

## RESPONDING TO DISCONTINUITIES – ALTERNATING ACTION PATTERNS OF VALUE APPROPRIATION

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**Abstract.** *Challenged by the lack of research on the dynamic nature of value appropriation confronted with disruptive triggers this study aims to enhance the understanding of a relationship between discontinuity and value appropriation. More specifically the paper studies how a discontinuity affects complex action patterns of the value appropriation process. Given that, the defined research area remains not well understood, the investigation followed a qualitative approach using a field-based case study method governed by a multiple case design research strategy. To accomplish research propositions five in-depth case studies were performed. All cases concerned the path dependency breaking the influence of discontinuities over value appropriation process in firms exhibiting highly intensive use of knowledge and technology in performed business activity. Extracted data enabled identification of discontinuities that occurred across different dimensions of environment and were addressed with path breaking alternations of value capturing practices. Obtained findings indicated that investigated firms exhibited a high responsiveness to sudden discontinuities. Deployed responses involved substantial changes in value appropriation, which concerned the quantity, diversity, and combination of formal and informal isolating mechanisms. Structured reactions induced branching of current action patterns of value appropriation. Given that branching was preceded by intended strategic information gathering, evidenced line of action complies with the concept of dynamic capabilities. The overall sequence of undertaken actions captured in an appealing framework complies with a graduated response to weak signals discussed by Ansoff (1975).*

**Keywords:** *discontinuities; strategic change; value appropriation; dynamic capabilities.*

### Introduction

The growing dynamics of the environment forces firms toward incorporation of that dynamics into their strategic management in order to grow, and most importantly to survive (D'Aveni, 1994). A strategic attempt to exploit effectively changes in the environment needs to be supported by inevitable modifications in deployed patterns of action. Meanwhile, it is a common observation that despite a growing demand for flexibility firms often remain inert and locked in behavioral and decision-making patterns shaped by a past experience (Sydow, Schreyogg & Koch, 2009). As pointed out by Leonard-Barton (1992) firm's most important capabilities may become its core rigidities as the firm becomes overly focused on successful behavioral patterns to anticipate and recognize discontinuities that undermine the usefulness of currently used knowledge. From a strategic perspective rigidity resulting from the path, dependency is a notion of potential inefficiency (Sydow et al., 2009).

A thorough review of the literature on management has confirmed that the problem of organizational response to discontinuities has been discussed predominantly with regard to activities performed along the value creation process, while its mirror reflection, which is an appropriation of created value, has received much less scholarly attention (Coff, 2010). It is quite surprising since value appropriation makes a direct impact on the profitability of an organization (Makadok & Coff, 2002) and the logic of value distribution may or may not follow the rules governing the value creation process. The number of research works devoted to the complex issues of value receiving, protecting and retaining is now relatively modest, concerning both theoretical and empirical dimension. In result, there is no coherent framework enabling investigation of the way firm responds to discontinuities by alternating its action patterns focused on value appropriation.

Thus, this study aims to enhance the understanding of a relationship between discontinuity and value appropriation, contributing to research that explores the dynamic nature of the process of value capture. The study builds its arguments and contribution on a framework emerged from the extant theory review and qualitative research carried out in accordance with a multiple case study design.

### **Literature review**

Firms face a multitude of changes occurring in the external landscape. Those more or less disruptive events require simultaneous management to align an organization to the turbulent environment (Prahalad, 1998). On the one hand, environmental changes may provide new supportive circumstances for business growth, while on the other hand may generate threats to the current performance of even existence of a firm (Benner & Tushman, 2002; Gilbert, 2005; Lavie, 2006). The importance and difficulty of an organizational response stem from this duality of influence and the fact that at early stages it is quite difficult to discern clearly whether the final impact of a particular event will develop into a threat or opportunity (Ansoff, 1975). Moreover, occurring changes may be of incremental nature, leading to extrapolation of current trends, or may induce a radical shift of existent development trajectories by rendering deployed lines of actions obsolete (Ghezzi, 2013; Gilbert, 2006). Given that sudden, unexpected breaks in dominant conditions have been increasing in frequency, the problem of organizational response to discontinuous changes has drawn a significant amount of scholarly attention in the field of strategic management (e.g. Ansoff, 1975; Gilbert, 2005; Ghezzi, 2013; Tripsas, 2009; Kaplan, 2008). Although lacking a widely accepted definition, generally it is assumed that a discontinuous change refers to an abrupt, unforeseen shock requiring an organizational adaptation along a shifted trajectory (Christensen, 1997; Gilbert, 2005; Rothaermel & Hill, 2005). According to the extant strategic management literature, the nature of such discontinuous changes may vary (Prahalad, 1998; DeSarbo et al., 2005; Tripsas, 2008). A complete newness in the circumstances may be driven by uncertainties occurring within or across different dimensions of the environment, e.g. technological environment (Lavie, 2006; Tripsas, 2009; Rothaermel & Hill, 2005), market environment (Tripsas, 2008), competitive environment (Prahalad, 1998; DeSarbo et al., 2005), regulatory dimension (Prahalad, 1998). It is worth noting that the range of explored discontinuities involves also those of endogenous origins (Anderson & Tushman, 1990; Helfat & Peteraf, 2003). Internally driven disruptive changes to refer generally to unexpected, unintentional shifts in

