Woodlawn Associates
Management Consulting

Analytical Strategy:
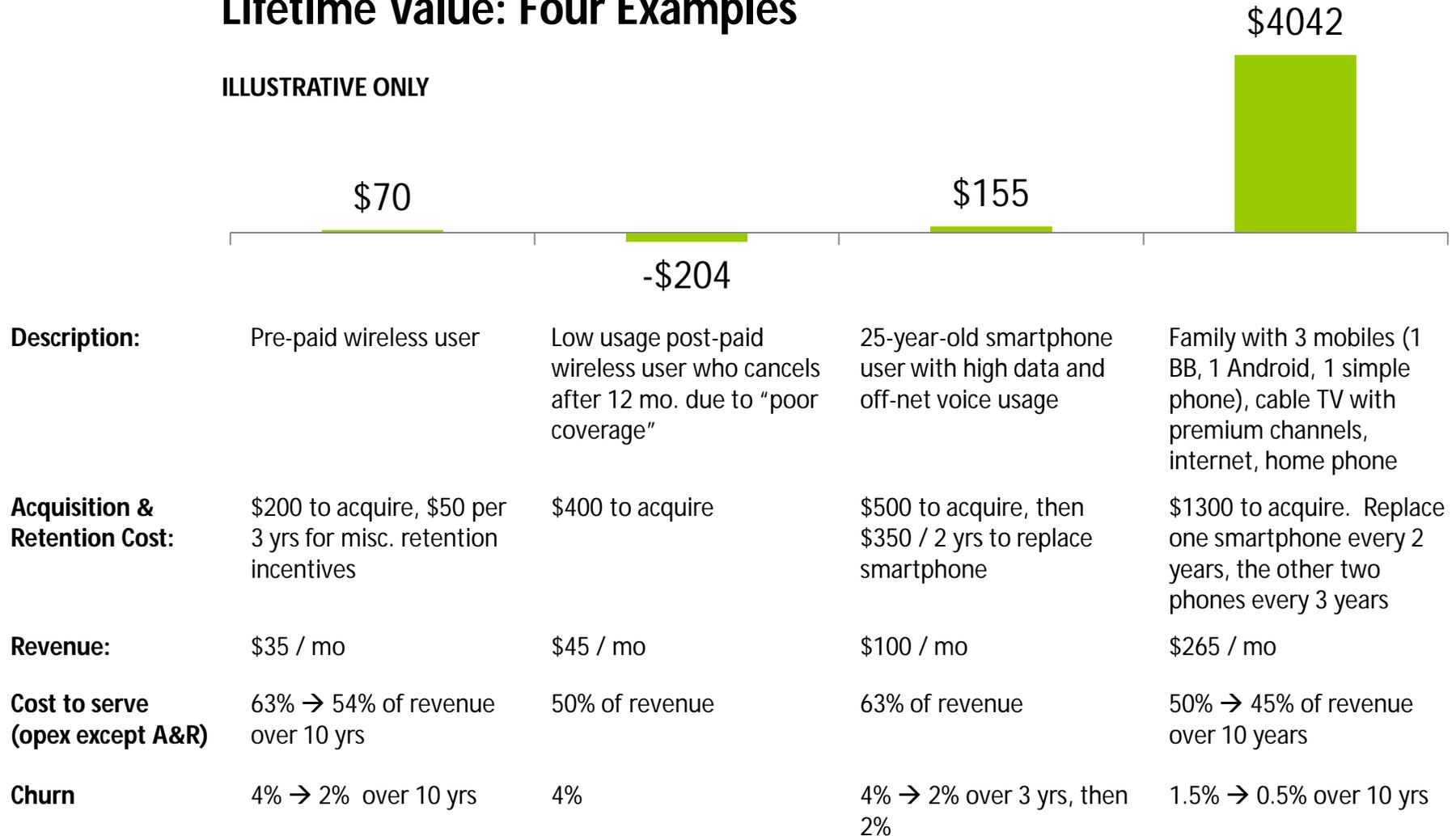# Optimizing the Value of Your Customer Base

