

The Relative Advantage of Marketing over Technological Capabilities in Influencing New Product Performance: The Moderating Role of Country Institutions

Martin Eisend, Heiner Evanschitzky, and Roger J. Calantone

ABSTRACT

Marketing and technological capabilities are major drivers of new product performance. Prior research has suggested that marketing capabilities outperform technological capabilities. This study shows that the relative advantage of marketing over technological capabilities for new product performance depends on the institutional context in a country. Meta-analytic data of 341 effect sizes of the relationship between capabilities and new product performance taken from 50 articles with 57 independent samples and collected in 17 different countries reveal new contingencies to the capabilities framework. Although in general, marketing capabilities have a stronger influence than technological capabilities on new product performance, this effect is moderated by institutional context factors. The relative advantage decreases and even reverses with increasing growth rates; it further decreases with increasingly stronger rules of law in a country; and it increases in societies that put emphasis on self-expression values over survival values. These findings contribute to research on the utility of different capabilities, inform the institution-based view of firms in international marketing, and provide implications for international marketing managers.

Keywords: capabilities, institutions, new product success, meta-analysis

Capabilities, the organizational processes by which a firm develops and transforms resources into value offerings for the market, are major sources for companies to achieve competitive advantage and superior performance (Day 1994; Morgan, Kaleka, and Katsikeas 2004). Companies deploy different kinds of capabilities to increase their performance. Recent research indicates that, in general, marketing capabilities have a stronger impact on performance than other main capabilities such as research and development or operations capabilities (e.g., Krasnikov and Jayachandran

2008). However, prior research has been mainly conducted in the specific cultural context of Western and developed countries. The findings, therefore, raise the question of whether the advantage of marketing capabilities over other capabilities persists in other cultural contexts.

Variation in the relative advantages of different capabilities across cultures has been suggested by researchers who claim that the utility of capabilities depends on the market environment and that institutions in markets are

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likely to shape the effects of capabilities on firm performance (Eisenhardt and Martin 2000; Meyer and Sinani 2009). Institutions—that is, formal rules and informal restraints that structure political, economic, and social interactions within a market, society, or country (North 1991)—regulate human activity, set standards for acceptable behavior, and influence beliefs and emotions (Scott 2001). As a result, the institutional context in a country can shape how companies operate and how they perform (Peng, Wang, and Jiang 2008; Williams and Martinez 2012), and the influence of capabilities on firm performance can depend on the institutional context (Boso et al. 2013; Wu 2013).

In this study, we investigate the relative advantages of different capabilities and how they depend on the institutional context. We focus on new product performance as a company's outcome and on the two capabilities that have been identified as major drivers of new product performance (Henard and Szymanski 2001; Moorman and Slotegraaf 1999): marketing and technological capabilities. Prior meta-analyses have shown that, in general, marketing capabilities have a stronger influence on new product success than technological capabilities (Evanschitzky et al. 2012; Henard and Szymanski 2001). Furthermore, it has been shown that organizations with a market culture show the highest new product performance, whereas hierarchy-type organizations show the lowest performance, and that this effect is moderated by a value congruency between organizational and national culture (Eisend, Evanschitzky, and Gilliland 2015). Prior research has further shown that the effect of a single capability such as marketing capability varies across countries and that differences in socioeconomic, legislative, and cultural institutions among these countries moderate the influence of the capability on performance (Wu 2013). Thus, in the current study, we look at the relative advantage of marketing over technological capabilities as drivers of new product performance and investigate whether and how country institutions moderate the relative advantages of these two core capabilities; that is, we investigate how the relative advantage of marketing capabilities over technological capabilities is attenuated or even reversed by country institutions.