current action patterns triggered by resource/capability gaps and inherent risk component of organizational behavior (Anderson & Tushman, 1990; Helfat & Peteraf, 2003).

Given the diverse nature of discontinuous changes (visibility, informational content, area and time of occurrence, intensity of influence), large bodies of research have examined challenges that firms encounter while formulating and deploying appropriate responses (e.g. Smart & Vertinsky, 1984; Gilbert, 2005; Tripsas, 2009; Ghezzi, 2013). Scholars have investigated organizational responses with regard to a time lag between emergence of discontinuity and firm reaction (Tripsas & Gavetti, 2000), amount and type of resources committed to a new line of action as opposed to reinvestment in the existing action patterns (Gilbert, 2005; Rothaermel & Hill, 2005; Danneels, 2008), scale of capability reconfiguration (Gilbert, 2005; Kaplan, 2008; Ghezzi, 2013), continuance of investment regardless of initial constraints (Tripsas & Gavetti, 2000; Kaplan, 2008).

According to provided findings organizational difficulties in shaping firm action in radically changed circumstances are centered on managerial cognition, organizational identity and resource/capability endowments. Cognitive elements together with managerial attention are decisive when it comes to initiation of a response to recognizing and interpreting disruptive events as threats or opportunities (Smart & Vertinsky, 1984; Gilbert, 2005). It has been confirmed that a strong perception of threat helps overcome organizational inertia only partially, as it stimulates investment in resources, yet in a rigid manner along existing routines (Gilbert, 2005). Further, given that organizational "identity comprises insider and outsider perceptions of what is core about an organization" (Tripsas, 2009, p.441), it is embedded in organizational routines and serves as an interpretation filter, identity challenging disruptions are difficult to discern and accommodate (breaking a dominant set of beliefs). Giving the meaning to a recognized discontinuity brings in the issue of resource and capability requirements, as disruptive changes render current resource configurations and deployed patterns of actions obsolete (Leonard-Barton, 1992; Lavie, 2006). Facing discontinuous changes firms are challenged either to leverage, extend, retrench, or provide access to new resources and capabilities (Helfat & Peteraf, 2003). Thus formulating an organizational response involves learning, unlearning and refining behavioral patterns. There is an agreed consensus in the management field that development and adjustment of capabilities in an effort to adapt to radically new circumstances is particularly difficult (Anderson & Tushman, 1986; Lavie, 2006). Moreover, it is argued that the organizational response can be governed by a specific mechanism conceptualized as dynamic capabilities (Winter, 2003; Teece, 2007; Najda-Janoszka, 2016).

Due to its inherent focus on change, the concept of dynamic capabilities represents a relatively new and promising approach to explore strategic renewal (Eisenhardt & Martin, 2000; Helfat et al., 2007). Dynamic capabilities are defined in terms of an organizational capacity to purposively create, extend or modify existent capabilities and resource base (Helfat et al., 2007, p.4). Hence, the logic of dynamic capabilities lies in an intentional and routinized change in organizational action patterns across different dimensions of business activity (Teece, Pisano & Shuen, 1997; Madsen, 2010). It is important to underline that dynamic capabilities are not automatically involved in every reaction to environmental disruption since their development and

implementation involve substantial cognitive, managerial and operational costs (Ambrosini & Bowman, 2009). Thus, a decision on deployment of dynamic capabilities depends on the balance of costs and benefits derived from their deployment in comparison to other non-routinized responses (Winter, 2003). Recent advances in the field allowed a more clear understanding of the routine-based content of dynamic capabilities, leading to a comprehensive operationalization (Teece, 2007; Wang & Ahmed, 2007; Pavlou & El Sawy, 2011; Helfat & Peteraf, 2015). Although the extant literature provides a quite wide spectrum of distinct measurement approaches, most of them are built on the notion of the initial operationalization proposed by Teece (2007), which entails three main activity clusters of sensing, seizing and reconfiguring.

