DYNAMIC CAPABILITIES AND INNOVATION: Capability Building and Strategic Management for Today’s Global Economy

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I. The need for a capabilities perspective
Already in 1921 Frank Knight hinted at the need for dynamic capabilities theory of the firm

- “With uncertainty present, doing things, the actual execution of activity becomes in a real sense a secondary part of life; the primary problem or function is deciding what to do and how to do it” (Knight, 1921:268)

- Interpretation: Making the right investments is critical while optimizing current activities for efficiency is less important.

- However, if investments are irreversible, there are potential problems
The capability to innovate and change is the very essence of capitalism, but it is deeply underplayed in modern economic theory

- As Nelson (1981) explains, the very essence of capitalism—in fact, the very advantage of a private enterprise economy over a planned one—is that, with private enterprise, firms innovate, compete, sometimes disrupt each other, and sometimes cooperate.

- Nelson is surely right; so theories of the firm that do not put innovation and change center stage are not in tune with the essence of our economy or the fundamental managerial challenges of our time.
Lord Keynes & Jeff Bezos (Amazon) see eye-to-eye?

- Keynes stressed that if human nature felt no temptation to take a chance and investment had to rely on cold calculation, there might not be much investment.

- Likewise, Jeff Bezos, the CEO/founder of Amazon, noted:
  
  “there are decisions that can be made by analysis … Unfortunately, there’s this whole other set of decisions that you can’t ultimately boil down to a math problem” (Deutschman, 2004, p. 57)
Capabilities have been identified as the key enabler of competitiveness

- “The proximate cause [of differences in the wealth of nations] lies, for the most part, in the capabilities of firms” (John Sutton, London School of Economics, 2012)
- Capabilities are the fulcrum for leveraging tangible resources into human achievement (Amartya Sen, Nobel Laureate)
- The main reason firms perform differently in the long run can be traced to dynamic capabilities
II. Risks & uncertainty in management
Strategic management requires distinguishing between risk and uncertainty.

Uncertainty

Don’t know most futures or their probabilities with (unknown unknowns with probabilities)
F 1-4 are possible futures
F? are undefined futures
Chess v. Mixed Martial Arts (MMA). MMA is a good metaphor for competition under uncertainty in the innovation economy

**Chess**

Each move is knowable (closed world). The better player almost always wins. A large but finite number of moves and counter moves. If the player (e.g. a computer) has unlimited computational powers, chess is a trivial game as Von Neumann and Morgenstern once observed

**MMA**

Not a closed world... rules more permissive. Striking, grappling, boxing, kickboxing, Brazilian Jujitsu, Judo, and wrestling are all widely employed
There is a premium to entrepreneurial management when there is deep uncertainty

The lack of predictability and deep uncertainty in MMA is not unlike today’s interdependent innovation economy.

- Existing “rules” of competition are being changed
- Entirely new “rules” are invented (e.g. cloud computing; Amazon Prime, internet of things)
- New players constantly emerging (e.g. mobile money, start-ups versus the banks)

To succeed in this world, managers need to be entrepreneurs, and entrepreneurs need to be (or find) managers too (e.g. Brin and Page found Schmidt to be CEO of Google).
A shift toward greater ambiguity

Newer Tools
- Influence Diagrams
- Scenario Planning
- Real-options Analysis
- Hedging/Derivatives
- Enterprise Risk Management
- System Dynamics Modeling

Traditional Tools
- Extrapolative Forecasting
- Net Present Value Analysis
- Decision Trees
- Expected Utility Theory
- Computer Simulation
- Portfolio Optimization
- Insurance/Safety Programs

Certainty | Risk | Uncertainty | Ambiguity | Chaos/Ignorance
---|---|---|---|---
Lower Risk & Lower Reward | Higher Risk & Higher Reward

Dynamic Capabilities

III. The dynamic capabilities framework
Strong “ordinary” (or normal) capabilities: require resources to be used efficiently

- There is little attention to the validity of fundamental resource allocation decisions
- Operations, administration and governance are ordinary capabilities
- Routines / standard operating procedures are key to ordinary capabilities
- Ordinary capabilities reflect technical efficiency
- Diffusion of ordinary capabilities to rivals is enabled by
  - More information in the public domain
  - Better business school training
  - Management consultants
- “Best practices” logic connected to strong ordinary capabilities
- Admittedly, not everyone gets the simple stuff right
Best practices don’t suffice anymore

- There is no benefit at being very good at delivering the “wrong” products
- Best practices alone are generally insufficient to ensure a firm’s success and survival, except in weak competitive environments (which are still ubiquitous in less-developed countries).
- Much of the knowledge behind ordinary capabilities can be secured through consultants or through a modest investment in training (Bloom et al., 2013).

