

Risk Profiles of Emerging and Established Value Chains in Dynamic Markets

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Abstract: That supply chain management and logistics are a determining factor for the long term success of a company was well documented by Forrester over a half century ago (Forester, 1958), with the importance of the statement only growing through the intervening years. Whether consciously factored into the operating mode or not, logistics and distribution channel management plays a critical role in the life, and death, of a firm. From the rudimentary beginnings of the start-up company to the hectic world of the growth company and onto the relatively secure existence in mature markets, the value chain consisting of logistics and distribution channel linkages follows the firm, until it solidifies into immutable form of the mature value chain and begins to exert an inexorable pressure on the survival of the entire chain, and conversely the chain imposes its will on the members. The emergence of mature industry value chains is often driven by the need to monopolistically control logistics and distribution channels which provides a competitive advantage but also introduces a serious exposure to pending shock loadings of the chain.

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1. Introduction

In the early stages of development, firms tend to be supple and pliable along with their coupled ecosystems that resist perturbations generated within the market, but by the time maturity is achieved real brittle structures affront the market forces and often break down under extreme loadings. Once in a mature value chain though, the suppliers feel a long term pressure to grow beyond their chain as they tend to be more of a volume business than the partners downstream in the chain. This struggle between chain discipline and lost business opportunities leads to many compensating strategies for the suppliers and sometimes to dissonance that can internally endanger the value chain. Risks arise both from external and internal threats to the chain. External shock loading such as earthquakes, tsunamis, secure data breaches, or disastrous interruptions can stress the system to a breaking point. There is an important and compelling logic to maintain sub-optimal inventories in anticipation of JIT becoming JIC [just in case]. It is an eternal struggle between optimal performance and a more viable but suboptimal one. This paper will examine the causes and consequences of value chain perturbations and shock loadings, due to emerging risks in the market and within the chain, during the market development.

2. Types of risks and their consequences

We will be dealing mostly with the relatively predictable occurrences of perturbations due to risks residing in the market along the lifecycle (Rowe et al, (1999); Moore, (1991)) and within value chains, and occasionally in the cloud, due to cybersecurity issues. Much of the supposed uncertainty associated with risks can be substantially understood by examining the lifecycle of a market and the natural developments that occur as the firm travels along this lifecycle. Risks assume different character and intensity depending whether the firm is in relatively turbulent and

complex context of early stages or the more placid and simple dynamics of mature markets (Koplyay and Mitchell, 2014a, b). We categorize risks in two major groupings;

- Uncertain and unpredictable, which by its nature cannot be countered through reasonable precautions [an act of nature such as an earthquake in Vienna]
- Predictable with a margin of error, but surprising in its potential impact [a hundred year flood in Vienna]

Although it is worth remarking that what was unpredictable yesterday may well be foreseen today; for example a large earthquake in California is now almost a certainty, but the date is unknown. It is reasonably predictable risks that we will be examining in this paper and mapping them along the market lifecycle along with the attendant prescriptions for mitigating the effects of an occurrence. Within the predictable category of risks it is worthwhile to isolate and describe three risk types that dominate the market landscape;

- **Internal risks;** the malfunction of internal systems, relationships, and market intelligence. Among these we find breakdown in logistics and distribution channels due to shutdown of connectivity of the transportation network, bankruptcy of a key supplier, distributor or a principal customer. An ongoing court case between Apple and its designated sapphire supplier for lenses, GT Advanced Technologies, highlights the dangers. The court documents filed by GT supposedly contain information that harms the reputation of Apple and discloses competitive practices. A supplier is only reliable while it is functioning properly, at the black hole stage of bankruptcy a third party decides on disclosure; the courts.
- **External risks;** these occur when the market delivers a jolt to the firms in the form of an unexpected perturbation that ranges in magnitude from a small oscillation of market conditions, such as the entry of a small competitor, to a shock loading of the system targeting the firm or the whole

market, the loss of critical suppliers and supplies [loss of potential access to rare earth elements from China for the high-tech industry]. A further example of the first is the defection or demise of a supplier, but only one among many. The second type is typified by a situation such as Apple introducing an innovative product that causes massive market share reductions for a competitor.

- **Cyber risks;** risks due to infiltration of malware into the business systems, such as internet based theft of credit cards and raiding of bank accounts. With the advent of the cloud this can only grow in frequency and magnitude as the huge and repeated cascades of data can mask malware intrusions, and with sleepers, cause the maximum damage by the time the problem is discovered. Big data can lead to big headaches, as Home Depot recently admitted to a further loss of customer data in the order of 50 million compromised cases, originating from a supplier's system linked closely with Home Depot internal operations; seamless ties can lead to major headaches.