The concept of dynamic capabilities proved to be a very useful in explaining the organizational response to disruptive changes in terms of capability reconfiguration. Scholars have applied the concept to investigate firms' reactions to discontinuities generated by technological progress (e.g., Anand, Oriani & Vassolo, 2010; Danneels, 2011), market shifts (e.g. Verona & Ravasi, 2003; Danneels, 2011), dynamics of industry architecture (e.g. Pavlou & El Sawy, 2011) or internationalization processes (e.g. Kuuluvainen, 2013). Despite the broad spectrum of identified disruptive events and distinct organizational responses, provided insights pertain predominantly to the value creation process, while there is a lack of a thorough discussion referring to the value appropriation process (Coff, 2010). The unsolved question concerns the way discontinuities affect the nature of organizational capabilities deployed in the process of value appropriation, i.e. how those capabilities are reconfigured in response to disruptive change. The significance of the task stems from the fact that value capturing is not a simple extrapolation of activities performed within the value creation process, the nature and range of used resources and capabilities is quite distinct (Pitelis, 2009). Value is not extracted and captured instantaneously but it requires a substantial effort over a longer time span (Najda-Janoszka, 2016; Ellegaard, Geersbro & Medlin, 2009). It is a process embracing development, deployment, and reconfiguration of complex compositions of isolation mechanisms, i.e. tangible and/or intangible barriers preventing replication of a particular behavior of a given firm (Rumelt, 1984). The number of research works reaching beyond the individual effectiveness of selected protection tools and devoted to the complex issues of value receiving, protecting and retaining is at the moment relatively modest, concerning both theoretical and empirical dimension (Coff, 2010; Fischer, 2011; Di Gregorio, 2013). Thus, the problem of managing discontinuous change in the area of value appropriation remains to a large extent underexplored.

### **Research methodology**

Given that the relationship between the value appropriation process and discontinuous change is not well understood, the investigation followed a qualitative approach using a field-based case study method governed by a multiple case design research strategy. While a case study research facilitates holistic understanding of context-bound and complex phenomena, a multiple case study approach reinforces the generalization of results, and thus enhances a reliable extension of existing theories (Eisenhardt, 1989; Yin, 2014). To accomplish research propositions five in-depth case studies were performed (Table 1). Because of the high sensitivity of collected data, the names of investigated firms were disguised. All cases concern the path dependency

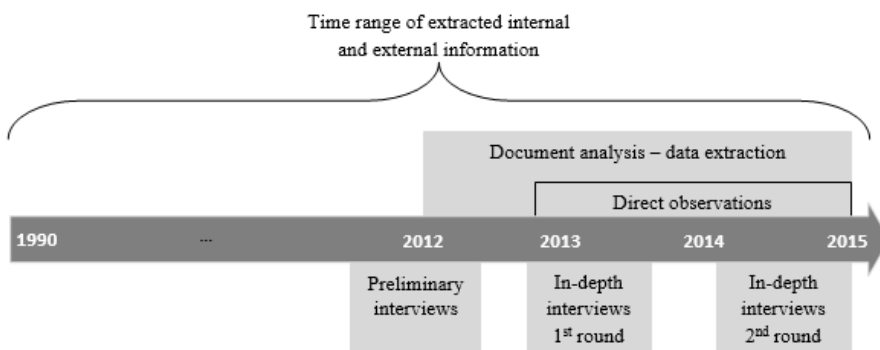
breaking the influence of discontinuities over value appropriation process in firms exhibiting highly intensive use of knowledge and technology in performed business activity.

**Table 1. Description of investigated firms**

Case	Main business activity	Number of employees (2015)	Turnover (2015) (PLN in thousands)	Established
Case A	Complex and integrated marketing services	23	>1 000 PLN	2004
Case B	Design and construction of data processing centers	11	~1 000 PLN	2008
Case C	Trade of industrial electronics	34	>10 000 PLN	1987
Case D	Production of suppressors and transformers	305	>100 000 PLN	1991
Case E	Technology solutions for transportation	42	~10 000 PLN	1991 - corporation 2010 - business unit

Note: 1 EURO = 4,2623 PLN (31-12-2014) Polish National Bank – NBP

Cases rely on current and retrospective data collected through three waves of semi-structured interviews carried out in 2012 (11), 2013 (11), 2014-2015 (13) with three categories of informants (top and project managers of investigated firms, project managers of cooperating partners), direct observations conducted in years 2013-2015 (13), extraction from internal primary (a total of 71 documents), and external secondary sources (press releases, industry statistics and reports) (Figure 1).



