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## **Dynamic Capabilities and Performance**

An Empirical Study of Audio-Visual Producers in Europe

**Abstract:** *This study tests Teece's conceptualization of dynamic capabilities in the context of small and medium sized firms competing in creative industries, i.e. the European audio-visual production industry. This industry is characterized by immature and evolving markets where firms' dynamic capabilities are expected to lead to superior innovative performance. Using survey data from audio-visual producers in ten European countries we find that both sensing and seizing capabilities have a positive effect on firms' innovative performance. The effect however, is curvilinear and positive effects appear only when capabilities overcome a threshold level.*

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During the last decades, the European market for TV production has been turbulent. Revised broadcasting regulations and new technologies have stimulated the launch of new television channels which in turn has created a market for independent audio-visual production across the continent (e.g. Brown and Picard 2005; Gillan 2011; IDATE 2010; Palmer 2006). European markets are immature and dynamic, and the roles of both broadcasters and producers are still being negotiated. Adding a recession to this backdrop creates a situation which is extremely challenging for European television producers. In order for TV producers to survive, they have to be able to adjust their business models; perceive and make sense of changing business environments; and (re)organize and recombine their resources. In other words they need excellent dynamic capabilities (e.g. Teece et al. 1997, 516), defined as the “ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.”

Teece (2007) suggests that for analytical purposes dynamic capabilities can be disaggregated into three classes: the capability to sense opportunities; to seize opportunities; and to transform and reconfigure resources in order to manage the potential threats to the firm's assets. The independent TV producers cope with the challenging situation with varying success. Based on an assumption that the heterogeneity among the European independent TV producers to some extent can be explained by variations in their dynamic capabilities, this study examines the links between two of these classes of dynamic capabilities—to sense and to seize opportunities—and innovative performance (e.g. Morgan et al. 2009; Teece 2007; Zott 2003).

There are three reasons for focusing on these two classes and thereby excluding the capability to transform and reconfigure resources. First, sensing and seizing capabilities are at the heart of a company's ability to be ambidextrous, to balance exploration and exploitation, and to maintain its value creation ability (Gibson and Birkinshaw 2004; He and Wong 2004; Rothaermel and Alexandre 2009). Second, while resource configuration is a crucial capability in large and mature firms—which need to transform, and at time even disrupt, existing routines (Zahra and George 2002)—it may be less critical in smaller and younger firms, such as European audio-visual producers (Chen and Hambrick 1995). Third, studying

transformation and reconfiguration capability would require longitudinal data, which are not available in retrospect.

Teece's (2007) implicitly assume a linear and positive relationship between sensing and seizing capabilities and innovative performance. However, especially in smaller firms, which prevail in the creative industries, dynamic capabilities are bounded by existing processes and resources within the organization. As noted by Zahra, Sapienza and Davidsson (2006, 925) "the building and use of dynamic capabilities are costly and can lead to losses or gains." Therefore, the relationship between dynamic capabilities and innovative performance in small and young audio-visual production ventures may be more complicated than previously assumed. In particular, we propose that the effects of dynamic capabilities on innovative performance are curvilinear. Building on prior research (Hagedoorn and Cloudt 2003), we define innovative performance as the degree to which a company introduces new ideas into the market. Innovative performance captures the part of creativity that can be monetized and is an important performance outcome for companies competing in creative industries. While business activities in creative industries are characterized by the production of ideas and knowledge, firms' success is highly dependent upon their commercialization (Paleo and Wijnberg 2008).

The study extends prior research in two ways. First, prior studies have found a significant relationship between dynamic capabilities and firm performance (Helfat and Peteraf 2009) and innovation (e.g. Danneels 2002; 2007; Ellonen et al. 2009). However, to date, researchers have focused mainly on dynamic capabilities in large companies. Thus, our study responds to prior studies' call to broaden the research focus beyond large firms by examining the performance implications of dynamic capabilities in small and young ventures (Zahra et al. 2006). Second, research on dynamic capabilities has relied mainly on data collected from one single country (the United States in particular), failing to include the effects of dynamic capabilities across different country settings. In contrast, this study examines the relationship between dynamic capabilities and firm performance of audio-visual producers in a number of European countries. Our results can clarify the effects of dynamic capabilities on firm performance, controlling for different institutional conditions.

## **Theory and hypotheses**

The business model concept has attracted increasing research attention over the last few years, evolving from a popular term to a key concept in management research (McGrath 2010). Particularly crucial are the dynamic aspects of business models (Teece 2010), as sustained value creation relies on a firm's capacity to continuously adapt and renew its business models (Achtenhagen et al., forthcoming). Following Achtenhagen et al., we conceptualize dynamic capabilities as the foundations to a company's capacity to innovate, including adjusting and renewing its business models. Thus, we view dynamic capabilities as a key component (or building block) of business model change and sustained value creation Demil and Lecocq (2010).