Being a top performer in productivity is unlikely to lead to competitive advantages because it only takes a few firms at the frontier to drive prices down to competitive levels
From ordinary to dynamic capabilities in autos

- **Ordinary:** The operations portion of the automobile business has been thoroughly optimized over many decades, doesn’t vary much from one automobile company to another, and can be managed with a focus on repetitive process. It requires little in the way of creativity, vision or imagination. Almost all car companies do this very well, and there is little or no competitive advantage to be gained by “trying even harder” in procurement, manufacturing or wholesale.

- **Dynamic:** Where the real work of making a car company successful suddenly turns complex, and where the winners are separated from the losers, is in the long-cycle product development process, where short-term day-to-day metrics and the tabulation of results are meaningless.

  - Bob Lutz, former vice chairman at General Motors, Wall Street Journal, June 11, 2011
Deep uncertainty (turbulent environments) require strong dynamic capabilities:

With stable environments ordinary capabilities are good enough and provide meaningful guidance.
Dynamic capabilities can be thought of as falling in three categories:

- **Sensing**
  Identification of opportunities & threats at home and abroad

- **Seizing**
  Mobilization of resources to deliver value and shape markets

- **Transforming**
  Continuous renewal and periodic major strategic shifts
Sensing is the ability to see around corners

The ability to foresee future opportunities and threats... what Jack Welsh (CEO of GE) once referred to as the ability to “see around the corners”
Sensing is akin to discovery of the truth

“Intellect has little to do on the road to discovery. There comes a leap in consciousness, call it intuition or what you will, and the solution comes to you, and you don’t know how or why.”

Albert Einstein
Good sensing benefits from “abductive” reasoning as a way to help sense the future

- Explanations are developed for surprising or anomalous behavior/phenomenon
- Induction & deduction depend on the past
- Abductive reasoning moves ahead through “logical leaps of the mind” and uses all available data in a search for patterns
- Once an abductive hypothesis is established, data is searched to test the hypothesis, which in turn spurs original thinking
- Not used to determine if something is true or false, but to indicate a new path to “deep truth” about a phenomenon or a situation

Abductive reasoning is the handmaiden of sensing

The challenge is to develop a valid hypotheses about what is going on in the market
Zooming in & out to master uncertainty

Creating Scenarios & Strategic Vision

Narrowing In on a Few Scenarios & Strategies

Expanding View to Look at Data That No Longer Fits

Dynamic Monitoring

Strategic & Tactical Adjustment

Seizing/Asset Orchestration is also core to dynamic capabilities

“Apple still has strong growth opportunities because of its ability to work simultaneously on hardware, software and services... Apple has the ability to innovate in all three of these spheres and create magic... This isn’t something you can just write a check for. This is something you build over decades.”

- Tim Cook, Apple CEO (Taipei Times, February 2013)
Asset orchestration requires many skills

Transformation is about redeploying financial, physical, and human resources to effectuate organizational change

What’s needed is some kind of dynamic optimization, rather than the static optimization. Lou Gerstner, IBM’s former (turnaround) CEO put it this way:

“In anything other than a protected industry, longevity is the capacity to change … If you could take a snapshot of the values and processes of most companies 50 years ago—and did the same with a surviving company in 2014—you would say it’s a different company other than, perhaps, its name and maybe its purpose and maybe its industry. The leadership that really counts is the leadership that keeps a company changing in an incremental, continuous fashion. It’s constantly focusing on the outside, on what’s going on in the marketplace, what’s changing there, noticing what competitors are doing.”