**Figure 1. Fieldwork timeline**

The longitudinal study provided an opportunity for examining the change dynamics over time, while deployment of multiple data collection methods and data sources enabled triangulation of both themes and conclusions.

## Results and discussion

A thorough analysis of extracted data enabled identification of continuous changes that induced incremental adjustments along the existing development trajectory of value appropriation process (change in the number and scale of used isolating mechanisms), as well as discontinuities that occurred across different dimensions of environment (Ghezzi, 2013) and were addressed with path breaking alternations of value capturing practices. Table 2 presents results concerning discontinuous changes and organizational responses pertaining to value appropriation action patterns.

**Table 2. Collected evidence of organizational response to discontinuous changes**

Case	Discontinuity		Initial response	Strategic information gathering	Final response	
	Characteristics	Time of emergence			Before the major impact of discontinuity	After the major impact of discontinuity
Case A	Competition intensity, entry of big players, change of customer preferences	2005-2008	<p><i>First signals</i> Aggressive run for customers, losing at bids</p> <p><i>Initial perception</i> Threat of misappropriation of value streams</p> <p><i>Type of initial response</i> Ad hoc initiatives – price and time delivery reduction, intense use of personal networks</p>	<p><i>Focused search:</i> Reviewing needs and preferences of customers, solutions provided by competitors, complementary technologies, opportunities for financial support</p>	<p><i>Perception</i> Opportunity for broadening and stabilizing value streams</p> <p><i>Response</i> Structured - investment decision while still experiencing a growth of revenue - own unique logistics system (copyrights), raising complexity of providing solutions, extended control of complementary assets</p>	<p>Continuance - developed system of controlled complementary assets reduced the impact of discontinuity. Further decisions concerned expansion of the system</p>
	Economic crisis: demand collapse	2010-2013	<p><i>First signals</i> losing at bids, losing existent customers</p> <p><i>Perception</i> Threat of financial collapse</p> <p><i>Type of initial response</i> Ad hoc initiatives – extending use value for customers at the cost of the firm, price, and employment reduction</p>	<p><i>Focused search:</i> Searching through market trends, reviewing situation on new potential markets, reviewing internal resource base</p>	<p><i>Perception</i> Threat of financial collapse</p> <p><i>Response</i> Ad-hoc initiatives - breaking set rules for protecting value streams in order extending use value for current and new customers</p>	<p>Continuance of ad-hoc initiatives</p>
Case B	Economic crisis: major payment backlogs	2010-2011	<p><i>First signals</i> Extending payment terms by customers</p> <p><i>Initial perception</i> Threat of financial collapse</p> <p><i>Type of initial response</i> Ad hoc initiatives – commencing litigation</p>	<p><i>Focused search:</i> Searching through market trends and possibilities for financial risk reduction, reviewing internal resource base and effectiveness of used isolating mechanisms</p>	<p>Until the major impact - ad hoc initiatives concerned with commencing litigation</p>	<p><i>Perception</i> Opportunity for reorganizing and stabilizing value streams</p> <p><i>Response</i> Structured – expanding networks of business relationships, diversification of business activity (unrelated industry), recombination of extant and new capabilities; readjustment of business model – harmonizing streams</p>