Teece, Pisano and Shuen (1997, 516) defined dynamic capabilities as a company's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. Over the years, this definition has been revised, developed and extended, resulting in a number of different conceptualizations (Eisenhardt and Martin 2000; Helfat et al. 2007; Schreyögg and Kliesch-Eberl 2007; Winter 2003). While the focus on the company's ability to alter its resource base and to be innovative is common to most conceptualizations of dynamic capabilities (Foss and Stieglitz 2010), the richness and diversity of viewpoints has also given rise to a certain amount of debate. As noted by Easterby-Smith, Lyles and Peteraf (2009, 2): "This may be due, in part, to the fact that the

definition provided by Teece, Pisano and Shuen (1997) was broad enough to provide opportunities for others to refine, reinterpret and expand the concept.”

Several scholars have followed this call, for instance, in 2007, Teece suggested that there are three *classes* of capabilities: the capability of sensing business opportunities (and threats), the capability of seizing on such opportunities, and the original transformational/reconfiguring capabilities. Wang and Ahmed (Wang and Ahmed 2007) argued in a similar fashion that dynamic capabilities consist of three main *components*, i.e. adaptive capability, absorptive capability and innovative capability. Barreto suggested yet another typology consisting of four *dimensions* or *facets*, i.e. “the propensities to sense opportunities and threats, to make timely decisions, to make market-oriented decisions, and to change the firm’s resource base” (Barreto 2010, 271). Common to all these typologies is the recognition of capabilities to sense and seize on opportunities as significant integrated parts of a firm’s dynamic capabilities. Wang and Ahmed (2007) refer to these capabilities as absorptive capabilities and Barreto (2010) prefer to emphasize the decision-making aspects of the capability to seize on a business opportunity, but all three typologies do indeed go beyond the original definition, which primarily focused on resource reconfiguration capability (Teece et al. 1997).

It should be noted that this extension of the dynamic capabilities framework has not escaped criticism, for instance from Ambrosini and Bowman (2009, 36) who do not consider sensing and seizing as dynamic capabilities but rather as “enablers and inhibitors” (ibid.) of dynamic capabilities. This lively debate is another sign of the developing state of the research on dynamic capabilities, but in this article we follow the path of Teece (2007), Wang and Ahmed (2007), Barreto (2010), and others, and choose to consider sensing and seizing as integrated in the dynamic capabilities framework.

We choose to build on Teece’s concepts, and as mentioned earlier in the article, we focus on sensing and seizing capabilities, and develop and test hypotheses on their effects on innovative performance. Teece (2007) suggests that each one of the three classes of capabilities in his typology, are undergirded by a number of activities, referred to as the capability’s micro-foundations. Sensing refers to the capacity of identifying, filtering, shaping and evaluating opportunities. Its micro-foundations lie in activities such as gathering new information, researching customer needs and monitoring competitor activities. Seizing refers to a company’s capability of addressing an opportunity through the development of new products, processes, or services. Its micro-foundations lie in activities that relate to “the design and performance specification of products, and the business model employed, [which] all help define the manner by which the enterprise delivers value to customers, entices customers to pay for value, and converts those payments to profits” (Teece 2007, 1330).

One of the problems associated with the study of the micro-foundations of dynamic capabilities is that the activities that undergird each capability may fundamentally differ in quality and character between industries, sectors, and even between firms within the same industry. This makes it difficult to create large empirical studies across multiple industries as the measurement tools created tend to be too blunt to be able to cope with the different character of the micro-foundations across different contexts. One way to address this challenge is to use a qualitative approach, such as a comparative multiple-case study (e.g. Ellonen et al. 2009). Another approach is to limit the study to a context where the variations within the population are limited (Davidsson 2005). We choose the latter approach and focus on the micro-foundations of sensing and seizing capabilities in the European audio-visual production industry. This industry is described below.

### *Industry background*

Creative industry audio-visual production typically is organized on a project basis (Lundin 2008) with a business model that tries to combine creative inputs with routine tasks in a “creativity-intensive process” (Seidel 2011; Karow and Reul 2012). Production is characterized by “complex, non-routine tasks [that] require the temporary employment and collaboration of diversely skilled specialists” (DeFillippi and Arthur 1998, 125). Regularly, the production team consists of semi-permanent work groups that come together for distinct projects under the supervision of the same production managers for repeated collaborations (Blair 2003; Starkey et al. 2000). The project-oriented production determines what kind of capabilities can be regarded as useful in an industry. Lampel and Shamsie (2003) apply a concept similar to Teece’s sensing and seizing frameworks. They identify “mobilizing” and “transforming” as two essential capabilities. Mobilizing capabilities imply routines necessary when securing resources for a film project such as the creative talent. Transforming capabilities become important only after a project has begun. They comprise of routines that instruct the way the resource bundle is used to arrive at a finished product of the desired quality.

Lampel and Shamsie (2003) argue that capabilities to mobilize resources are more important in a project-oriented industry with limited hierarchical control, while transforming capabilities could be regarded as industry capabilities shared in the network of all companies. Similarly, Davis, Vladica and Berkowitz (2008) show that mobilizing firm-level capabilities are critically in project-based production.

