PERSPECTIVES

presents emerging issues and ideas that call for action or rethinking by managers, administrators, and policy makers in organizations

# *Discontinuity in the Environment, Firm Response, and Dynamic Capabilities*

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## *Executive Summary*

Technological innovations, regulatory reforms, institutional overhauls, and socio-cultural developments create discontinuities in a firm's environment. They deny resources that it had depended on for its functioning, thus challenging its sustenance, or provide new paths for growth. The firm needs to respond to these discontinuities by anticipating them well in advance, creating options for change, choosing an appropriate option, and implementing it by reconfiguring its resources. The demands from the management in responding to discontinuities are unique. The response engages the management in processes like unlearning what is redundant, learning what is required in the new situation, and leveraging on whatever is relevant from the past. Such capabilities of 'sensing', 'seizing' and 'reconfiguring' have been referred to as 'dynamic capabilities' in the literature on strategic management.

In this perspective, the authors propose a framework of interrelations among discontinuity in the environment, firm responses, and dynamic capabilities. The framework is illustrated by presenting the experiences of two companies: (a) R R Donnelley & Sons – from the printing industry, where the old heavy iron-based printing technology was giving way to digital printing and (b) Gramophone Company of India Limited (GCIL) – from the entertainment industry, where PVC as a medium for recording music and playing back.

The two cases demonstrate:

- the need for the firm to challenge its own sources of success and be prepared to face discontinuities
- the need for sensing the change, seizing the opportunity, and shaping the responses (re-configuring).
- the adaptive response through capabilities of sensing scenarios and preparing for the response.

This perspective not only urges managers to explore the relevance of the proposed interrelations framework but also to think through the possible sources of discontinuities in their environment, and develop capabilities to visualize the implications and accordingly engage in the reshaping process to make itself relevant to the environment once again.

**KEY WORDS**

Dynamic Capabilities

Discontinuity

Technological Innovation

Socio-cultural Development

Unlearning

Leveraging

*"It is not the strongest of the species that survive, nor most intelligent, but the one that is most responsive to change."*

**Charles Darwin**

A firm's environment is conceptualized as a set of external forces that impact the firm's strategy and functioning. These forces are interconnected and the firm has little or no control over their developments (DiMaggio and Powell, 1983). This environment has attributes like uncertainty, hostility, dynamism, heterogeneity, and complexity (Venkataraman and Prescott, 1990; Emery and Trist, 1965; Thomson, 1967; Dess and Beard, 1984; Child, 1972;; Mintzberg, 1979; Miller and Friesen, 1983). *Uncertainty* represents non-predictability of outcomes, while *Hostility* captures the degree of threat posed by the firm due to multifacetedness, and intensity of competition and volatility of the industry. *Dynamism (or uncertainty)* is characterized by the rate of change and innovation in the industry as well as the uncertainty and unpredictability in actions of competitors and customers. *Heterogeneity* refers to the differences in the type of forces and their impact and *complexity* refers to the number of forces and the nature of interrelations to be kept track of.

Rapid technological innovations (Teece, 1988; Teece, 1992), regulatory reforms (Angelini and Cetorelli, 2003), socio-cultural developments (Erez, 1986), global integration (Douglas and Wind, 1987), and institutional overhauls (Gumport and Sporn, 1999) create discontinuities in the environment of the firm and threaten its sustenance or open new paths for future. It has to anticipate, comprehend, and interpret the implications of discontinuities for its strategy and performance. It has to generate and evaluate options for reconfiguring its 'aspirations, arena, differentiators, vehicle, staging, and economic logic' (Hambric and Fredrickson, 2001). It might have to redesign its structures, systems, processes, and sk ills (Miles, *et al*., 1978) to execute the new responses. Such capabilities in sensing, seizing, and reconfiguring, are also referred to as dynamic capabilities (Teece, 2007). The firm needs to identify and develop these capabilities. Conceptual frameworks for linking the firm and with its environment (Cyart and March, 1963; Thomson, 1967; Andrews, 1971; Hannan and Freeman, 1977; Pfeffer and Salanick, 1978; Hofer and Schendel, 1978; Aldrich, 1979; Porter, 1980; Astle and Van de Ven, 1983) have not paid independent attention to aspects of discontinuities in the environment and responses of the firm to them.

