do you charge them to use your phone?
 - Have you ever used an automated SMS service?
 - If so, did you find it easy to use?
 - Have you ever used a java phone application?
 - If so, how was it installed?
Internet connection
Store with cable
 - Have you ever used an interactive phone menu system?
 - If so, did you find it easy to use and were you satisfied?
 - Does your phone have Internet capabilities?
 - If so, have you used them?
 - Do you have a data plan?
 - Are you able to surf pages from your dwelling?

•Response to legacy system

Do you like to interact with Bandhus? (if not why? If yes why?)

Do you like the catalogs?

What specific items do you order (daily, weekly, monthly)?

How satisfied are you with existing service (scale of unhappy to very satisfied)?

Any problems faced – explain below?

Money transaction errors

Delivery delays

Erroneous deliveries

Other..

What changes would you like to see?



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