						of costs and benefits
	Market growth, launching postponed public sector investments	2013-2015	<p><i>First signals</i> Requests for proposals from new markets</p> <p><i>Initial perception</i> Opportunity for broadening value streams</p> <p><i>Type of initial response</i> Careful engagement in small scale projects</p>	<p><i>Focused search:</i> assessing knowledge and technology requirements of new markets, reviewing internal resource base and capabilities, verification of new markets (construction, military) in terms of timeliness and reliability of payments</p>	<p><i>Perception</i> Opportunity for broadening appropriable value streams</p> <p><i>Response</i> Structured – introducing procedures for customer evaluation, building network of complementary assets, entering new markets, extension and reconfiguration of capabilities – developing architectural knowledge in modular design, developing an integrated knowledge protection system based on an organizational culture of discretion and formal security certificates</p>	Continuance – improving developed network system of complementary assets, strengthening protection of core architectural knowledge
Case C	Increase of competition, entry of big players, market growth due technology advances	1995-2000 2005-2008 2012-2015	<p><i>First signals</i> Losing at bids, suppliers turning into competitors</p> <p><i>Perception</i> Threat of misappropriation of value streams</p> <p><i>Type of response</i> Ad hoc initiatives – intensification of sales forces, reinforcing quality focus</p>	<p><i>Focused search:</i> searching through technology advances, market trends, customer preferences, solutions provided by competitors, reviewing internal resource base and capabilities</p>	<p><i>Perception</i> Opportunity for broadening appropriable value streams</p> <p><i>Response</i> Structured – reconfiguration due to new procedures and philosophy of implemented CRM, focusing on time-based advantage, changing value streams balance from selling toward maintenance and servicing, changing regional sales offices to service centers</p>	<p><i>Perception</i> Opportunity for broadening appropriable value streams</p> <p><i>Response</i> Structured – broadening the portfolio of suppliers in order to reduce over-dependency, developing own product line and own trademark, diversification in areas of complementary technology</p>
	Financial crisis: collapse of the main market – banking industry	2009-2010	<p><i>First signals</i> Postponed investments of customers</p> <p><i>Perception</i> Threat of weakening market position</p> <p><i>Type of response</i> Ad hoc initiatives – refocusing on</p>	<p><i>Focused and broad search:</i> searching through technology advances, market trends, customer preferences, solutions</p>	<p>Immediate impact due to domination of financial institutions in customer portfolio</p>	<p><i>Perception</i> Opportunity for strengthening and broadening appropriable value streams</p> <p><i>Response</i> Structured – developing a network of external servicing</p>

			servicing current customers	provided by competitors, reviewing internal resource base and capabilities		engineers, implementation of a new proprietary training system , entering new internal and foreign markets and developing broad personal business relations, improvement of management practices – closing regional offices with inefficient performance
Case D	Increase of competition, technology progress, saturation of the market, regulatory changes (feed-in electricity tariffs)	2010-2015	<p><i>First signals</i> Drop in sales, price-reduction pressures</p> <p><i>Perception</i> Threat of diminishing returns</p> <p><i>Type of response</i> Ad hoc initiatives – cost/time delivery improvements</p>	<p><i>Focused and broad search:</i> reviewing internal resource base and capabilities, market trends, and policy mechanisms for renewable energy, advances in production technologies and materials, competitive structure of industry</p>	<p><i>Perception</i> Opportunity for strengthening appropriable value streams</p> <p><i>Response</i> Structured – integration with a global corporation (world leader in the photovoltaic industry), development of R&amp;D division following four eyes principle, introducing and integrating new areas of expertise, developing new procurement division and a network of suppliers - redefinition and reconfiguration of core knowledge protection system (procedures, encryption techniques).</p>	<p><i>Perception</i> Opportunity for broadening appropriable value streams</p> <p><i>Response</i> Structured – reorganization through cost reduction and lean management implementation, improvement of management practices and implementation of X-team technique, entering new related markets with complementary technology</p>
Case E	Convergence of technologies, modification of customer expectations	2011-2015	<p><i>First signals</i> Problems with satisfying raising expectations of customers</p> <p><i>Perception</i> Threat of lowering profit margin</p> <p><i>Type of response</i> Ad hoc initiatives – reaching for a backup from the R&amp;D of the parent company</p>	<p><i>Focused and broad search:</i> reviewing internal resource base and capabilities, scanning market trends, related and unrelated technology advances, solutions developed by direct competitors</p>	<p><i>Perception</i> Opportunity for securing and strengthening appropriable value streams</p> <p><i>Response</i> Structured – developing own R&amp;D department following four eyes principle, investing in own know-how related to open architecture programming, integrating newly acquired knowledge with existing capabilities, development of proprietary training on confidentiality</p>	<p>The impact was reduced by the investment, which matched the development trajectory of the technology used.</p>

According to collected evidence in all cases, firms conducted an on-going, systematic process of environmental scanning, which enabled a relatively early detection of the



first signs of disruptive changes (Ansoff, 1975; Rohrbeck, 2011; Ghezzi, 2013). Guided by the perception build on initial input information, investigated firms responded with immediate initiatives involving the most intense use of controlled resources along existing routines of value appropriation (Gilbert, 2005; Rothaermel & Hill, 2005). Hence, deployed actions generally aimed at maintaining status quo in terms of the amount of captured value. Nevertheless, in parallel with initial responses firms engaged more heavily in refocused strategic information gathering in order to generate a more comprehensive picture of detected disruptions (Ansoff, 1975). Interestingly, with information that is more specific provided an initial negative perception tended to shift towards opportunity-seeking attitude (Gilbert, 2005). In the case of opportunity driven initial response, additional strategic information reinforced the positive perception of experienced discontinuity.