Management literature has seen discontinuity in the environment as a major external event in the firm's environment leading to a crisis (Smart and Vertinsky, 1984). It is identified as a strategic problem in project marketing (Hadjikhani, 1996). It is presented as a dramatic change in the competitive landscape due to globalization, de-regulation, volatility, convergence, indetermination of industry boundaries, and eco-sensitivity (Prahalad, 1998). It is also seen as a major societal change (Khand-wala (2002). In mathematical connotation, discontinuity relates to a situation where the real value of a function is defined at a particular point, the function taking a completely different path beyond that point (Tall and Vinner, 1981). Technological discontinuity is identified as an innovation that dramatically advances an industry's price *versus* performance frontier (Anderson and Tushman, 1990). It occurs when a new technology does not just enhance the current technology, but actually supplants it for a better performance. Schumpeter (1942) refers to discontinuity as creative destruction (destruction of existing forms, norms, and combinations). It is described as an innovation that commands a decisive cost or quality advantage which strikes at the foundation (Astle and Van De Ven, 1983; Tushman and Romanelli, 1985). It is related to situational uncertainty and complexity faced by the managers (Kaplan, Murray and Henderson, 2003). In Anthropology, cultural discontinuity relates to conflict due to inability of carrying the cultural cues by a select group under study (Ogbu, 1982). It appreciates the disconnect of the domains and the inability of carrying values of a societal group in a particular context. In Geological Science, continuity relates to the stream flow of a river with predictable morphological and hydrological features, and discontinuity relates to the artificially created barriers like dams to control the flow and the movement of the river with disequilibrium of habitual factors (Johnson, Richardson and Naimo, 1995).

## CLASSIFICATION OF DISCONTINUITIES

Based on the above, a classification of discontinuity along key dimensions is possible. It could be linked to types of environment like technological, regulatory, institutional, and competitive and socio-cultural or could be linked to 'dimensions' of environment like uncertainty, hostility,

munificence, dynamism, complexity, homogeneity, and heterogeneity. The triggers for discontinuity and the chain of impacts could be traced through systems theory and organizational economics (Katz and Kahn, 1966; Thomson, 1967; Barney and Ouchi, 1986). The classification is useful because the specific capabilities of the firm in responding to the discontinuities of various types could be different. Further it can be hypothesized that the impact of different types of discontinuities on firm's strategy and performance could be different.

## FIRM RESPONSE TO DEVELOPMENTS IN THE ENVIRONMENT

A firm's response to developments in the environment is conceptualized as the process of re-establishing the 'fit'[1] with the environment within the existing constraints and opportunities, and through creation of some appropriate deliverables (Basu, 2010). Response to any environmental development requires top managers to anticipate, learn, unlearn, and revisit priorities. The abilities are seen as emerging (Eisenhardt, 1989), inclusive, and entrepreneurial (Child, 1972; Pfeffer and Salanick, 1978) decision-making abilities. In situations of discontinuity, the capabilities of anticipating the extent of impact and the timing of developments through scanning processes (Aguilar, 1967) would be different. Discussing the literature, Burns and Stalker (1961) find two distinctive different management methods of response to environmental developments – 'mechanistic' (in more stable environment) and 'organic' (for continuously changing environment). Chandler (1962) studies the changes in the structure and the communication system as a response to different environmental set-ups. Thomson (1967) portrays the basic decision dilemmas of the organization as achieving rationality in an uncertain world, either through internal strategies of adaptation or through external strategies of innovative interaction with other firms. Khandwala (1976) finds that managers perceiving uncertain environmental developments respond with either comprehensive strategy formation or innovation in adaptation. Astle and Van de Ven (1983) pose a higher level question of theoretical pluralism for a comprehensive response like adaptation and selection facing environmental developments. Hrebiniak and Joyce (1985) try to find the changes in firm adaptations as interaction between strategic choice and environmental determinism. So, it links with the fact that, firms engage with streams of 'innovations' for adaptations in environment (Tushman and Anderson, 1986; Romanelli and Tushman, 1994; Magnusson, Lindstorm, and Berggren, 2003) to respond to the environmental developments.