Another characteristic of this industry can be found in the orientation of the managers. Scholars (e.g. Chaston 2008; von Rimscha and Siegert 2011), have shown that managers in creative industries consider values such as lifestyle and creative freedom, to be more important than pure financial gain. These priorities have consequences for firm performance since—as Davenport noted—if producers who “have no desire to increase turnover or company size” (2006, 253) run the business, it is unlikely that the firm’s profit potential will be fulfilled.

TV production industries in European countries have developed with varying speed but they have all passed through the same three phases (see Figure 1). The first phase, characterized by dominant public service broadcasters (PSB), featured integrated business models, where much of the production was done in-house. The environment was fairly stable and the PSBs could survive without strong dynamic capabilities.

The second phase was characterized by the introduction of commercial broadcasters and a new audio-visual policy (Ursell 2000) that was supposed to stimulate the emergence of a strong independent production sector that could serve as a counterweight against U.S. dominance. Broadcasters retreated from production and concentrated on content packaging while independent producers with a strategy of flexible specialization (Saundry 1998) emerged. Both newly established commercial broadcasters and the incumbent PSBs commissioned much of their programming to external producers. The producers got their production fully funded and all rights were transferred to the broadcaster. This made in fact the new “independent” producers highly dependent on their commissioning broadcasters since they were not able to use a rights stock to build their own equity. The shift in business models altered the usefulness of company resources. Property based resources were useful in a stable environment as during the first phase, but less integration and predictability in the second phase meant an increasing importance of knowledge-based resources (Miller and Shamsie 1996).

The third phase is characterized by broadcasters’ cost cutting initiatives and the emergence of dynamic value networks among the independent producers. With intensified competition and diminishing advertising revenues, broadcasters started shifting some of the risk and financial burden to the independent producers in exchange for program rights. This

meant that the independent producers had to assume an increasingly active role in the product development and make sure that they had the capability to identify and seize on new opportunities and develop these into tested and marketable products that could be offered to broadcasters. In other words they had to make sure they had strong dynamic capabilities.

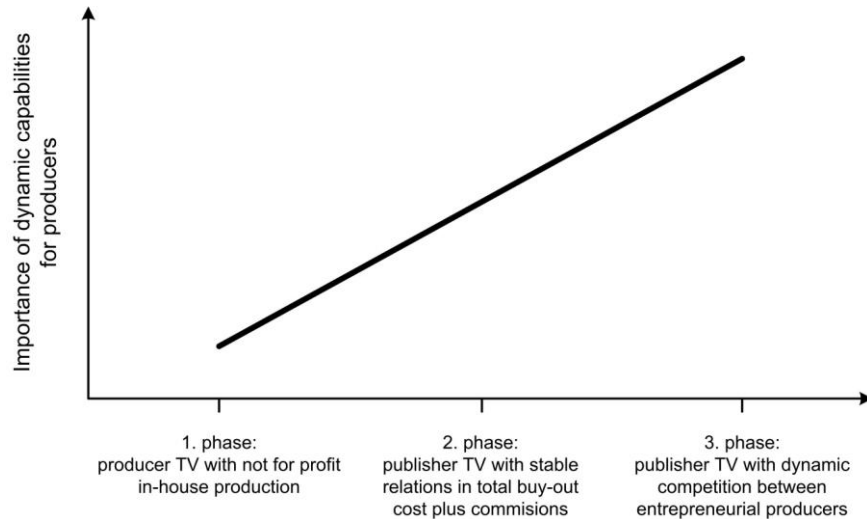


Figure 1. **Phases of business model development in the European audio-visual production industry**

### *Hypotheses*

Dynamic capabilities reflect a company’s resources and activities (Teece 2007) as they are “learned patterns of collective activities” (Foss and Stieglitz 2010, 10) and comprise the ability to integrate, build, and reconfigure resources and competences to compete in changing environments (Teece et al. 1997). As such, dynamic capabilities are at the heart of a company’s ability to adjust and renew business models through innovation. While empirical evidence suggests a positive relationship between dynamic capabilities and innovative performance, recent work suggests that this relationship might be not perfectly linear (Ellonen et al. 2009). The activities that undergird dynamic capabilities are costly and require considerable investments, especially for resource-constrained small and young firms (Zahra et al. 2006). Thus, they will lead to innovative outcomes only when the benefits will outweigh the costs. Building on this, we suggest that while sensing and seizing capabilities have the potential to lead to higher innovative performance in small creative firms, the realization of these innovations requires a certain ‘threshold level’ of these capabilities.