(Davis and Dickson, 2014: 125).
Transformation and organizational structure & culture

- Organizational structures, culture, and dynamics represent a significant irreversibility.
- Dorothy Leonard-Barton (1992) noted that the source of a company’s strength can become a “core rigidity” that inhibits its development.
- It is often harder to repurpose an organization than to repurpose a technology. The latter is often little more than writing a check; the former requires organizational reengineering.
- Benner and Tushman (2003) observed that activities focused on measurable efficiency and variance reduction drive out variance-increasing activities and, thus, affect an organization's ability to innovate and adapt outside of existing trajectories ... Core capabilities may become core rigidities.
Dynamic capabilities emphasizes advanced agility, i.e. redeployment capacity

- Dynamically capable firms have more than agility and more than ambidexterity
- Too often, agility is defined as the ability to do commonplace things faster and cheaper. If that’s what one means by agility, it is more akin to ordinary (rather than dynamic) capabilities
- When agility refers to a reduction in the time required to reach best practices, it is simply an incantation for Six Sigma, Value Engineering, or other efficiency initiatives
- Those may be necessary for the organization to become more efficient; but they are only secondarily related to conferring evolutionary fitness
- What matters most is management’s ability to redeploy physical, financial, and human assets to new and better commercial avenues
“I had a choice. I could have gone pedal to the metal, stripped out costs, delivered strong profit for a few years, and then said adios. But that wouldn’t have yielded long term success. So I articulated a strategy to the board focusing on the portfolio we needed to build, the muscles we needed to strengthen, the capabilities to develop...we started to implement that strategy, and we have achieved great shareholder value while strengthening the company for the long term.”

Dynamic vs. ordinary capabilities

- **Purpose**
  - Ordinary Capabilities: Technical efficiency in basic business functions
  - Dynamic Capabilities: Strategic “fit” over the long run (evolutionary fitness)

- **Tripartite schemes**
  - Ordinary Capabilities: Operational, administrative, and governance
  - Dynamic Capabilities: Sensing, seizing, shaping and transforming

- **Imitability**
  - Ordinary Capabilities: Relatively easy; imitable
  - Dynamic Capabilities: Difficult; inimitable

- **Doing things “right”**
- **Doing the “right” things**
Dynamic capabilities in the strategic management theory space

Five Forces
- Industry attractiveness is the central focus
- Entry barriers critical
- Shielding from competitors is the game changer

Planning
- 1-5 year budgets
- Risk control
- Market forecasts
- Limited competitive analysis

Resource Based View
- VRIN assets drive value creation
- 4 VRIN traits necessary to sustain advantage
- “Isolating mechanisms” are central

Dynamic Capabilities
- Asset orchestration & strategy help drive advantage
- Reshaping ecosystems & biz models is critical
Decision making under deep uncertainty
Identifying & bridging capability gaps

Deep Uncertainty
Risk
1960s 1980s 1990s 2000+

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IV. Closing capability gaps
Closing capability “gaps”

- Capability gaps are of at least three kinds:
  - Technology gaps
  - Market gaps
  - Business model gaps
Recognizing capability gaps isn’t straightforward

- The first challenge is to understand the location and magnitude of capabilities deficiencies.
- Often it is only after an organization tries to do something (and fails) that the gap is apparent. The early phase of a project looks okay because there are typically few outcomes metrics to evaluate.
- Later on, problems begin to crop up, the senior team gets more and more involved, and the goal slips further away.
- Ad hoc “solutions” are attempted and failed. Only then is there general recognition of a capability gap.
There may or may not be a resource gap behind an identified capability gap

- Resources are not capabilities
- There may be budgets and people assigned to a project (resources) but, if employee capabilities are not strong, performance failure is likely
- Building capabilities is hard; the silver lining is that, once built, they are then difficult for others to imitate
- Put differently, the absence of a market for capabilities means that benefits can flow from entrepreneurial and managerial activity that builds and hones value-creating capabilities
Addressing capability gaps

- The search for capability gaps begins by examining the match between a proposed business model and the firm’s existing capabilities
- An analysis of existing capabilities needs an objective point of view that is detailed and realistic
  - Recognize what capabilities are needed
  - Develop them quickly, efficiently and effectively. This itself is a dynamic capability (Feiler and Teece, 2014)
Capability gaps & the transformation challenge

Market Distance

Business Model Distance

Technological Distance

Target state relative to current “O”