For this purpose, we theoretically combine research that has looked at the relative influence of capabilities (e.g., Krasnikov and Jayachandran 2008) with research that has looked at how the institutional context moderates the influence of a specific capability on important outcomes (Wu 2013). The conceptual background of our study refers to the capabilities framework and the institutional

view. Our empirical approach is based on a meta-analysis on the capability–new product performance relationship, and we investigate the moderating influence of important institutions in different countries. We select data from a prior meta-analysis on drivers of new product success (Evanschitzky et al. 2012) and update this data set. Our data set differs from the prior meta-analysis not just in terms of the additional and newer data but also because we have coded and analyzed further moderator variables (e.g., rule of law) that the prior meta-analysis did not consider. A similar methodological approach has been used for a meta-analysis that has selected a different set of antecedents of new product success, namely, antecedents related to organizational culture (Eisend, Evanschitzky, and Gilliland 2015).

Because each empirical study in the meta-analysis was set in a particular national context at a specific point in time, the combined analysis of these studies allows us to draw meta-analytical insights on the moderating role of country institutions that would hardly be possible by conducting primary research in a small set of countries at one point in time. The necessity of this work is also amplified by the key role of innovation in the renewal of the revenue-producing elements of the firm.

The contribution of this study to the international marketing literature is twofold. First, the study findings contribute to the capabilities framework by illuminating the differential effect of two important capabilities as drivers of new product success across different countries (e.g., Kaleka 2011; Krasnikov and Jayachandran 2008; Vorhies and Morgan 2005). International marketing scholars have employed the capabilities framework to study the origins of competitive advantage in global markets, but they have usually focused on either marketing or other capabilities while neglecting the relative advantages of some major capabilities (e.g., Ju et al. 2013; Kaufman and Roesch 2012; Kemper, Engelen, and Brettel 2011). By applying an institution-based perspective on capabilities and testing the moderating effect of institutional context, this study identifies conditions under which marketing capability is a superior or inferior driver of new product performance, compared with technological capability.

Second, our study contributes to the institution-based view of the firm and the related stream of research in international marketing on country-specific influences on firm performance (e.g., Chang, Bai, and Li 2015; Dwyer, Mesak, and Hsu 2005). The institutional view suggests that the market environment shapes which strategies

firms employ, what kind of choices they make, and how they perform. However, the existing international marketing literature has offered limited insights into how institutions explain the advantages of different kinds of capabilities. Drawing on established typologies of institutional subsystems (North 1990; Scott 2001), we detail how different institutions explain the relative advantages of different capabilities. These insights provide important implications for marketing practitioners, in particular as related to new product development activities of international and global firms. The findings of this study indicate in which institutional settings these firms should focus on either marketing capabilities, technological capabilities, or both.

MARKETING CAPABILITIES, TECHNOLOGICAL CAPABILITIES, AND NEW PRODUCT PERFORMANCE

Capabilities enable a firm to deploy firm resources and to perform value-creating tasks more effectively, both of which are key determinants of a firm's competitive advantage and, thus, performance (Day 1994; Harmancioglu, Droge, and Calantone 2009; Teece, Pisano, and Shuen 1997). Two main capabilities have been identified as drivers of new product success (Henard and Szymanski 2001; Moorman and Slotegraaf 1999): marketing capability and technological capability. New product success or performance relates to either technological performance of a new product (e.g., superior product quality) or financial or market-based performance (as measured by, e.g., market share or return on investment). Both marketing and technological capabilities can increase new product performance because these capabilities help a firm adapt to the evolving requirements of customers and markets, which is needed to develop and introduce new products successfully.

Marketing capability represents a firm's ability to understand and predict customers' needs better than its competitors (Krasnikov and Jayachandran 2008); in the context of new product development, it is the capability with which a firm conducts marketing activities and launches a product, such as initial screening, preliminary market assessment, detailed market study, customer tests of products, and market launch (e.g., Verona 1999). The stronger a company's marketing capability, the more likely the company will successfully introduce products.

Technological capability refers to a firm's ability to develop and apply technology to produce new products

more effectively and efficiently than its competitors; in particular, it relates to a firm's capability in using and applying technology in a new product initiative, such as preliminary technical assessment, prototype development, pilot production, and production start-up (e.g., Yalcinkaya, Calantone, and Griffith 2007). The stronger a company's technological capability, the more likely the company will successfully introduce products.