Firm's responses to environmental developments are addressed in three different strands of literature in organization theory, industrial economics, and strategic management. The contingency perspective is discussed in organization-environment alignment (Katz and Kahn, 1966; Thomson, 1967) and formulation of business strategy (Hofer and Schendel, 1978). In organizational theory literature, the responses are captured in terms of structural changes (Thomson, 1967) like centralization, formalization, integration, differentiation, etc. In industrial economics literature, the responses of the firm are viewed in a competitive perspective (Porter, 1980) in positioning, creating mobility barriers, and forming strategic groups. Strategic management literature, on the other hand, captures strategic response as 'fit' (Miller and Friesen, 1983; Venkataraman and Presscott, 1990) to the environmental developments. The concept of 'fit' is related to matching or aligning organizational resources with environmental opportunities and threats (Chandler, 1962; Andrews, 1971; Aldrich, 1979). Burns and Stalker (1961) find two distinctively different management approaches to respond to environmental developments – 'mechanistic' (stable environment) and 'organic' (changing environment). From the planning perspective, strategic response is formed through a sequence of rational analytical steps (Andrews, 1971; Ansoff, 1987). These cognitive efforts make the distinction of firm's strengths and weaknesses to match with the environmental opportunities and threats. The comprehensiveness of the decision includes the firm's attempt to be exhaustive or inclusive in making decisions to achieve long-term goals (Daft, 1983; Fredrickson, 1984). The criticism comes in citing individual cognitive limitations (March and Simon, 1958). Quinn (1985) expressed concerns about a manager's ability to comprehensively integrate multiple decisions into a consistent whole. Conversely, the emergent strategy perspective discusses the evolving strategies as changing as and when there is a need for change due to environmental developments (Mintzberg, 1979). The obvious integration happens with the assumptions of nature and

[1] 'Fit' is conceptualized in strategic management as matching or aligning organizational resources with environmental opportunities and threats (Chandler, 1962; Andrews, 1971; Venkatraman & Camillus, 1984)

level of environment dynamism. Strategic planning seems to be appropriate in more stable and predictable environment and for an emergent strategy in turbulence (Mintzberg, 1979; Fredrickson, 1984; Powel, 1992). Khandwala (1976) finds that managers perceiving uncertain environmental developments respond with either comprehensive strategy formation or innovative adaptation (similar categorization made by Fredrickson and Mitchell (1984) as synoptic and incremental). The interplay between the intended and the emergent strategy is the key to complex strategy-making process (Eisenhardt, 1989).

The responses to discontinuity could be knee-jerk and impromptu, radical as against linear, or planned. They could differ in speed, scale, and simultaneity. They could be cautious, concise, and sequential or highly risky. The firm could be anxious depending upon whether the discontinuity was sudden or anticipated and could decide to go alone in handling the response or work in alliances. The involvement of different levels of management and incorporation of learning from prior experiences of having dealt with similar type of developments could be different. The responses depend on the ability of the firm to scan the environmental developments (Weick, 1987; Conger and Kanungo, 1988; Kotter, 1988). The response could be critical in terms of preparedness, timing, and finding opportunities. It could be specific in terms of dealing uncertainty of priorities and preferences. It makes the response contextual in terms of recognizing options and extent of unlearning possibilities.

## CAPABILITIES TO RESPOND

Research on the survival and growth of firms has focused on identifying capabilities that enable the firms to be continuously relevant to the environment irrespective of the incremental, related, radical or unrelated developments in it (Collis, 1994; Teece, Pisano, and Shuen, 1997; Eisenhardt and Martin, 2000; Rindova and Kotha, 2001; Zollo and Winter, 2002). Such capabilities are christened 'dynamic capabilities,' through which the firms are able to integrate, build, and reconfigure internal and external competences to address the issues arising in a rapidly changing environment (Teece, Pisano and Shuen, 1997). These capabilities are embedded in processes and high level routines (Eisenhardt and Martin, 2000; Zollo and Winter, 2002) for adaptations in the changing environment. They help to create, extend, upgrade, protect, and retain the relevance of the enterprise's unique asset base. The concept of dynamic capability, hence, is advanced to explore and explain firm's strategies in changing environment with integration, extension, and re-organization of resources and capabilities (Collis, 1994; Teece, Pisano, and Shuen, 1997; Eisenhardt and Martin, 2000; Rindova and Kotha, 2001; Zollo and Winter, 2002). The term 'dynamic' refers to continuous efforts to achieve congruence with the changing business environment (Teece, Pisano and Shuen, 1997). On the other hand, the term 'capability' refers to a firm's ability for adapting, integrating, and reconfiguring of internal and external organizational skills, resources, and functional competencies to match the changes in environment. The resource base can include tangible or intangible resources and capabilities.

