How to win the telecom carriers’ non-zero-sum game in this global economic crisis

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Abstract

Attracted by high ROI, several industries (e.g., Internet, Telecom, Cable/Satellite, and Media) are merging each other; therefore, not only traditional telecom carriers but also new comers (e.g., MSO and MVNO) are able to offer subscribers much abundant services in mobile-broadband markets. This trend obviously conducts tough market-competitions and reorganizes the telecom industrial chain. As a result, ‘How can be survived’ is a serious question for all telecom carriers, especially in the current global economic recession. According to analysis from the aspect of GAME theory, it is clear that this type of competition is a non-zero-sum game due to uncertain number of players, services and subscribers. This article firstly analyzes the industrial trends and reviews literature resources, then proposes an approach, by which carriers can adopt corresponding strategies and tactics to deal with various market challenges. Finally, case studies are demonstrated as proof of concept.
Introduction

This section generally reviews the industrial trends and presents the addressed issues. Also it points out the solution spaces from academic aspects.

Analysis of Challenges

According to statistics study done by BuddeComm, 2008 [1], there are totally 6.7 billion telecommunication consumers around the world, including over 3.5 billion mobile subscribers, and more than 2.3 trillion text messages were sent last year. Obviously, the prospect of mobile communication is very attractive to various players (e.g., traditional double/triple players, MSOs, and MVNOs), so more and more plays step in the mobile markets. This trend leads a new wave of industrial transformation and re-organization.

In the meantime, the economic crisis hits all industries globally, including telecommunication. All roles in this industry, such as venders, carriers, subscribers, and investigators, are all facing different and critical challenges. For equipment venders, the challenges are: a) market shrink; b) excess produce-ability; c) less purchases; For telecomm carriers, the challenges are: a) pressures on operators to improve customer satisfactions; b) increased TCO; c) launch new services faster (e.g., mobile broadband, digital music, and mobile TV) more efficiently; For subscribers, the challenges are: a) less consumption due to tight budget; b) subscribe appropriate services corresponding

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Figure 1: Various Demands in terms of Different Economic Development Level
their nature behaviors;
As we all know, different economic foundations decide the market demand; thus carriers in various economic development areas are facing different challenges to survive. As shown in Figure 1, we simply categorize the markets into three types: Developed, Developing, and Start-up Market based on economic conditions.

Driving Force and Prediction
No matter how the telecomm industry changes, the market are organized based on the relationships among subscribers, carriers, and vendors. As shown in Figure 2, these three parties are impacted by each other. Basically, there are two directions to roll the gears shown in the figure:

- Subscriber’s demand is the original driving force, and it pushes operators to have a vision and think about the market demands. All of these demands will be transformed as a set of technical or business requests towards vendors finally.
- New technical improvement even innovation occurring in vendors’ side, and this impacts operators’ visions directly. As more hi-quality services are offered by operators, subscribers’ demands (especially reflecting
the nature behavior) can be matched smoothly and naturally.
As a kind of original driving force, subscribers’ demands are worth an analysis, especially in this economic downturn stage. A prediction about trends of telecom markets has been done by Strand, 2009 [2]. Some information related to this topic is extracted and digested as below,

- **Mobile market - Focus on mobile broadband**
  - Launching a number of premium products
  - Bundling services with a mobile broadband product
  - Launching premium billing on mobile broadband

- **Consumer behavior – discontinue some legacy services and change behavior**
  - Financial recession -> price sensitive
  - Migrating from fixed lines to mobile
  - Discontinuing fixed line subscription (Germany, & Spain)
  - Choosing perceive mobile solution as natural technology in daily lives (Some singles and youth)

- **Operator Business – focus on decreasing OPEX & minimizing CAPEX**
  - Primarily purchasing extra capacity and expansion of their mobile broadband networks
  - Investments in improving coverage will be limited to a minimum
  - MVNO market continues to grow
  - Outsourcing grows driven by the desire for rightsizing

- **Mobile Services Market – market emerging**
  - Music download

- **IP billing**
- **Driven by operators’ business model & CP**

### Addressed Issues and Solution Spaces

So far, we have analyzed the industrial trends and recognized the specific challenges for major roles in telecomm market. The addressed issue of this article is to figure out appropriate IT strategies and tactics for various scenarios in terms of solid theoretic foundations. So we will do the literature review in the following domains:

- **Strategy Alignment Model** [3]
- **Product-Market Growth Matrix** [4]
- **Game Theory** [5]

Figure 3 depicts the scenario and issues that this article is addressing. More research will be elaborated in the following section.