Current state
V. Dynamic capabilities in ecosystems
The dynamic capabilities framework is hard to master given that our education system favors deep specialization

- Dynamic capabilities is relatively challenging to comprehend and apply but can be the foundation to a more thorough understanding of complex reality.
- Good (Silicon Valley type) managers have an intuitive dynamic capabilities/systems view of the world. By making elements and inter-relationships more explicit, the dynamic capabilities can galvanize managers and management to action.
- The dynamic capabilities framework must be applied, further clarified, further elaborated, and made more precise not only within the company but in the surrounding ecosystem.
Implications of digitalization on capabilities

Elements of digital convergence

- Digital data and signals, provide a common (0,1) base for handling diverse types of information, including words, sounds, and images.
- Widespread use of common standards allows connectivity between diverse information devices and complementary enterprises.
- Systems integration is both easier and more necessary.
- Co-invention/Co-innovation opportunities & challenges
  - Requires integration of on going value creation and building of dynamic capabilities.
  - The ubiquity of digital platforms must be recognized.
  - A “grand convergence” may be in process.

Implication: Ecosystem orchestration and access and control of complementary assets may now be more important to competitive advantage than installed base/switching cost considerations.
The key elements of the dynamic capabilities ecosystem framework
Adner’s ecosystem methodology

Stresses:

- the importance not only of alignment with customers but also with investment partners to minimize co-innovation risk
- the role of ecosystem leader (the ecosystem orchestrator)
- helps one identify gaps in complementary assets/capabilities

A useful methodology to help clarify the structure of required collaboration, i.e. who hands off what to who & when?
Ecosystems and Wallin’s social architecture

The social architecture stresses:

• The culture, communication patterns, reward systems, policies, procedures and form of organizing

• People’s capacity and willingness to adapt to changes and their attraction to the network

When the unit of analysis shifts from firm to ecosystem:

• The orchestrator must secure the formation of both the right social architecture and the dynamic capabilities on ecosystem level

• In the example of Betterplace used by Adner the sensing was not an ecosystem level property, but wishful thinking by Betterplace founder Shai Agassi
The focus of Dynamic Capabilities is:

- Continuous innovation & change
- Creating as well as capturing value
- Orchestrating complementary assets
The impact of General Purpose Technologies (GPT)

- These technologies have three characteristics
  - Pervasive
  - High potential
  - Enhance research productivity
- GPT’s often start out as something less, (e.g. user invented with no initial obvious application)
- GPT’s allow development of derivative technologies in diverse fields (e.g. printing press, transistor, microprocessor)
- In general new GPT’s introduce new appropriability challenges
GPT’s by definition open up the field for new business model options

- With digital convergence, a plethora of complements must often be deployed to assure commercial success
- In multi-invention contexts, which individual offerings draw on multiple internal and external sources of technology (patented and unpatented)
- Business model choices for a new innovation, even with reference just to appropriability, are more complex than the original “licensing versus in-house production” appropriability model (Teece, 2010; Zott et al., 2011)
Key GPT takeaways for ecosystems

- Intangible assets are core to value capture
- Disaggregating the value chain requires standards
- Coordination across organizational boundaries & orchestration of the entire network is particularly important to the success of modularization
Dynamic capabilities in ecosystems

Creating & capturing value from innovation & sustaining continuous capability building is the essence of dynamic capabilities and provides the wider aperture lens that is needed for ecosystem competitiveness.
VI. Reflections from practice
(with assistance from: Gary Getz (Strategos))
The first step in Dynamic Capabilities is to test the relevance of implicit principles of strategy & organization.
WHY DO WE CHALLENGE THEM?

1. THEY DEFINE THE “RULES OF THE GAME” in our company and in the industry
2. THEY BECOME SELF-IMPOSED BOUNDARIES on how we compete
3. THEY CAN BLIND US to emerging business opportunities
Industry map help with sense-making

1. Helps one VISUALIZE THE COMPETITIVE LANDSCAPE and expose our orthodoxies where and how we compete.

2. Helps one gain INSIGHT INTO THE BUSINESS MODEL OF COMPETITORS, both current and potential.

3. Enables one to begin ENVISIONING POSSIBLE FUTURE OPPORTUNITIES - by exposing “white spaces” and finding innovative new opportunities and directions.
Redefining competition in university education