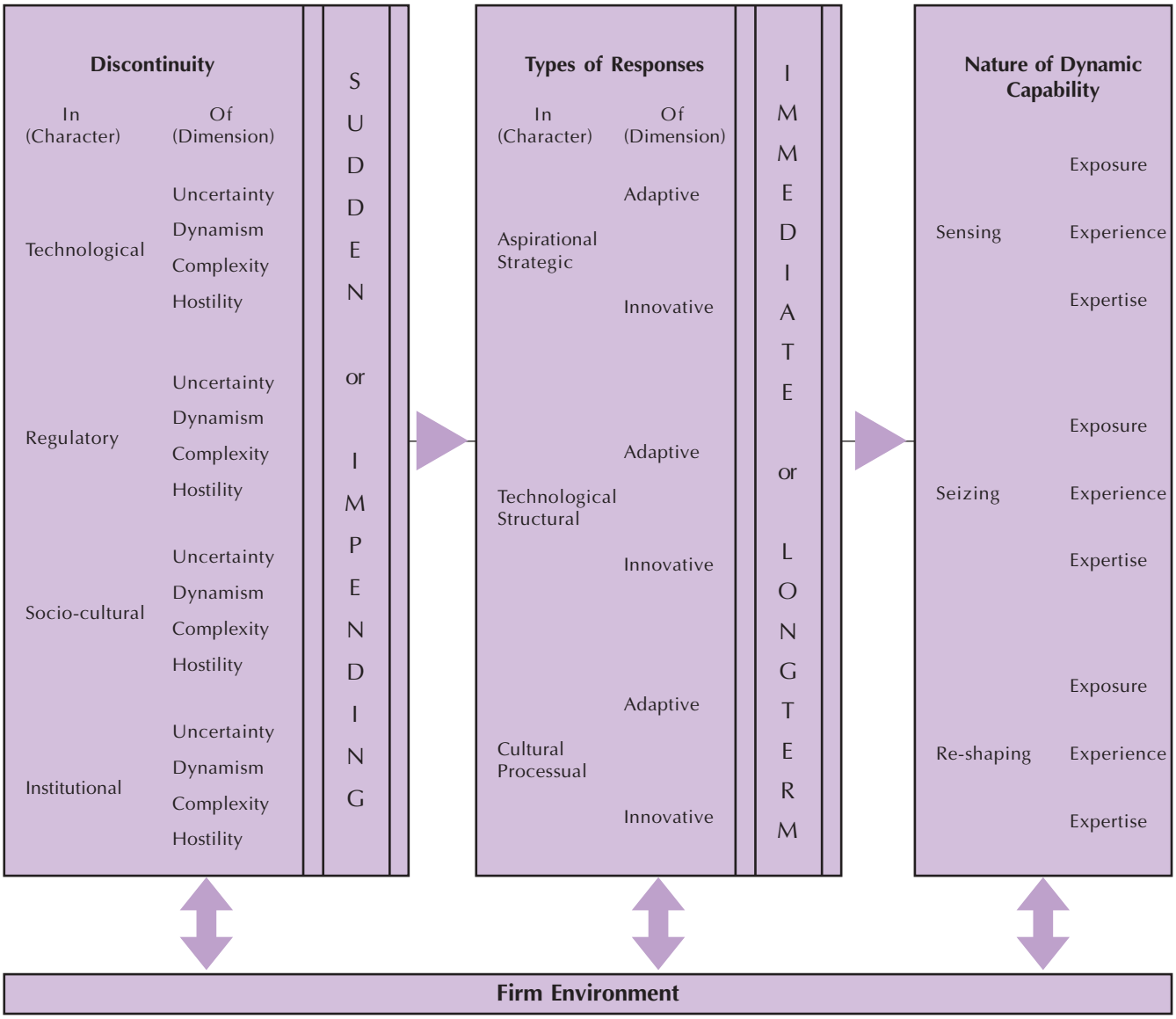
A firm has to depend on a *'portfolio of capabilities'* to respond to specific environmental developments like discontinuity. This is because the response needs to be thought through and implemented by the firm as an integrated action (see Annexure I for the details). Teece (2007) conceptualizes dynamic capability as aggregation of three different capabilities in facing environmental challenges. These are capabilities of '*sensing*' opportunities and threats from the changing environment; the capability of '*seizing*' opportunities and shielding from threats; and capability of '*re- shaping*' through enhancing, combining, and reconfiguring resource base. Sensing of scenarios, opportunities, and resources gives the firm the ability to respond better. 'Sensing' in discontinuity encompasses the abilities of scanning environment, anticipating the impacts on the ecosystem, creating scenarios of new reality, comprehending the opportunities and threats, interpreting the larger cues, and calibrating resource availabilities. Scanning in discontinuity faces either ambiguity or non-availability of information. Anticipating multiple impacts lead to complexity of decision-making possibilities. Comprehending the new scenario would face conflict in aspirations and involvements. Sensing would thus definitely require making a macro level understanding of resource requirements with a micro view of contribution of the existing capabilities. It is important to make a choice of possible response through seizing of technology, organization, and cultural unity. 'Seizing' captures strategic choice of options concurrent to the new boundary and aspiration drawn, with a rationale of managing complementarity and co-specialization (Teece, 2007) possibilities in the discontinued environment. Seizing capabilities would necessarily balance the drive of aspirations with realities of environmental offerings, especially in a discontinued situation. Re-shaping includes the ability