![Figure 3: Addressed Issues and Solution Space](image)

### Literature Review

This section introduces the applied theoretic foundations; also the relationships between foundations and the addressed issues will be explained. These models
are the foundation to conduct our approach, which will be described in the following section.

**Strategy Alignment Model**

This model (as shown in Figure 4) is raised by Venkatraman, Henderson and Oldach, 1993. Essentially, it is a framework for a) aligning IT with business strategy; b) conceptualizing and directing the strategic role and management of IT, and c) leveraging IT on a continuous basis to achieve sustainable competitive advantage.

![Strategy Alignment Model, (John Henderson, 1994)](image)

This model has four domains: two internal and two external domains. External domains also referred to as Strategy Domains (Business Strategy Domain and IT Strategy Domain), and Internal domains also known as Infrastructure Domains (Business Infrastructure and IT Infrastructure Domains).

The detailed responsibility of each domain can be concluded as below:

- **Infrastructure Domain (internal)**
  - **Business**
    - Structure: Organizational structure
    - Processes: What are key business processes?
    - Skills: What HR needed to accomplish specific competencies?
  - **IT**
    - Infrastructure: Hardware, Software, Database, Networks
    - Processes: Development, Maintenance, Operations
    - Skills: What skills required to maintain architecture and execute the processes?

- **Strategy Domain**
  - **Business**
    - Scope: What business are you in?
    - Distinctive Competencies: What do you do well to distinguish yourself from your competitors?
    - Governance: What external business relationships do you depend on?
  - **IT**
    - Scope: What information technologies support or create strategic business opportunities?
    - IT Competencies: What characteristics of IT create business advantage?
    - IT Governance: What external relationships does IT depend on (outsourcing, vendors, etc.)

Normally, we utilizes this model to implement: strategic fit, functional integration and cross-domain relationship.
Also it can help us to identify strongest and weakest domain, figure out the needs to develop communication with and increase understanding of weaker domains, and assist to understand relationship between domains when change in strategy occurs.

**Product-Market Growth Matrix**
This matrix is raised by Ansoff, 1957, and it allows marketers to consider ways to grow the business via existing and/or new products, in existing and/or new markets – there are four possible product/market combinations. This matrix helps companies decide what course of action should be taken given current performance. The Figure 5 shows the basic strategies adopted according to different market types.

![Product-Market Matrix](image)

**Figure 5: Product-Market Matrix**

As presented in Figure 5, four strategies are explained as below:

- Market Penetration
  - Market Penetration occurs when a company enters/penetrates a market with current products
  - The best way to achieve this is by gaining competitors’ customers (part of their market share)
  - Market penetration is the least risky way for a company to grow.

- Product Development
  - A firm with a market for its current products might embark on a strategy of developing other products catering to the same market
  - New product development can be a crucial business development strategy for firms to stay competitive

- Market Development
  - An established product in the marketplace can be tweaked or targeted to a different customer segment, as a strategy to earn more revenue for the firm

- Diversification
  - Virgin Cola, Virgin Megastores, Virgin Airlines, Virgin Telecommunications are examples of new products created by the 'Virgin Group of UK', to leverage the Virgin brand.
  - This helps company to enter a new markets where it had no presence before

**Game Theory**
Traditionally, Game can be either zero-sum game or non-zero sum game. A zero-sum game is a special
case of constant sum games, in which choices by players can neither increase nor decrease the available resources. In zero-sum games the total benefit to all players in the game, for every combination of strategies, always adds to zero (more informally, a player benefits only at the equal expense of others). Also in zero-sum games, one wins exactly the amount one’s opponents lose. e.g., most classical board games including Go and Chess.