Previous research has suggested that capabilities tend to be positively related to performance (Krasnikov and Jayachandran 2008). However, capabilities per se do not guarantee competitive advantage; they confer advantage only if they are applied in a way that delivers superior value to customers over competitors in dynamic markets (Eisenhardt and Martin 2000). Capabilities can even turn into rigidities, which can have a negative influence on performance (Leonard-Barton 1992). For instance, technology-driven core capabilities can lead to path dependencies if a firm fails to adapt to market developments and continues to stick with an outdated technology. The extant literature has tried to explain the variance in the relationship between capabilities and performance by applying different types of capabilities that are assumed to have relative advantages over each other (Barney 1991).

Following the assumptions of the capabilities perspective (Teece, Pisano, and Shuen 1997), Krasnikov and Jayachandran (2008) argue that the impact of different types of capabilities on performance depends on two characteristics of the knowledge that drives these capabilities: imitability and mobility. The more difficult it is to copy capabilities (imitability), the greater the capabilities' impact on performance. The more difficult it is to obtain capabilities on the market (mobility), the greater the capabilities' impact on performance. These authors further argue that marketing capabilities, compared with technological capabilities, are less susceptible to imitation because of the tacit knowledge involved, are less likely to be observed from the market, and are almost immobile. As a result, marketing capabilities lead to better performance than technological capabilities.

The relative advantages of capabilities might be specific to the institutional context of a country, because variations in institutional settings are related to imitability and mobility of particular capabilities and thus to the influence of different capabilities. For instance, the imitability and mobility of technological capabilities depends on formal rules and laws for licensing and patents, a condition that varies across countries. In the next section, we refer to the institution-based view of the firm and theorize

contingencies under which either marketing or technological capability is a superior driver of new product performance.

THE MODERATING ROLE OF INSTITUTIONS

An institution is defined and characterized as a set of formal rules and informal restraints that structure political, economic, and social interactions in order to perpetuate order and safety within a market or society (North 1991). Institutions regulate human activity, set standards for acceptable behavior, and influence beliefs and emotions (Scott 2001). The institutional context can shape how companies operate and how they perform (Peng, Wang, and Jiang 2008; Williams and Martinez 2012), and the influence of capabilities on firm performance can depend on the institutional context (Boso et al. 2013; Wu 2013).

The institutional view has emerged as a useful paradigm for explaining strategies and competitive advantages of firms in different country markets (Peng, Wang, and Jiang 2008). For example, Peng (2003) has shown that as soon as market-supporting institutions develop in markets, firms rely less on networks and personal relations and more on contracts, strategies, and core capabilities. Thus, the influence of different capabilities depends on the institutional context in different markets.

Building on institutional theory by North (1991) and Scott (2001), Burgess and Steenkamp (2006) distinguish between three distinct but related institutional subsystems that provide structure to society: socioeconomic, cultural,

and regulative systems. The authors further suggest key components to capture each of the institutional subsystems, which we incorporate into our research.

The socioeconomic system and its development can be captured by the gross domestic product (GDP) growth rate for each economy (Berry, Guillén, and Zhou 2010). National regulative systems have been captured using information on rule of law that measures the respect for the institutions that govern interactions of citizens and the state (Kaufmann, Kraay, and Mastruzzi 2010; Steenkamp and Geyskens 2006). Cultural systems are measured by cultural indices for different countries: we refer to Inglehart's cultural values for the cultural system (Steenkamp and Geyskens 2012). We examine how these institutions moderate the relationship between capability and new product success.

