INFO5992 - Introduction to IT Innovation

Week 2 Cheatsheet: Innovation Frameworks I

Dynamics of IT Innovation & Dominant Design

1. DIFFUSION OF INNOVATION (Everett Rogers)

Definition: Diffusion is the process in which an innovation is communicated through certain channels over time among the members of a social system.

Five Key Elements:

- **Innovation** - Product, process, or business model innovation
- **Communication Channels** - Word-of-mouth, TV, Internet, Social Media
- **Time** - Rate of adoption
- **Members** - Different adoption timing
- **Social System** - External (media, govt) & internal (opinion leaders) influencers

Innovation-Development Process:

1. Recognizing Problem/Need → 2. Research → 3. Development → 4. Commercialization → 5. Diffusion/Adoption → 6. Consequences

2. TECHNOLOGY ADOPTION LIFECYCLE MODEL

Category	% Pop	Characteristics
Innovators	2.5%	Take risks, access to new tech, venturesome
Early Adopters	13.5%	Opinion leaders, respect from peers
Early Majority	34%	Deliberate, contact with early adopters
Late Majority	34%	Wait before adopting, skeptical
Laggards	16%	Aversion to change, traditional

"The Chasm" (Geoffrey Moore): Critical gap between Early Adopters and Early Majority. Many innovations fail here. If crossed → greater market dominance opportunity.

3. GARTNER HYPE CYCLE

1. **Technology Trigger** - Breakthrough, proof of concept, media interest
2. **Peak of Inflated Expectations** - Overenthusiasm, unrealistic projections
3. **Trough of Disillusionment** - Interest wanes, failures, shake-out begins
4. **Slope of Enlightenment** - Benefits crystallize, 2nd/3rd gen products
5. **Plateau of Productivity** - Mainstream adoption, broad applicability

4. PRODUCT CATEGORY

Definition: All products offering the same functionality OR a socially constructed partition of similar products.

EV Types: BEV (fully electric), PHEV (plug-in hybrid), REEV (range-extended), FCEV (fuel cell)

5. DESIGN DOMINANCE & TECHNOLOGY CYCLE

The Technology Cycle:

Era of Ferment → Dominant Design → Era of Incremental Change

- **Era of Ferment:** Design competition, substitution, high uncertainty
- **Dominant Design:** Single design begins to dominate, market settles on standard
- **Era of Incremental Change:** Elaboration, refinement, optimization

6. FACTORS LEADING TO DOMINANT DESIGN

1. Learning Effects: Greater knowledge → Greater use → Faster improvement

2. Network Effects:

Type	Definition	Example
Direct	Value ↑ with more users	Telephone
Indirect	Complementary goods ↑	PC Architecture
Two-sided	Two user groups benefit	eBay
Local	Network benefits in groups	IM

3. Government Regulation: Mandates common design (e.g., Digital TV)

7. MARKET ENTRY STRATEGIES

Strategy	Failure	Description
First Mover	47%	Enter quickly, hope to dominate. High risk.
Second Mover	8%	"Me-too" product. Low cost/price.
Fast Second ✓	8%	Enter as design EMERGES. Optimal!

Fast Second Examples: Microsoft (IE, Xbox), Amazon, Canon, TikTok, Lyft

8. SMARTPHONE CASE STUDY

Early PDAs (1990s): Failed - poor handwriting, battery life, connectivity, too many OSes. $1B spent.

Current: Android (~70-85%) & iOS (~15-30%). Microsoft pivoted to cloud services.

9. EXAM QUESTION PATTERNS

Q: "Is there a dominant design?" → Product category, tech cycle, competing designs, standardization

Q: "What adoption phase?" → Lifecycle position, crossed chasm?, adopter categories

Q: "What entry strategy?" → Tech cycle position, resources, compare strategies

Q: "Dominant design factors?" → Learning effects, network effects, govt regulation

10. QUICK REFERENCE NUMBERS

Metric	Value
Innovators	2.5%
Early Adopters	13.5%
Early Majority	34%
Late Majority	34%
Laggards	16%
First Mover Failure	47%
Fast Second Failure	8%

11. KEY TAKEAWAYS

✓ Diffusion follows predictable patterns

✓ The Chasm is critical - most fail here

✓ Hype Cycle manages expectations

✓ Dominant Design emerges via learning/network effects

✓ Fast Second often optimal (wait for emergence)

✓ Network Effects = powerful dominance forces

✓ Timing is everything

12. ANALYSIS FRAMEWORK

Step 1: Adoption - Use Lifecycle, check Chasm, identify adopters

Step 2: Hype Cycle - Determine phase, adjust expectations

Step 3: Tech Cycle - Ferment? Dominant? Incremental?

Step 4: Factors - Learning effects? Network effects? Regulation?

Step 5: Entry Strategy - First/Fast Second/Second mover?

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