Non-zero sum game describes some outcomes have net results greater or less than zero. Informally, in non-zero-sum games, a gain by one player does not necessarily correspond with a loss by another. Besides the above two type of games, there is a type game called minus-sum game, in which neither side wins, all are losers.

According to the previous analysis, the competition among telecom carriers is a type of non-zero sum game, simply because of:

- Increased subscribers
- Uncertain players
- Changed services
- Both cooperative & non-cooperative
- Asymmetric strategy
- Simultaneous behaviors
- Imperfect information
- Continuous competition

Proposal

This section introduces the approach with the complied principle, roadmap, and methodology. The benefit of this approach is elaborated as well.

Principle, Roadmap and Methodology

Besides the theoretic foundations reviewed in the previous section, the proposed approach also follows up some principles, roadmap and methodology as below:

- **Principle**
  - seamlessly integrated IT & Telecom experiences
  - Upgrade the role from ‘vendor’ to ‘partner’
  - Enable products to support agile operation
  - Ensure the solution/strategies to be painlessly embedded into carrier’s current IT environment
  - Quickly address the market trends

- **Roadmap**: we adopt evolution & iteration, not acquisition & Integration, since:
  - Remain consistency: keeping one data-model, whatever features or modules are introduced
  - Ensure compatibility: higher version always inherits lower version’s functionality
  - Improved flexibility: easy to extend solution to a larger scope

- **Methodology**: adopt best of suite rather than best of bread, since:
  - Big software vendors
  - System Integrator (SI) is optional
  - Direct relation between user (Telco) and suppliers (ISV)
  - Pre-integration
  - Proven end-2-end solution
**Approach**

The Figure 6 demonstrates our approach as below. It clearly depicts that various strategies can be conducted based on understanding of diversified markets and previously introduced theoretic models. Even through the tactics can be generated from these strategies, then be adopted and applied to IT system to enhance the customer experience. Here we just simply categorized the markets according to basic economic condition, but this approach can be expended then used in even more complicated environment, which means the market segmentation rules can be more comprehensive.

**Benefit**

The approach can simplify works from multiple aspects, described as below:
- for Carrier’s
  - Service subscription
  - Payment & Bill
  - Account Management
  - Self-care
- for Customer’s
  - Solution Architecture
  - Project Management
- for SI’s
  - Solution Architecture
  - Project Management

**Figure 6: approach for diversified markets**
Case Study

As the proof of concept, this approach has been adopted in our previous projects, e.g., Vittel in Vietnam, and Starhub in Singapore. Actually, first case reflects the requests in a fast-growing market, and the second case represents the requests in a developed market.

- Case Study 1: Vittel
  - The addressed Business Requests In Vittel
    - Highly competitive
    - Price Sensitive
    - Low ARPU
    - Easy recharge
  - Applied Strategy
    - Various tariff Plans
    - Market Development
    - Product Development
  - Conducted Tariff Plans: E
    - Different reward for new connection of different subscriber
    - Recharging conveniently by SMS with AnyPay
    - Monthly rental is charged at the actual days of usage after the new connection
    - Discount 30% fee of domestic call and 20% fee of international call for calls from 0:00 am to 05:00 am

- Case Study 2: Starhub
  - Addressed Business Request
    - Reduce high subscriber churn rate
    - Improve customer contribution
    - Absorb more customer
  - Applied Strategy
    - Enhance product, especially BI portion
    - Market Penetration
    - Market Diversification
  - Conducted function: BI
    - Churn analysis
    - High value analysis
    - Activity analysis
    - Market share analysis

Summary

In order to precisely figure out IT strategies and tactics, especially in BSS/OCS domain, we firstly reviewed the industrial trends and categorize market requests in terms of economic conditions, then analyze relevant theoretic foundations, finally propose our approach. This approach is built based on Strategy Alignment Model, Product-market Growth Matrix, and Game Theory. It has been proven flexible to support diverse markets, including Startup market, fast-developing market and developed market. Therefore, this approach can be utilized to enhance carrier's IT capability to win market competitions.
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