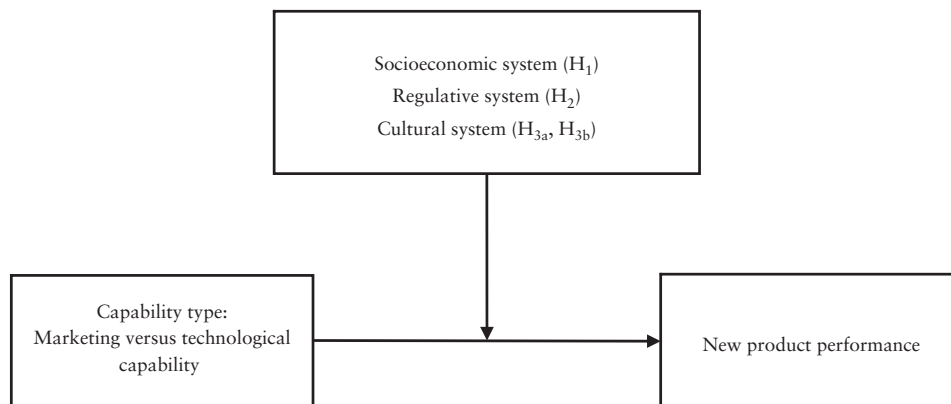
Figure 1 outlines the research approach of this study. It indicates the relative influence of two types of capabilities on new product performance as the main relationship that is moderated by different institutions. In the following section, we derive the moderating hypothesis for each of the suggested institutional subsystems.

Socioeconomic System: GDP Growth Rate

The socioeconomic system refers to conditions and dynamics caused by economic changes and developments in a society. A core component is the rate at which the economy develops, usually measured by the annual GDP growth rate.

Krasnikov and Jayachandran (2008) argue for the competitive disadvantage of technological capabilities in

Figure 1. Conceptual Framework



rapidly developing markets due to a higher degree of imitability, as well as the idea that mobility applies mainly to markets with low growth rates, in which licensing of technologies is more common. Technological knowledge is more likely to be codified (e.g., by patents) and is more likely to use standard procedures (e.g., total quality management, international standards) than marketing knowledge in rapidly developing markets. Although patents and licensing are mechanisms to protect intellectual property, they require the licensing company to disclose critical information about the technology, thereby enabling competitors to use this information for their own technology developments. The disclosure of such information makes technology more susceptible to imitation than marketing knowledge, which is mainly based on tacit knowledge (Simonin 1999). In rapidly developing markets, in which licensing of technologies is less common, lower imitability of technological capabilities increases their competitive advantage.

Furthermore, Wu (2013) shows that the influence of marketing capabilities is stronger in markets with low growth rates than markets with high growth rates because firms with strong and sophisticated marketing capabilities can address consumers' diverse preferences and unique needs in these markets better. In markets with high growth rates, most customers have low purchasing power and prefer affordable products that offer basic functionality and are marketed as such over products with novel features and premium prices that are due to low imitability and mobility of marketing capabilities. As a result, marketing capabilities are less important for successfully addressing customers in these markets (Song, Nason, and Di Benedetto 2008). A set of studies in the marketing logistics global effects cluster has pointed out a long relationship between the physical distribution leverage of a country's infrastructure and the ability of that country to progress, utilize all of their production capabilities, and distribute food efficiently to create more jobs for those who decide to seek economic prosperity in urban areas. Thus, marketing capabilities, when put into the dynamics of a rapidly developing economic situation, provide not only strategic slack to firms but also a latent economic platform for progress, variety in consumption, and less expensive food (Bowersox and Calantone 1998; Bowersox, Calantone, and Rodriques 2003).

As a result, marketing capabilities, compared with technological capabilities, are the main drivers of new product success in markets with low growth rates, but this advantage becomes smaller for rapidly developing markets.

H₁: The relative advantage of marketing over technological capabilities related to new product performance decreases with increasing growth rates in a country.

Regulative System: Rule of Law

The regulative system in a country involves the capacity to establish formal rules and to inspect society members' conformity to these rules (Scott 2001); it defines rights and obligations in exchange relationships in markets (Wu 2013). Rule of law is an essential component of the regulative system (North 1990) and addresses the degree to which the behavior of organizations is guided by formal, transparent, and legal rules and to what extent individuals and organizations have confidence in and abide by these rules (Kaufmann, Kraay, and Mastruzzi 2010; Steenkamp and Geyskens 2006).