Profile of educators
- Professionals who work during day
- Mainly full-time professors; some adjunct professors
- Mostly PhDs
- Domestic locations only
- Attract international students
- International locations

Content Taught
- Standardized content
- Mix of standardized & customized content
- Diverse, customized content
- To support basic operations
- To support education

Use of technology
- Integral part of business model

Location of Instruction
- On campus
- At satellite campus
- Virtual instruction

Student Profile
- 18-22 college kids only
- Post-grads and undergraduates
- Adult students only

Source of learning
- Peer to peer learning groups
- Professor is key knowledge source
- Mainly full-time professors; some adjunct professors

International presence

Traditional Competitor
- University of Phoenix

Source: Gary Getz, Strategos
SENSING: WHAT IS A CUSTOMER INSIGHT?

An unmet or unarticulated need or frustration, which can lead to the identification of a new opportunity

A Customer Insight redefines the combination of:

- **Who** (consumer target, segment)
- **What** (unmet need, benefit)
- **Why** (why does the consumer have this need?)

Source: Gary Getz, Strategos
Valuable insights are grounded in needs that lie under the surface

1. **UNARTICULATED**
   *The customer settles or works around it.*

2. **UNDERAPPRECIATED**
   *The industry hasn't seen this as important.*

3. **UNDERLEVERAGED**
   *Our capabilities can have a greater impact.*

Source: Gary Getz, Strategos
Seizing: Technology commercialization advisory activities involves addressing in parallel

- Testing key hypothesis behind new business concepts
  - Cycles of experimentation
- Repeatedly refreshing business concepts and models to incorporate what we are learning
  - The dynamic capabilities business brief
- Building the infrastructure for commercial launch
  - The build phase
What is required for “seizing” is a highly disciplined approach based on core design principles

- Don’t wait too long for commercial launch
- Close key knowledge gaps through targeted capabilities assessment and rapid experimentation
  - Focused on most critical hypotheses
  - Disaggregated elements of the business model and require an exchange of value with the participant
- Be able to answer key questions at every point
- Who is the customer and what is the value proposition?
  - What are our intended business and profit models?
  - How will the client win vs. competition?
Steps to achieve sustainable business models

1. Segment the market
2. Create a value proposition for each segment
3. Design and implement mechanisms to capture value from each segment
4. Figure out and implement 'isolating mechanisms' to hinder or block imitation by competitors, and disintermediation by customers and suppliers

A Competitively Sustainable Business Model requires a Strategic Analysis Filter
Elements of business model design

Create Value for Customers, Entice Payments, and Convert Payments to Profits
Questions to ask about a (provisional) business model

- How will the product/service be used?
  - How is it a solution to the customer’s problem?
- What might customers be enticed to ‘pay’ for value delivered?
- How large is the target segment?
- Do competitive offerings exist?
- Where is the industry in its evolution?
  - Has the dominant design emerged yet?
- How should the product be presented as a solution to customer’s problem, and not merely a novel item/gizmo?
- What will it cost to deliver value to the customer?
  - Are costs’ volume sensitive, and if so, how?

What is the Supplier Specific Customer Value Proposition?
What is the Related Appropriation Mechanism?
How can Imitators be Held at Bay?
Tools: Business Model Action Lab

Process:
- Details an idea selected from a key strategic area
- Participants: the core team, invited experts, and advisors
- Workshop session to define the customer, the value proposition, and operating, and economic models

Results:
- Idea converted into a full business concept
- Often, novel ideas as a result of stretching/challenging
- Key unknowns identified to feed into the experiment design process
- Input to develop a pitch document for senior management

Source: Gary Getz, Strategos
AGILE SEIZING: “LEARNING BEFORE EARNING”

1. Test Business Model Assumptions
2. Experiment in Market
3. Run Pilots
4. Launch and Scale

Prioritize learning over investment to de-risk and accelerate.

Source: Gary Getz, Strategos
Experimentation is important to reduce the risk of an opportunity before recommendation that the business to commit significant resources.

All information about the business is certain.

No information about the business is certain.

Level of commitment is high.

Level of commitment is low.

Source: Gary Getz, Strategos
Good transformation assistance works the consultant out of a job;

Source: Gary Getz, Strategos