July 2010

Executive summary

- **Wireless and wireline telecom/cable operators face increasingly competitive markets, so growth will be more challenging**
  - Full penetration (OECD), MNP (India), new competitors (everywhere)

- **Key to success is maximizing lifetime value of customer base**
  - Some customers are worth many times more than others; may justify significant investments to acquire and retain
  - Example: A single quad-play family may be worth >50x a single prepaid wireless customer

- **To do this:**
  - Identify segments with high customer lifetime value using innate, purchase history, and customer experience predictors
  - Design product and offers to appeal to these segments
  - Model and predict churn by segment and customer using similar predictors
  - Do same for elasticity using controlled market tests
  - Retain and up-sell with investments targeted at high-value, high-elasticity customers

- **Companies in other industries have been very successful with similar strategic analytics**
  - Credit cards (MBNA, AmEx), insurance (USAA, Progressive), consumer tech (Netflix, Amazon), airlines, hotels, autos, etc.

- **Using similar models, telecom carriers could improve operating income by 5-10%**

Some customers worth many times more than others, justify significant investments to acquire & retain

Lifetime Value: Four Examples

ILLUSTRATIVE ONLY

$70   -$204 $155 $4042

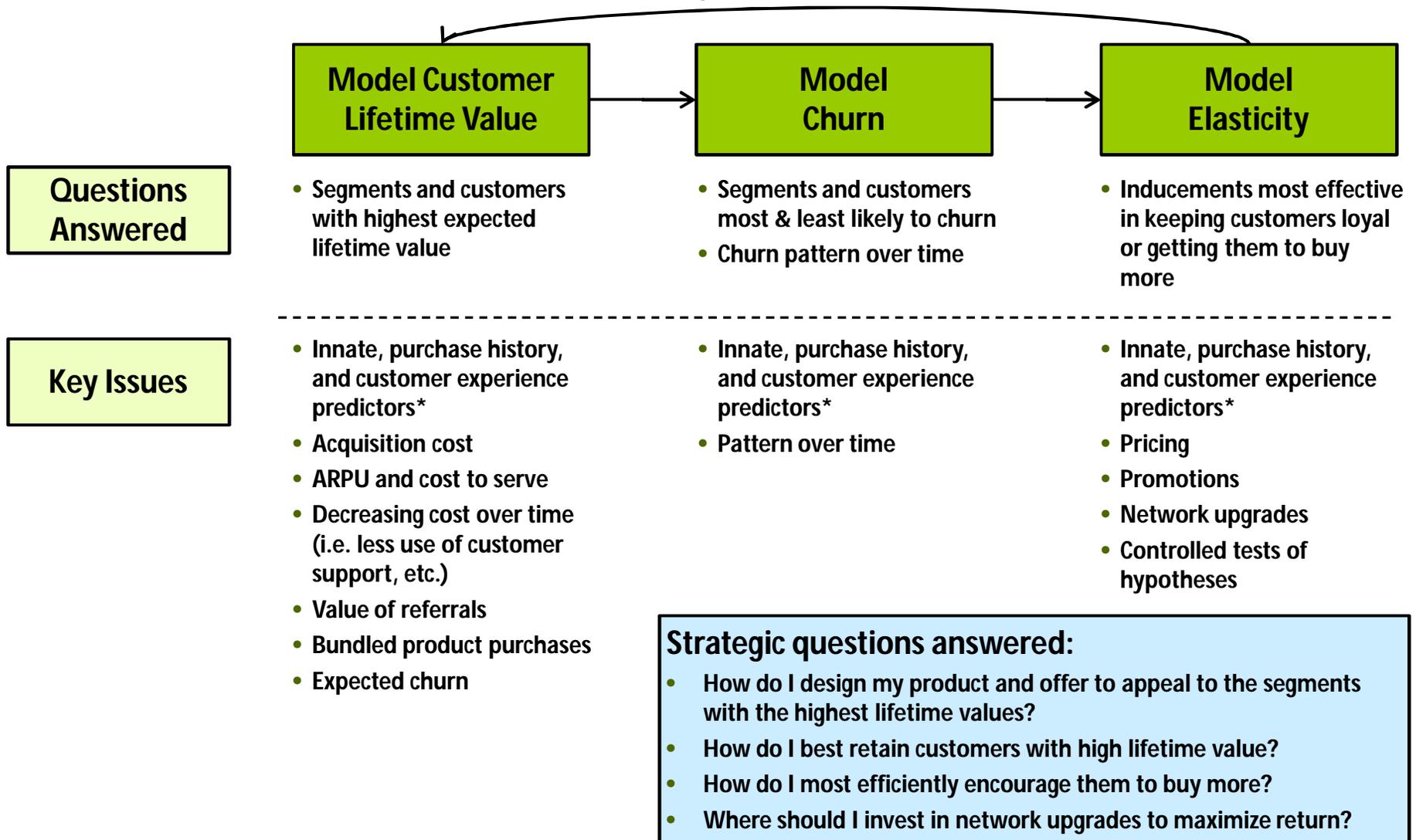|				
Description:	Pre-paid wireless user	Low usage post-paid wireless user who cancels after 12 mo. due to "poor coverage"	25-year-old smartphone user with high data and off-net voice usage	Family with 3 mobiles (1 BB, 1 Android, 1 simple phone), cable TV with premium channels, internet, home phone
Acquisition & Retention Cost:	$200 to acquire, $50 per 3 yrs for misc. retention incentives	$400 to acquire	$500 to acquire, then $350 / 2 yrs to replace smartphone	$1300 to acquire. Replace one smartphone every 2 years, the other two phones every 3 years
Revenue:	$35 / mo	$45 / mo	$100 / mo	$265 / mo
Cost to serve (opex except A&R)	63% → 54% of revenue over 10 yrs	50% of revenue	63% of revenue	50% → 45% of revenue over 10 years
Churn	4% → 2% over 10 yrs	4%	4% → 2% over 3 yrs, then 2%	1.5% → 0.5% over 10 yrs