For example, TV producers need to spend a certain amount of resources on sensing new opportunities or seizing those opportunities before the firm is able to increase its innovative output. Below this level, there will be no positive impact on performance. This reasoning leads us to the following hypotheses for sensing and seizing capabilities:

*Hypothesis 1: Sensing capabilities have a curvilinear (J-shaped) relationship with innovative performance, with the slope (marginally) negative at low levels of sensing capabilities and positive at medium and high levels of sensing capabilities*

*Hypothesis 2: Seizing capabilities have a curvilinear (J-shaped) relationship with innovative performance, with the slope (marginally) negative at low levels of seizing capabilities and positive at medium and high levels of seizing capabilities*

## **Methods**

### *Data*

We identified audio-visual content production companies using member lists of the relevant industry association in ten European countries in late 2010. The sample of countries reflects different markets sizes and regulatory and industry traditions: Croatia, Denmark, Germany, Ireland, the Netherlands, Norway, Spain, Sweden, Switzerland, and the UK. The scope of each national association and the proportion of companies represented differs, thus we cannot claim to be fully representative of the industry. However, in absence of a complete industry directory the approach of the industry associations is the best available. For each company we identified the managing director or, if applicable, the strategy executive. Overall, we contacted 1,455 individuals and asked them to fill out an online questionnaire. After three reminders we received 133 completed questionnaires, which equals a response rate of 9.1 percent.

### *Measures*

Competition in cultural industries is driven by a search for novelty (Lampel et al. 2000, 266). The novelty of creative goods such as audio-visual entertainment is hard to assess: “Any creative product that does not just replicate can be defined as innovation” (Caves 2000, 202). To measure *innovative performance*, we construct a measure that combines the number of new and renewed production deals the company was able to secure in 2009 ( $\alpha=0.87$ ). This measure is in line with prior studies that have measured innovative performance in terms of number of new products and services a firm brings to the market (Yamin and Otto 2004). However, this measure is somewhat problematic in the context of the audio-visual production industry since it does not distinguish between production deals for a season of a series (e.g. 14 episodes of 40 minutes each) and a one-off cartoon of just a few minutes. Furthermore, some fictional productions such as made for cinema productions do not require a production deal but are initiated by the production companies themselves. As a result, we tend to underestimate the innovative performance.

To develop a measure for sensing and seizing capabilities, we generated eight items using Teece’s (2007) conceptualization of these capabilities and analyzing qualitative interviews with TV producers in a pilot study. We pre-tested the instrument with TV producers and industry experts from the national industry associations. We identified the following four items to measure *sensing capabilities*: (1) the number of trade fairs and events the firm attended in 2009; (2) the number of industry newsletter the firms subscribed to in 2009; (3) the number of research reports the firm purchased in 2009; and (4) the number of full time equivalents who are devoted to research and development. These items were standardized and summated in one scale ( $\alpha=0.96$ ).

To measure *seizing capabilities* we identified the following four items: (1) the number of new production techniques the company has developed over the previous three years; (2) the number of new suppliers or partners the company had worked with over the previous three years; (3) the number of structural changes the company had implemented over the previous three years; and (4) the number of new distribution methods the company had used over the previous three years. These items were standardized and summated in one scale ( $\alpha=0.74$ ).

The study also includes several control variables. *Company size* is measured by the sum of full time employees and freelance staff. The two values were standardized prior to be summed together. *Company age* is measured by the number of years the company has been in operations. Two variables measure the *genres* the company produces: the respective percentages of the company's output (in hours) coming from fictional entertainment and from non-fictional entertainment. Two variables measure the main *distribution channels*: the respective percentage of the company's output (in hours) distributed through cinema and through TV. *Environmental dynamism* is measured by a six item scale slightly adapted from Miller and Friesen (1982) ( $\alpha=0.80$ ). Finally, *financial resources* are measured by the number of grants each company was able to secure in 2009. The measure has to be regarded as a rough proxy only, since the directives how grants are allocated differ considerably in the sampled countries. However, in the absence of reliable data on the company level grant data is still a better proxy than the national market volume.

## Results

Table 1 provides means and standard deviations for the sample and the correlations between the study's variables. The inter-correlation matrix shows that collinearity is not a problem in our study.

**Table 1**  
**Descriptive statistics and inter-correlations**

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11
1 Innovative performance	5.62	14.50	-										
2 Firm size	0.02	1.07	0.73*	-									
3 Firm age	16.47	14.75	0.15	0.23*	-								
4 Genre fiction	44.68	40.16	-0.06	-0.07	0.09	-							
5 Genre non-fiction	22.91	33.85	0.10	0.13	0.01	-0.57*	-						
6 Distribution channel cinema	29.45	34.47	-0.15	-0.12	-0.03	0.56*	-0.48*	-					
7 Distribution channel TV	64.31	34.38	0.13	0.14	0.09	-0.52*	0.45*	-0.89*	-				
8 Environmental dynamism	3.14	0.75	0.04	0.02	-0.10	-0.08	-0.01	-0.03	0.00	-			
9 Financial resources	5.99	8.15	0.13	0.06	0.02	0.09	-0.27*	0.31*	-0.26*	0.14	-		
10 Sensing capabilities	1.39	0.46	0.57*	0.31*	0.03	0.08	-0.16	0.06	-0.09	0.04	0.14	-	
11 Seizing capabilities	0.03	0.77	0.42*	0.59*	0.11	0.00	-0.02	-0.02	-0.03	0.20*	0.13	0.01	-