of managing assets, structures, processes, routines with new asset orchestration, innovation, and governance structures. The micro-foundations of these dynamic capabilities responding to discontinuity find their base in their existing aspirations and value bases, historical endowments of experience, exposure, and expertise.

## THE FRAMEWORK

Based on the above discussion, we can visualize a framework of interrelations to enable the investigation of firm's response to discontinuity. Figure 1 presents the framework. We illustrate this framework with two cases in the next section. As discontinuity relates to suspension of one environmental character or dimension, it captures the classification of the environment into technological, regulatory, socio-cultural, and institutional discontinuity based on the existing literature. The environment qualifiers which relate to these characters in identifying the types of discontinuities in the firm ecosystem are identified from the existing research base and listed as uncertainty, dynamism, complexity, and hostility. These specific developments are further characterized in terms of their timing like sudden or impending based on the preparedness and ability of recognition for a particular discontinuity. The classifications are detailed in the framework and captured within a broad conceptual subsection. The framework relates discontinuity and firm response with a unidirectional arrow confirming the relationships be-

**Figure 1: Conceptual Framework for Investigation of Interrelations in Firm Response to Discontinuity**



tween the antecedent and the successor. The types of response are aspirational, strategic, technological, structural, cultural, and processual with qualifiers like adaptive and innovative, depending on the nature and involvement. The framework also identifies the role of dynamic capabilities in the form of sensing, seizing, and re-shaping. The dynamic capability is related with firm response with a reverse arrow, allowing propositions that responses are enabled by dynamic capability and their nature.

The framework appreciates the importance of top management in developing and deploying these capabilities with domain expertise, management experience, and exposure to similar developments in the past. It is described as an open system of dynamic interrelationships where discontinuity, firm response, and dynamic capability are connected with firm environment through two-way arrows. The framework re-emphasizes facts like continuous interaction of the firm and the environment through their demands and commands. The intensity and direction of demands and commands are captured by the relative bargaining power of environment and firm within the eco-system. The multiplier effects create further discontinuities of different types at different times in the ecosystem making uncertainties much more complex.

## ILLUSTRATING THE FRAMEWORK

Two case studies are presented in enabling to illustrate the framework of interrelations in the context of discontinuity. The cases are from (a) the printing industry where the old heavy iron-based printing technology was giving way to digital printing and (b) the entertainment industry where PVC as a medium for recording music and playing back was giving way to the magnetic medium. In one case, the firm involved was anticipating the discontinuity and preparing itself for change. It had to learn and unlearn in a punctuated fashion. In the entertainment industry, the firm could not anticipate the speed of discontinuity and hence was ill-prepared to respond. Both cases put together provide very significant insights into the content and processes in response to discontinuity.

### R R Donnelley & Sons: The Digital Division

R R Donnelley & Sons' (RRD) experience (Garvin and March, 1996) in dealing with the impending discontinuity is a reflection of an entrenched firm facing difficulties in responding to the impending discontinuities. The firm anticipated the development of digital printing and began making changes. It was founded in 1864 in Chicago as a family-run printing house. By 1995, it had become the world's largest printer with 41,000 employees in 22 countries. It went public in 1956. The main customers of RRD were telephone companies, direct mail merchandisers, and retail houses that required large scale printing for their businesses. In the late nineties, RRD had eight business groups with 38 divisions. The main technology used in printing for high volume works are gravure press and offset printing. RRD used to have long-term contractual orders from its loyal customer bases. The traditional print business was based on high fixed cost (of machineries and accessories) and low variable cost. The entry barrier in high volume printing was due to its nature of high fixed cost. RRD had its market share higher than the next nine competitors put together. The scale of its network and volume of business across the world spoke about its absolute leadership in this sector.