Source: Woodlawn Associates analysis
Notes: See details of calculation in Appendix. Does not include value of referrals or additional products that may be sold to these customers over time

Optimizing value of customer base requires models of customer lifetime value, churn, and elasticity

Actions to Improve Overall Lifetime Value of Customer Base

Model Customer Lifetime Value	Model Churn	Model Elasticity

Questions Answered

• Segments and customers with highest expected lifetime value	• Segments and customers most & least likely to churn • Churn pattern over time	• Inducements most effective in keeping customers loyal or getting them to buy more

Key Issues

• Innate, purchase history, and customer experience predictors* • Acquisition cost • ARPU and cost to serve • Decreasing cost over time (i.e. less use of customer support, etc.) • Value of referrals • Bundled product purchases • Expected churn	• Innate, purchase history, and customer experience predictors* • Pattern over time	• Innate, purchase history, and customer experience predictors* • Pricing • Promotions • Network upgrades • Controlled tests of hypotheses

Strategic questions answered:

- How do I design my product and offer to appeal to the segments with the highest lifetime values?
- How do I best retain customers with high lifetime value?
- How do I most efficiently encourage them to buy more?
- Where should I invest in network upgrades to maximize return?

Notes: * See examples on next page

Three main data sets can be used to predict lifetime value, churn, and elasticity

Innate Predictors

- Age
- Profession
- Age of children
- % of friends on same network
- Employer, spouse's employer
- ZIP code
- Housing turnover in ZIP code
- Housing type (apartment, condominium, single-family detached, etc.)
- Credit score
- Number of competitors
- Relevant competitors (and quality of their offers)
- Competitor promotions
- Cost of startup with new operator

Purchase History Predictors

- Number of products purchased (single-, double-, triple-, or quad-play)
- Wireless device or STB model
- Number of telephone lines
- Corporate contract (Y/N)
- Pre-paid vs. post-paid
- Length of time remaining on contract(s)
- % of minutes/MB off-network
- # of months as customer
- Early termination fee
- # of VOD purchases / month
- Content viewed
- Exclusive content viewed
- MB of data used / month
- Payment history
- Sales channel, retail store, salesperson

Customer Experience Predictors

- % of calls dropped
- % of data access via sub-optimal network
- Average data speed
- Number and length of telephony, broadband, or video outages
- Number or type of calls to customer support
- Typical or predicted signal strength
- # of towers "hit"

Indicative only --
Not a complete list

Other industries have had great success using similar techniques

MBNA* (Credit Cards)

- **Realized people in some occupations inherently more loyal than others**
  - Teachers, nurses, engineers

- **These groups also likely to carry high balances but be good credit risks**

- **Designed offers to support/reach these customers through affinity groups**

Results:

- **Balances 67% above national average**

- **Cards used 12% more than average**

- **Typical transaction 4% larger than national norm**

- **Charge-offs ~3% vs. 5-6% for industry**

USAA (Insurance)

- **Historically, military officers not attractive market**
  - Move often; change their policies before acquisition cost recovered
  - Not wealthy

- **Designed system around this group's needs**
  - Mail, telephone, internet direct sales instead of local agents
  - National and even int'l policies

- **Realized this group inherently loyal, honest, reliable**

Results:

- **Less than 2% annual defections**

Netflix (Consumer Tech)

- **Used analytical models to recommend movies for each customer**

- **Also, determined infrequent users most profitable**

- **To increase chance of retaining most profitable customers, prioritized shipping to infrequent users**

- **"Test and Learn" approach**

Results:

- **Revenue growth from $0 in 1998 to >$1B in 2006**

Source: *Competing on Analytics* (Davenport and Harris), *The Loyalty Effect* (Reichheld)
Notes: * now Bank of America

Example Applications – Wireless

Situation	Possible Actions (Not Comprehensive)
Retain high-value customers	• Define high-value customer segment (i.e. high ARPU, low off-net and data usage, multiple lines, triple- or quad play, good payment history, low expected churn) • Place high-value customers into groups by % dropped calls (or average data speed, or ...) • Test elasticity of loyalty to various incentives by group • Hypothesis: Should focus retention investment on customers w/ moderate % dropped (high % dropped will leave anyways, low % dropped already getting very good value) • Focus network upgrades where they will improve experience for largest number of high-value customers with poor historical experience

Up-sell high-potential customers	• Identify current customers with high-value markers but low current purchases. I.e.,:
	  - Family with two children 10-21 yrs old but only one wireless phone line
	  - Wireless-only customer who is triple-play customer from another carrier
	  - Individual with basic phone plan in ZIP code with high % smartphones
	  - Individual with basic plan with high % of numbers called that are smartphones
	• Test elasticity of demand to various up-sell incentives
	• Expand use of incentives that are shown to be most effective in generating up-sell

Optimize base of value-oriented customers	• Identify markers that distinguish profitable low-end customers from unprofitable ones, such as: % of usage off-net, % of payment delinquencies, # of accesses to customer care • Direct retention activities at more valuable group
Select high-value customer base (new operator)	• Look for markers that distinguish high- and low-value customers • Where appropriate, ask for this information during sale / application process • Design product offer and pricing structure to appeal to high-value groups

Example Applications – Cable / Satellite / IPTV

Situation	Possible Actions (Not Comprehensive)