Note: \*  $p < 0.05$

□

Table 2 presents the results of the hierarchical regression analysis. Model 1 contains the control variables, Model 2 introduces the direct effect of the independent variables, Model 3 examines the quadratic effect of sensing capabilities (Hypothesis 1), and Model 4 examines the quadratic of seizing capabilities (Hypothesis 2). The models show a statistically significant increase in explanatory power. Prior to the creation of the squared terms of sensing capabilities (Model 3) and of seizing capabilities (Model 4), we mean-centered these variables to reduce multicollinearity (Aiken et al. 1991). In addition, we calculated the variance inflation factors (VIF) for each regression equation. The maximum VIF was well below the cut-off point of ten (Hair et al. 2006).



**Table 2**  
**OLS estimation of innovative performance**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Firm size	<b>9.71***</b> (0.84)	<b>6.73***</b> (1.00)	<b>7.16***</b> (0.63)	2.18 (1.83)	<b>7.34***</b> (0.61)	3.75 (2.25)
Firm age	-0.02 (0.07)	-0.01 (0.06)	0.01 (0.04)	0.04 (0.06)	0.01 (0.03)	0.03 (0.06)
Genre fiction	0.02 (0.03)	0.02 (0.03)	0.03 (0.02)	0.03 (0.02)	0.03 (0.01)	0.03 (0.03)
Genre non-fiction	0.01 (0.03)	0.05 (0.03)	0.02 (0.02)	<b>0.06*</b> (0.03)	0.02 (0.02)	0.05 (0.03)
Distribution channel cinema	-0.09 (0.06)	-0.04 (0.05)	<b>-0.09**</b> (0.03)	-0.06 (0.05)	<b>-0.09**</b> (0.03)	-0.06 (0.05)
Distribution channel TV	-0.04 (0.06)	0.01 (0.05)	-0.03 (0.03)	-0.00 (0.05)	-0.02 (0.03)	-0.01 (0.05)
Environmental dynamism	0.01 (1.17)	-0.47 (1.01)	-0.38 (0.64)	-0.36 (0.98)	-0.18 (0.61)	-0.26 (0.98)
Financial resources	0.23 (0.12)	0.16 (0.10)	0.09 (0.06)	<b>0.21*</b> (0.10)	<b>0.13*</b> (0.06)	<b>0.19*</b> (0.10)
Sensing capabilities		<b>13.24***</b> (1.78)	<b>3.22*</b> (1.35)	<b>13.49***</b> (1.73)	-0.25 (0.87)	-2.76 (2.03)
Seizing capabilities		2.14 (1.30)	-1.23 (0.86)	-1.66 (1.81)	-0.54 (1.67)	<b>13.92***</b> (1.77)
Sensing capabilities squared			<b>7.10***</b> (0.52)		<b>3.00*</b> (1.26)	
Seizing capabilities squared				<b>2.35**</b> (0.80)		<b>4.57*</b> (2.03)
Sensing capabilities cubic					<b>1.58***</b> (0.45)	
Seizing capabilities cubic						-0.45 (0.37)
Constant	9.72 (6.93)	-1.97 (6.01)	3.74 (3.82)	-3.73 (5.87)	5.83 (3.70)	-4.08 (5.86)
R-squared	<b>0.56***</b>	<b>0.70***</b>	<b>0.88***</b>	<b>0.69***</b>	<b>0.89***</b>	<b>0.69***</b>
Adj. R-squared	0.53	0.67	0.87	0.72	0.88	0.72

Note: Standard errors in parentheses; \*\*\* p<0.001. \*\* p<0.01. \* p<0.05; N=133

□

### *Effect of sensing capabilities on innovative performance*

Hypothesis 1 predicts a curvilinear (J-shaped) relationship between sensing capabilities and innovative performance. We test this hypothesis including a main effect of sensing capabilities and a squared term of this variable. The interaction term is statistically significant. The plot shown in Figure 2 helps interpreting this curvilinear effect. The calculations are based upon the formulas provided in Aiken and West (1991). Figure 2 shows a pattern that is consistent with the relationship suggested by Hypothesis 1. It depicts a relationship that is marginally negative for low levels of sensing capabilities, and then positive for medium and high levels of sensing capabilities. Thus, we find support for hypothesis 1.