The late nineties saw impending technological discontinuities. In addition, there were new demands from customers. The customer began demanding customized products. A customized product with relatively small quantities to be delivered at the doorsteps of customers in a limited period of delivery time was the need captured by the leading players. The new capabilities required satisfying customers like Microsoft, IBM, and other IT sector companies for which speed, simultaneous global distribution, and quick revision of materials were important. The sharply rising postal rates, paper costs, and delivery charges put pressure on the cost side. A major change in office computing facilities created new opportunities in printing and distribution facilities. Desk top publishing became popular due to its flexibility and speed (technological discontinuity). Filmless printing technologies like digital four-color and computer-to-plate, were gaining momentum in the printing horizon. Flexibility, reduced cycle time, and customizing facilities helped the digital printing presses to grow during the same time across the world. Initial investment came down and huge alliances appeared in industries to give competition to the larger printing presses with less fixed investments and networks of small printers. In 1995, digital growth was forecasted at 16 per cent per year, while traditional printing was growing at 3 per cent annually. RRD read the lines of the emerging competition with differentiated technology platform and reacted boldly forming a new division called

'digital division' to focus (seizing opportunity) on the new technology. This ensured sensing of an impending discontinuity and being prepared for it.

### *Responding to Discontinuity*

RRD restructured the divisions (structural response) and introduced new information architecture (technology response) having connection with the upstream players like content owners and downstream customers (cultural response). It virtually became an electronic warehouse and distributor with a critical ability to print on demand (strategic response). In the new infrastructure facilities, data files were received and stored in data bases and copies were made on a particular demand from any store. It reduced 60 per cent of the cost of publishing by print on demand in any corner of the world and made supply possible within 24 hours. The efficiency in the operations brings down cost per copy and is independent of run length, where customized delivery is possible. The total cycle time came down from twenty days to two days. RRD created a venture capital fund (structural response), developed new print technologies, and ensured a stable digital future. A team of technologists was constituted to review economic and technical validations of the new venture (structural response). In 1994, seven teams were put in action to reengineer the process of the corporate centre. The new teams devised new processes (processual response), guided by the objective of greater speed, improved financial data, and checkpoints for better effectiveness. The opportunity in the differentiated demand (socio-cultural discontinuity) from the existing huge printing facilities created another discontinuity in printing technology (digital printing).

The response of RRD was very timely in getting into a new business format by adapting a new technology platform and re-confirming its leadership in the printing industry. The capability of sensing the direction of new printing technology led to early capturing of technology and knowledge base (seizing) for the new platform. The capability of re-shaping its resource base reflected in building its network all over the world and delivering the value to the customer base was in line with the framework. The response related to change in the structure, culture, and processes in adapting the new technology through exposure in the new technology platform. The dynamic capability of sensing the problems early helped to seize the option for technology development and trial in small market and finally seizing the opportunity through resource re-orientation. The re-organization was not that easy as it had its huge customer base and delivery mechanism based on a particular technology platform. The internal organizational processes of creation of smaller units, making the trial for new technology, getting the right people for the new technology, and convincing, internally as well as externally, about building of new capabilities, were critical in facing technological discontinuity.

## Gramophone Company of India Limited (GCIL)

The Gramophone Company of India Limited is a classic representation of a firm facing multiple discontinuities – regulatory, technological, socio-cultural, and institutional (Budhiaraja and Athreya, 1996). This case demonstrates a struggle to respond to the discontinuities leading to a near closure of the company. It failed to anticipate developments in the horizon, and thus could not respond to the emerging threats. Established in 1901 as a trading organization, GCIL started manufacturing gramophone records in 1907. Till 1970, they were the sole manufacturer of such records in India. GCIL had three manufacturing facilities – two at Kolkata, and one at Mumbai. GCIL was the first overseas branch of Electric and Musical Industries Limited (EMI), London. In 1968, the company went public with 40 per cent foreign holding, conforming to the Foreign Exchange Regulation Act (FERA), 1976. GCIL has seen a phenomenal increase in sales as well as profits during the sixties and the seventies. It started its Consumer Electronics Products Division in 1960 for providing lower end record players to increase the use of records in India. It became the household name for entertainment through music in India. During the seventies, there was discontinuity in the technology of music listening. The use of long playing records virtually came down due to inconvenience and arrival of new technology in music systems. Cassette players and recorders were aggressively launched in the market (discontinuity led opportunities towards cassette players and recorders) by the competitor companies like 'Philips' and 'Sony'.

GCIL faced regulatory imbalance in the form of Section 52 of the Copyright Act, which allowed competitors to use the same music by different singers.