Shifted or strengthened perception formed a basis for a structured response, which was designed and implemented to confront the major impact of a discontinuous change. In accordance with Gilbert (2005), an opportunity-driven structured response was focused on breaking path dependencies and current action patterns of value appropriation. The overall sequence of undertaken actions illustrated on Figure 2 complies with a “graduated response through amplification and response to weak signals” discussed by Ansoff (1975). Nevertheless, given the distinct nature of experienced discontinuities and organizational idiosyncrasies, the time lag between the emergence of disruption and a structured response differ among investigated firms (Tripsas & Gavetti, 2000). In Cases B and C, firms did not manage to implement responses before the major impact of the disruptive change. Both firms experienced difficulties in capturing value streams, yet prepared and deployed structured reactions enabled relatively quick recovery, reduction of the negative impact and in result strengthening their financial condition and strategic position toward main competitors. Conversely, in Case A after a successful adaptation to a supportive market disruption, investigated firm failed to develop further its organizational learning processes, which did not match the enlarged scale of business activity. In result, the firm was unable to formulate a comprehensive, structured response to discontinuity caused by the economic crisis (Winter, 2003; Helfat & Peteraf, 2003).

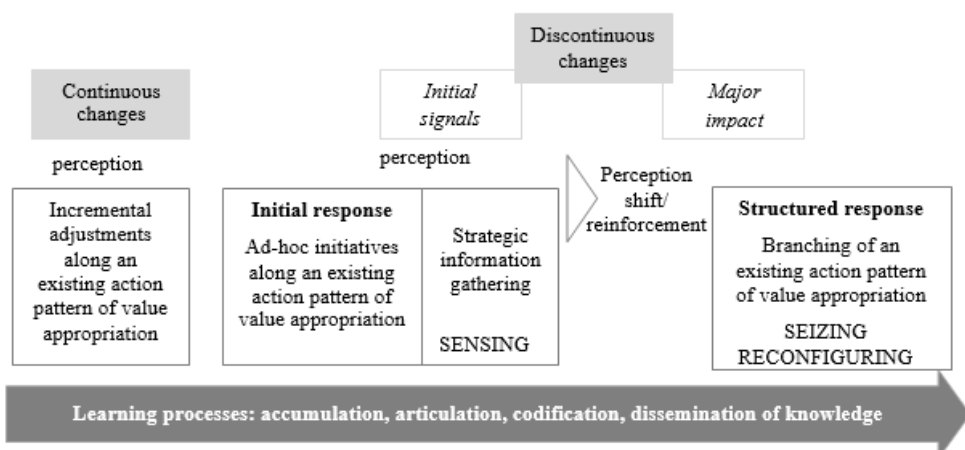


Figure 2. Changing value appropriation action patterns in response to discontinuities

Overall investigated firms confirmed a high responsiveness to sudden discontinuities. Deployed responses involved substantial changes in value appropriation, which concerned the quantity, diversity, and combination of formal and informal isolating mechanisms. Based on gathered strategic information a structured reaction of investigated firms induced branching of current action patterns of value appropriation. This complies with the concept of dynamic capabilities (Helfat & Peteraf, 2003). Therefore, the framework describing changing value appropriation action patterns in response to discontinuities (Figure 2), which emerged from experiences of investigated firms and reviewed theory, clearly indicates three activity clusters of dynamic capabilities, i.e. sensing, seizing and reconfiguring (Teece, 2007).

## Conclusions

The framework, which emerged from the conducted research, provides new insights into how the organizational response to discontinuities extends beyond the technology/marketing frontier, involving action patterns of value appropriation. In the process of organizational alignment to disruptive changes, value appropriation is not independent but dependent variable. Obtained results provide a rich picture of the breadth and complexity of strategic reconfiguration introduced within the domain of value capture. The study contributes to the strategic management field by enhancing understanding of value appropriation in terms of a process, which is characterized by its own dynamics as it undergoes various alternations due to continuous and discontinuous triggers. An indication of perception shifts while approaching a structured response to external disruptions should serve as a point of departure for subsequent studies focused on a micro level of managerial cognition in the process of value appropriation. Nevertheless, a cautious reflection on contextual conditions and implications of the study is needed due to analytical generalization based on a limited number of five cases.

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