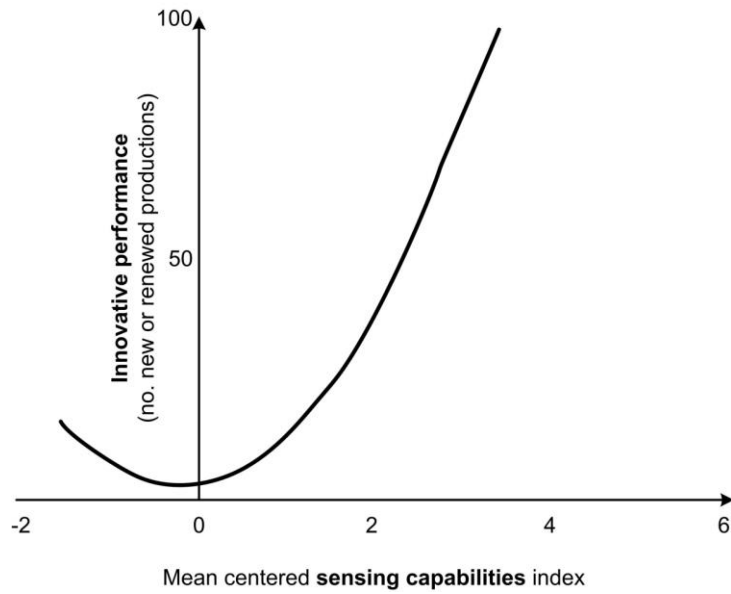


Figure 2. **Curvilinear effect of sensing capabilities on innovative performance**

*Effects of seizing capabilities on innovative performance*

Hypothesis 2 predicts a curvilinear (J-shaped) relationship between seizing capabilities and innovative performance. We test this hypothesis including a main effect of seizing capabilities and a squared term of this variable. The interaction term is statistically significant. The plot shown in Figure 3 shows a pattern that is consistent with the relationship suggested by Hypothesis 2. It depicts a relationship that is very marginally negative for low levels of seizing capabilities, and then becomes positive for medium and high levels of seizing capabilities. Thus, we find support for hypothesis 2.

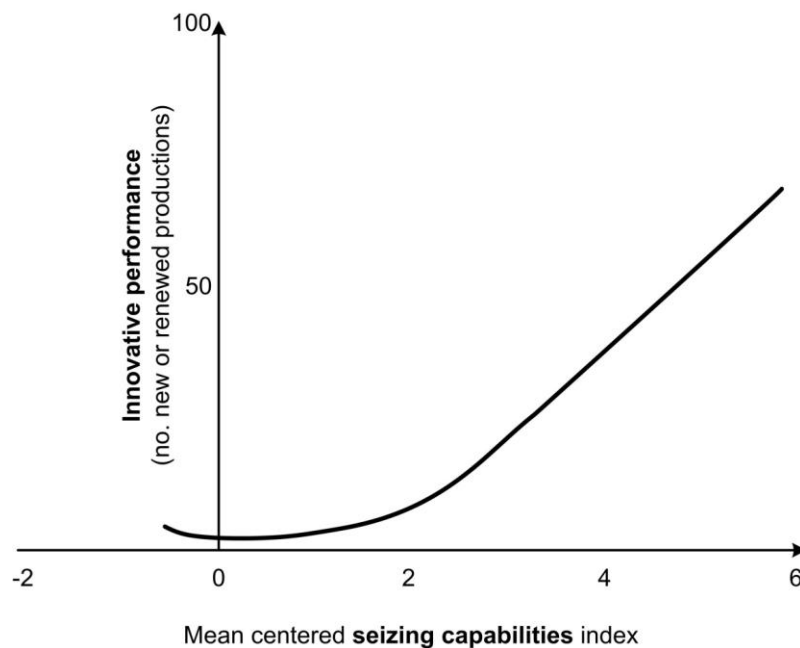


Figure 3. **Curvilinear effect of seizing capabilities on innovative performance**

As robustness check for our models we also tested for the presence of alternative, non-linear relationships between our independent and dependent variables. Specifically, we tested for the presence of an S-shaped relationship between sensing and seizing capabilities and innovative performance. One could expect that very high levels of these capabilities might be detrimental for innovative performance in small firms, because of the very high costs involved (Terziovski 2010). We built the test of the S-shaped relationships by adding the cubic term of sensing and seizing capabilities, after the squared terms and the linear terms. For the S-shaped relationship to hold, the squared terms should have been statistically significant and negative. The results of these additional analyses are reported in Table 1, Model 5 and Model 6. For what concerns the S-shaped relationship between sensing capabilities and innovative performance, the cubic term of sensing capabilities is statistically significant, yet positive (Table 1, Model 5). Thus, this result does not support a negative relationship between sensing capabilities and innovative performance for very high levels of sensing capabilities. On the opposite, it suggests an exponential relationship: high levels of sensing capabilities have an increasingly positive effect on innovative outcomes.