### *Responding to Discontinuity*

GCIL had no option than to open a music cassette division with a licensed capacity of producing 1.2 million per year with some export obligations. However, as GCIL was late in taking this initiative, it faced huge competition from small operators, who copied film songs in low-quality music cassettes and sold in the market. This was a very good example of how technological discontinuity led to the other institutional discontinuities. Some of the operators like the T-series developed their own business model of selling low-priced film music. Thus, GCIL faced huge losses from consumer electronics and cassettes divisions. It tried to outsource cassettes to manage low pricing, but was caught in quality complaints from the customers. It demonstrated a failure in sensing the problems early and also in its multilevel response to discontinuity. The response dilemma of GCIL could easily be attributed to the inability to sense the need for building of new capability and the absence of flexibility in unlearning. The demand of records went further lower in the face of cheaper availability of cassettes. The then copyright act helped other cassette manufacturers like T-series, Venus, Tips, etc., to produce and sell in Indian markets. The entire music entertainment market was flooded with prerecorded cassettes, while GCIL could not change with time and upgrade its technology (regulatory discontinuity). Subsequently, GCIL was taken over by the RP Goenka (RPG) Group, which operated in the direction of utilizing the existing asset bases but lost ground in its core business of records and cassettes. This could be inferred as a missed opportunity by GCIL in identifying technological changes in the horizon and getting caught through competition from completely different platforms. GCIL failed to sustain in piracy boom and got closed in 1991-1992. A complete absence of dynamic capability of sensing developments in the horizon left the company handicapped to seize the opportunity of different technology platform and business as a whole.

## DISCUSSION

The two cases pointed to the sustenance challenges posed by discontinuities and the need for abilities to respond to them. They underline the impact of discontinuities at multiple levels with uncertainties of resource relevance (RRD case) and failure of apt and timely response (GCIL case) leading to sustenance issues. The GCIL case is a good example of multiple discontinuities and challenges to sustaining its relevance over time. GCIL failed to respond to the changing technology in time and compete in the market. This could be attributed to its lack of sensing abilities because of which it could not identify the options available to them and finally failed to seize the emerging opportunity. The evidences of different discontinuity patterns like technological (digital printing, music cassettes), regulatory (music patent act, copyright protection acts), sociocultural (using tape recorders, buying cheap cassettes), and institutional (T-series cassette company) are reflected in the two cases. RRD's anticipation and forming of the digital division or GCIL's inability to identify discontinuity in the horizon and respond to the challenges are good examples of failed responses. The need for sensing the change, seizing the opportunity, and shaping the responses (re-configuring) came out strongly from the discussed cases. These cases also demonstrated the adaptive response (RRD case) through capabilities of sensing scenarios and preparing for the response. The conceptual framework is built on different possibilities of relationships at different levels. The broad level of propositions made through this framework of environmental discontinuities (of the nature of technological, regulatory, sociocultural, and institutional) triggers responses (aspirational, strategic, technological, structural, cultural, and processual) by the firms which are enabled by dynamic capabilities (of sensing, seizing, and reshaping) depending on the environmental support and complementarity.