Within these categories of internal, external and cyber risks we find elements of both physical and information aspects, and both elements matter. Asset based companies such as manufacturing are more exposed to physical risks by the nature of their business and consulting or banking firms, as a contrast, are lot more exposed to information risks. Three noteworthy observations;

- Risks can migrate from external to internal status and conversely
- When risks are internal they can cause bigger damage than when they are external
- The loss of one outsourced or external supplier may be mitigated but the loss the only supplier inside the value chain may bring the whole chain down

3. Why market lifecycle matters for understanding risk

The market lifecycle (Rowe et al, 1999) and significant market milestones (Moore, 1991) can be divided into three major phases, the initial start-up and growth phase, the leveling off and maturity phase, and the decline and collapse phase.

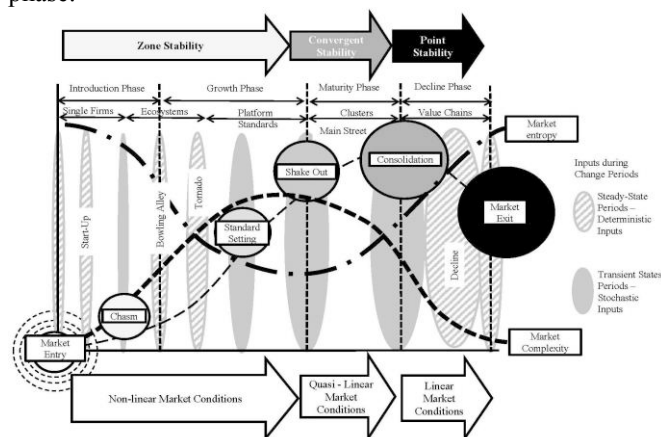


Exhibit 1 – Stability along the life-cycle

The first and last are generally a transient phase whereas the maturity is a steady state where market behavior is quite reliable. Exhibit 1 captures the dynamics of market phase

succession. Within these major phases, subsections are either steady state or transient, and their behavior is masked by the larger phenomenon of the three dominant phases (Koplyay and Mitchell, 2014b). Nevertheless they are worth a closer look for the special conditions they create that give rise to both risks and limitations they impose on the means to respond. The six transients of the market are potential points of no return;

- **Market entry** represents the opportunity to evolve from incubation to a start-up role in a nascent market. Failure to properly time entry may result in a permanent absence from the market. The early market is fault tolerant and accepts incomplete products, and can act as an early beta test.
- **Chasm** occurs as early firms make a transition from pure product innovation to satisfying the early majority client base which demands more reliability, quality, and better price, also a substantially complete product. The inability to adjust in real time may leave the firm in the chasm and force an eventual exit from the market.
- **Standard setting** unleashes a process of coalition forming around principal firms which introduce often competing standards platforms. The choice of platform partner may dictate which coalition emerges as the market leader, forcing the other groups into a follower role, as in Apple versus Samsung or Motorola. [Blackberry recently partnered with Samsung to provide secure communications for the Samsung android products.] The standard setting also has the critical role of building a barrier to disruptive technology suddenly invading the market, as beyond this market point, all competitors need to be compatible with a platform. Standard setting occurs in all industries; such as the beverage industry where container size and materials are standardized; and in aerospace where the capacity and range of airplanes are similar in each airplane class.
- **Shakeout** is the first mass burial ground for firms. The market is in extreme turmoil; too many competitors and not enough clients as demand starts to level off. And usually it's firms with adequate financial resources which survive not necessarily those with better technologies. As the market storm rages, firms have to weather the storm, but this takes spending of reserves. For the second time since start-up days, questions are asked about the firm's burn rate and financial staying power under turbulent market conditions. And since most young firms live day to day, many disappear in the shakeout.
- **Consolidation** represents the period when firms merge are acquired or seek long term partnerships, and this is done to respond to the prevailing strategic imperative of the market, cost leadership, which is imposed on the market by the fact that late stage client base seeks the best price at a given quality. To deliver the best price firms must have better economies of scale which in turn depends on better market share, hence the efforts of combining firms to achieve this market share advantage.
- **Market exit** happens after a market starts to decline but in spite of this delicate situation, a decent living can be made by firms that wait for exit of others and begin to service the legacy component of the market, namely the client base that has too much invested in existing technology or is reluctant to switch to promising but untested new ones. Lucent made

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