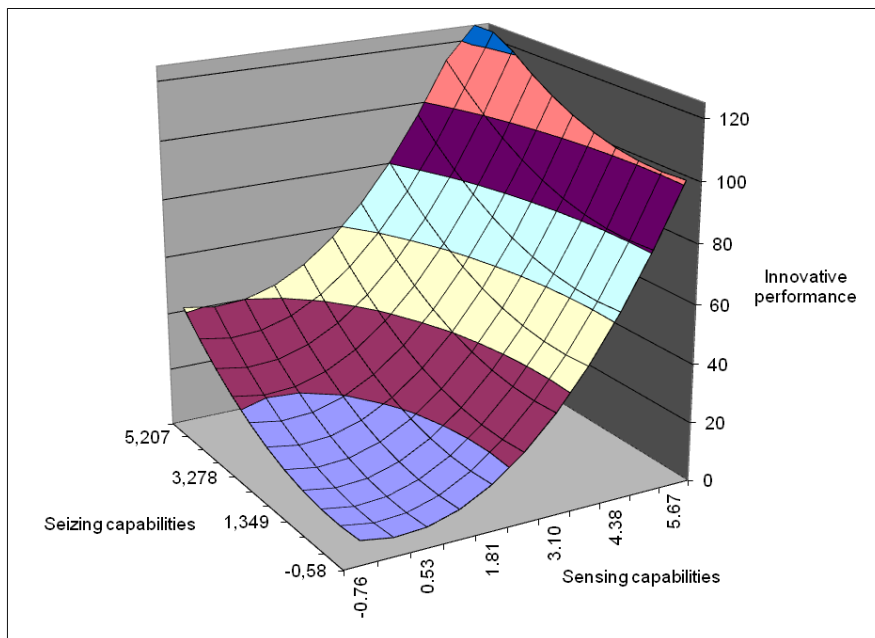


Figure 4. **Relationship between sensing capabilities and innovative performance across different levels of seizing capabilities**

To further interpret these results we drew on them and constructed Figure 4 to illustrate the relationship between sensing capabilities and innovative performance across firms with differing levels of seizing capabilities. This figure shows a relationship that is in line with the one reported in Figure 2. The calculations are based upon the formulas provided in Aiken and West (1991). Specifically, it depicts a relationship that is marginally negative for low levels of sensing capabilities, and then positive for medium and high levels of sensing capabilities. A comparison of the differences between different levels of seizing capabilities illustrates a positive and significant moderation effect of seizing capabilities. Indeed, a firm with a sensing capability of 1.4 (the average value of sensing capabilities) and a seizing capabilities

of 4 has an innovative performance higher than for a firm with the very same sensing capabilities, but a seizing capability of 1. The cubic term of seizing capabilities was not statistically significant in Model 6. Thus, no support is found for an S-shaped relationship between seizing capabilities and innovative performance.

### **Discussion and conclusions**

As noted by Teece (2007, 1329) “selecting, adjusting, and/or improving the business model is a complex art.” This is particularly true for companies competing in creative industries, which need to cope with a Schumpeterian world of innovation-based competition (Randle and Dodourova 2010). As previously mentioned in the article, organizations in the creative industries historically have been slow to adapt their products, business models and organizations changes in their environments. Building on Teece (2007) and Achtenhagen, Melin and Naldi (forthcoming), we hold that dynamic capabilities focused on sensing and seizing opportunities and threats are crucial for innovation, and at heart of ability of organizations in the creative industries to adjust and continually renew their products and business models.

This study has examined the nature of the relationship between two subsets of dynamic capabilities—sensing and seizing capabilities—and innovative performance, in a sample of European audio-visual producers. As depicted in Figure 2, Figure 3 and Figure 4, we found that both capabilities have a nonlinear (J-shaped) relationship with innovative performance.

These findings provide empirical evidence in the context of creative industries that the capability to sense new business opportunities (~sensing) and the capabilities to develop these opportunities into marketable products/services (~seizing) enhance a company’s innovative performance. Therefore, in line with prior research on creative industries, our study holds that firms in creative industries do not need additional ‘creative’ skills (Randle and Dodourova 2010) as much as organizational routines and processes for sensing and seizing new business opportunities and turn creative ideas into new value propositions. More importantly, as expected, the effects of these capabilities on innovative performance are not linear. Creative firms in the TV industry need a threshold level of these capabilities to be able reap their benefits. Indeed, these firms operate in a business environment that is becoming increasingly complex and diverse. To achieve excellence, this type of project-based organizations, which rely heavily on freelancers, need substantial investments in sensing and seizing capabilities. Little investments will be just like a drop of water in the ocean.

These findings have also important implications for the dynamic capabilities literature. Teece (2007) suggests that sensing and seizing capabilities are two subset of dynamic capabilities that allow the firm to create new products and processes, and respond to changing market circumstances. However, scholars still question whether sensing and seizing capabilities are directly and immediately related to innovation. Our study shows that these capabilities have the potential for influencing innovative performance. However, in small and medium sized firms, very low levels of these capabilities are not sufficient. Small and medium sized firms need to build a ‘threshold level’—or ‘critical mass’— of these capabilities to be able to reap their benefits and foster innovation. Thus, scholars investigating the effects of dynamic capabilities on innovation and performance outcomes can begin to move beyond studying the direct and immediate effects of dynamic capabilities on firm outcomes, and devote more attention to how these effects vary along different levels of these capabilities.