Up-sell to current high-potential customers	• Identify current customers with high potential markers but low current purchases. I.e.,:
	  - Family with two children but only basic TV (no HD, VOD, phone or data service)
	  - University grad living in high-income area with only HSD service
	  - Phone-only or double-play customer with high % of numbers called that are triple-play
	   (can also do with social networking sites like Facebook)
	• Test elasticity of demand to various up-sell incentives
	• Expand use of incentives that show highest ROI

Reduce churn – innate drivers	• Determine innate factors that are best predictors of churn: ZIP code, housing type, etc. • Design product offer and pricing to be particularly attractive to groups with factors indicating low innate tendency to churn
Reduce churn – purchase history drivers	• Determine which product purchase and usage patterns yield low churn • Test elasticity of demand to various incentives to trial or take services that drive subsequent churn down • Expand use of incentives that are shown to be most effective in generating up-sell
Reduce churn – customer experience drivers	• Look for customer experiences that statistically result in higher subsequent churn: network outages, high number of customer support calls, high use of OTT video • Test elasticity of loyalty to various incentives • Expand use of incentives that are shown to be most effective in reducing subsequent churn

Telecom carriers could improve operating earnings 5-10%

Potential EBITDA Benefit, Large Wireless Business*

(Millions of $ annually)

Churn ↓ / ARPU ↑	0	0.1%	0.2%
$0	0	362	723
$0.50	216	578	939
$1.00	432	794	1155

Potential EBITDA Benefit, Large Wireline Business**

(Millions of $ annually)

Churn ↓ / ARPU ↑	0	0.1%	0.2%
$0	0	135	269
$0.50	142	278	412
$1.00	285	421	555

- **For some wireless and wireline businesses, EBITDA could improve by up to $1B annually (~5-10% increase)**
  - Based on economics at AT&T Wireless, Verizon Wireless, and Comcast
  - Other operators would have similar benefit in percentage terms

- **Estimates do not include potential benefits from:**
  - Reduced use of call centers (used more heavily by new customers)
  - Referrals
  - Increased purchase of bundles

Source: Woodlawn Associates analysis
Notes: * Assumes wireless business of 90M subs, $50 ARPU, 1.3% churn, $300 CPGA, and 40% EBITDA margins (W.A. approximation of AT&T Wireless and Verizon Wireless)
** Assumes triple-play wireline business with 23M video subs, $123 ARPU, 1.5% video churn, $400 CPGA, and 40% EBITDA margins (W.A. est. of Comcast)

Why Woodlawn Associates?

- **Thoroughly understand telecom economics and analytical techniques**
  - Have worked in and advised telecom businesses as executives, investors, bankers, and consultants
  - Senior strategy and analytical expertise on tap from other industries that have tackled similar problems

- **Fully integrated view of the business, unencumbered by functional silos**

For more information:

www.woodlawnassociates.com
+1 (312) 262-1610
josh.lutton@woodlawnassociates.com

Appendix

CLTV Equation*

$$CLTV = \sum_{t=0}^{T}\left[\left(12R_t - 12OpEx_t - ARCost_t\right)\left(\frac{\prod_{t=0}^{T}(1-\alpha_{t-1})+\prod_{t=0}^{T}(1-\alpha_t)}{2}\right)(1-WACC)^t\right]$$

$$+ \frac{\left(\left(12R_{T+1} - 12OpEx_{T+1} - ARCost_{T+1}\right)\left(\frac{\prod_{t=0}^{T}(1-\alpha_{t-1})+\prod_{t=0}^{T}(1-\alpha_t)}{2}\right)(1-WACC)^{T+1}\right)}{2(WACC - i)}$$

Where:

T = number of years of forecast period

R = expected net monthly revenue

$OpEx$ = monthly cost to provide service (excluding acquisition and retention costs)

$ARCost$ = annual cost of acquisition and retention

Π is operator similar to Σ but for multiplication

α = annual churn

$WACC$ = weighted average cost of capital

i = inflation (or perpetuity growth)

Notes:

* Does not account for value of referrals

Terminal value adjusted downward by 50% to reflect fact there will be continued churn even after last year of model period