## LOOKING FORWARD

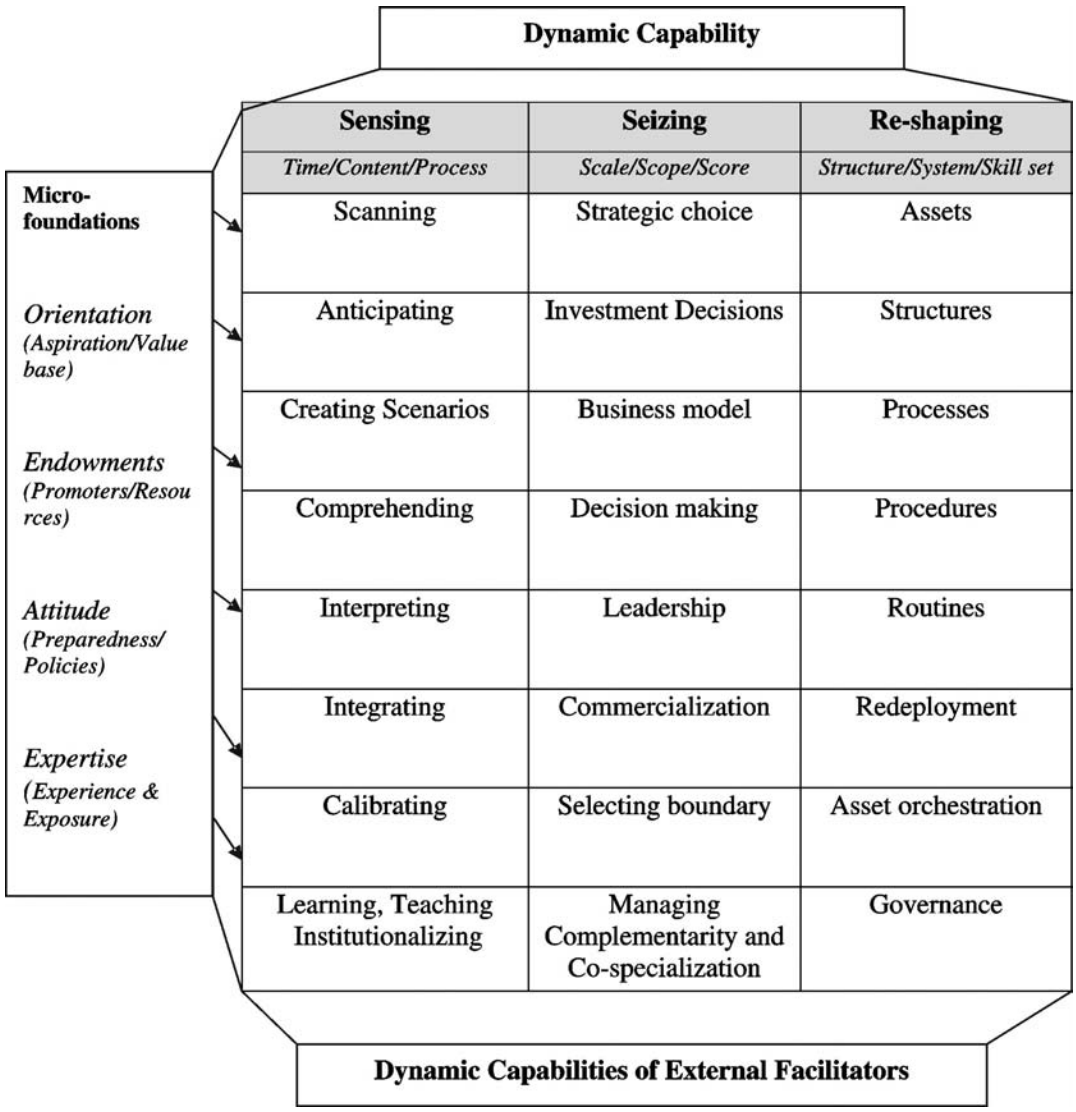
From the above discussion, we can note that discontinuity is a specific development in the environment that warrants managerial attention on multiple fronts and well in advance. In these days of innovation and regulatory reforms, managers need to anticipate the discontinuities and prepare the firm accordingly. Towards this, the firm needs to develop capabilities to sense, seize, and reconfigure. Rigidities arising from past successes or illusions about the environment being benevolent permanently pose difficulties in responding to discontinuities. As seen through the illustrations, the firm needs to challenge its own sources of success and be prepared to face discontinuities. Inside the firm, this would mean unlearning and new learning. Internal selling of the need to prepare and be ready is not easy. The 'discontinuity response champion' faces resistance from within from those who are managing the current fit between the firm and its environment. At times visualizing that the resource that was available would no longer be available is not easy. Our

perspective not only urges managers to explore the relevance of the interrelations framework present here but also think through the possible sources of discontinuities in their environment. Towards this, the following statements are relevant.

Discontinuities in the environment have multiple implications to the firm in terms of opportunities or threats for the current strategy and functioning. The managers need to develop capabilities to think through and think across the implications. The choice and timing of response would depend on the capability of 'sensing' of the firm. The firm's organizational structure, systems, processes, and people would shape this capability. The firm can prepare better for impending discontinuity. In case the discontinuity is sudden, it can see through the implications and act with speed. The quality of options generated would depend on the ability to generate options based on the discontinuity sensed by the firm and the context of resources that could be leveraged. There is a stage beyond sensing and generating options. The firm needs to choose an option and implement it. More often than not it calls for new learning and challenging the assumptions about what had worked thus far. The firm can then engage in a reconfiguring exercise to make the new response effective. This reshaping process has its shocks and surprises as seen in the Gramophone case. An effective firm would counter these and make itself relevant to the environment again.

## Annexure I: Dynamic Capability Facing Discontinuities

(Captured Conceptualization of Dynamic Capability from Teece, 2007)



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