At the same time, the exponential increase in innovative performance for medium to high levels of dynamic capabilities, reported in Figure 4, suggests that if a firm is continuously investing in sensing and seizing capabilities, there might be gains in efficiency and innovation to be realized. This finding is in general agreement with Zahra, Sapienza and

Davidsson (2006) work, which suggests that the repeated use of dynamic capabilities decreases their future costs.

Further, our study indicates that the effects of sensing and seizing capabilities should not be investigated in isolation. Rather, the positive moderation effect of seizing capabilities on the relationship between sensing capabilities and innovative performance (Figure 4), reinforces Teece's (2007) contention that these subsets of capabilities augment each other's benefits. This finding is also in line with Eisenhardt and Martin (2000) who suggest that overall dynamic capabilities require a mix of two logics, the logic of exploration—or sensing to use our study's terminology—and exploration—or seizing to use our terminology.

Finally, our study advances our knowledge on business model change. For example, it extends the model by Demil and Lecocq (2010) suggesting that change in business models is not only created by the interactions between its building blocks, namely, resources and competences, organizational structures, and value propositions. We posit that sensing and seizing capabilities are also needed to extend, modify or change the three building blocks of business models.

#### *Implications for managers in the creative industries*

The survival of organizations in the creative industries is based on the continuous creation of novelties. For instance; audio-visual production companies are expected to generate new episodes for their shows on regular basis; book publishers are expected to launch new books; and magazines have to publish new creative issues on a predefined schedule. However, this routinized creative capability should not be confused with the dynamic capabilities examined in this study. Often, as already mentioned above, organizations in the creative industries have proven to be conservative laggards, and have had relatively weak dynamic capabilities. The findings generated by this study offers practical guidance to managers in audio-visual production companies how they might manage their organizations in order to strengthen their dynamic capabilities. The J-shaped relationships between dynamic capabilities and innovative performance call on these managers to ensure that “enough” resources are spent on sensing and seizing activities before these investments will have an impact on innovative performance.

It is apparent that managers of these organizations have to engage in several sensing or seizing activities in order to reach a level where their efforts really pay off. To some extent this reinforces the relative importance of company size and draws their attention to a structural characteristic of many organizations in the creative industries, namely that the industry is dominated by small entrepreneurial organizations. Organizations in the creative industries with only one or two employees quickly reach a physical limit for how much sensing is possible. A producer in an audio-visual production company can only read so much and visit so many events without neglecting his or her duties in the production process. Thus, sensing and seizing capabilities function as a barrier to growth in the audio-visual production industry as well as for the creative industry in general.

#### *Limitations*

These results need to be considered bearing in mind the limitations of our study. First, our operationalization for innovative performance could be improved. The number of new products and services a firm brings to the market might be less meaningful in some audio-visual production, e.g. fiction, where every product has to comprise a limited amount of innovation. Furthermore, it might be helpful to distinguish between content innovations and process innovations. Process innovations are usually not evident in the product and respondents might be reluctant to reveal them since they are regarded as temporary competitive advantage before they evolve as industry standard.

Second, our response rate is low, although it compares favorably with similar studies. This must be regarded as a general problem when researching small companies. A company with less than ten employees is less prepared to devote time to academic research. The low response rate does not allow us to run separate analyses to compare the influence of market size and different regulatory and industry traditions. We would suspect that the minimum of the J-shape varies across different countries.

Third, we have a single respondent per company. While most small audio-visual production companies are micro firms, where the founder or CEO is very knowledgeable about the firm and its capabilities, some companies may be organized as partnerships where a number of industry veterans team up to share a corporate skeleton, yet operating fairly independently from one another. Thus, in these cases it is questionable whether one respondent has a complete picture of the company capabilities and a second respondent might have been of help to ensure the validity and reliability of our study. While we acknowledge these limitations, we also see them as opening up avenues for future research.

#### *Directions for future research*

Future research could build on our work in several ways. First, this study conceptualizes capabilities as building blocks of business models, along with resources and competences, organizational systems and value propositions (Demil and Lecocq 2010) (Figure 1). Empirically, we test only one part of this model—that is, dynamic capabilities and their impact on innovation performance. Future studies could examine the other parts of the conceptual model as well as various contingencies and conditions under which these relationships contribute to performance. These studies should also try to enhance the understanding of the apparently non-existing correlation between continuous creative capability and Teeceian dynamic capabilities within organizations in the creative industries.

Second, in testing the relationship between sensing and seizing capabilities and innovative performance in small, creative firms, our study suggests that researchers need to be careful in expecting an immediate positive relationship between these capabilities and innovation performance. Our analyses show that the relationship between dynamic capabilities—in specific sensing and seizing capabilities—and innovative performance varies with the levels of dynamic capabilities. Therefore, researchers interested in dynamic capabilities and their performance implications in the creative industries need to give equal attention to the costs and the benefits of implementing the activities that undergird dynamic capabilities.

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