Rule of law facilitates the development of technology-based innovations (Oxley and Yeung 2001). Technological knowledge is likely to be more imitable and mobile than marketing knowledge because technological knowledge is codified and better accessible than marketing knowledge, which is often based on tacit knowledge (Simonin 1999). Countries with strong regulative systems can support the control and restriction of imitability and mobility of these capabilities, for example, through patents that provide the inventor firm with protection from copying. Therefore, technological capabilities' influence on new product success should be stronger in countries with strong rules of law.

On the other hand, a weak regulative system in a country makes market transactions costly and uncertain. Wu (2013) has argued that in such situations, marketing capabilities work as a substitute for strong regulation because they help firms reduce transaction costs and uncertainty in exchange relationships. An important facet of the marketing capability as defined earlier in this article is the gathering of market information, for example, information about the financial situation of customers and suppliers as well as the building of durable relationships with customers that discourage opportunistic behavior (Day 1994). In countries with strong legislative systems, in contrast, contracts are stable and boundaries exist for acceptable behavior (Steenkamp and Geyskens 2006). Firms can easily acquire information about customers and business partners through intermediaries. Thus, the role of marketing capabilities in reducing transaction costs and uncertainty becomes less important.

H₂: The relative advantage of marketing over technological capabilities related to new product performance decreases with increasing rule of law.

Cultural System: Inglehart's Cultural Values

The cultural system represents the culturally supported values of a society that guide individual and firm behavior. Prominent approaches to measuring cultural systems in international marketing are Hofstede's (2001) work and the Globe project (House et al. 2004). The work by Inglehart (1997) has been introduced as a fruitful approach in distinguishing between cultural orientations of markets (Steenkamp and Geyskens 2012). Other than Hofstede's work and the Globe project, Inglehart's measures of culture allow for variations and developments over time, and they are therefore more appropriate for the data in our study that vary across countries *and* time, because they take into consideration the cultural changes within countries.

Inglehart (1997) suggests that socioeconomic development of a society leads to cultural changes. He proposes two major and separate dimensions that capture these changes and the differences across societies: the dimension of traditional values moving toward secular-rational values and the dimension of survival values moving toward self-expression values.

Traditional Values Moving Toward Secular-Rational Values. The dimension of traditional values moving toward secular-rational values reflects the bureaucratization, centralization, rationalization, and secularization of societies that occurs typically in the industrialization phase of societies. Secular-rational values support clear rules and authorities, rational organizations, and a hierarchical governance structure (Steenkamp and Geyskens 2012). Such rules and authorities are useful for exploitation of technological knowledge because a strong governance structure can control and restrict imitability and mobility of technological capabilities.

Marketing capabilities, on the other hand, suffer under too much bureaucracy, centralization, and rationalization. Organizations with a bureaucratic governance and hierarchical leadership are the ones considered least successful in creating successful innovations (Desphandé and Farley 2004). Such cultural orientations in organizations are strongly linked to cultural institutions in a country and reveal similar effects on firm performance (Eisend, Evanschitzky, and Gilliland 2015). We therefore expect that when moving from traditional toward secular-rational

values across countries, the relative advantage of marketing over technological capabilities decreases.

H_{3a}: The relative advantage of marketing over technological capabilities related to new product performance decreases the more a country emphasizes secular-rational values.

Survival Values Moving Toward Self-Expression Values. The dimension of survival values moving toward self-expression values reflects the emphasis on individual autonomy and self-expression that typically occurs in the phase of postindustrialization. Societies that value autonomy and self-expression give consumers a sense of human autonomy and creativity (Inglehart and Welzel 2005). With this autonomy and creativity, consumers develop diverse needs and unique preferences. Firms need to develop strong marketing capabilities to identify these small segments of consumers with diversified preferences and to quickly respond to them, to develop products that satisfy the particular needs of these segments, and to target these segments in an efficient way and ahead of competitors (Wu 2013). For example, the development of identity-related meanings of brands is more important for a society that values autonomy and self-expression, such as the United States, than for a society where survival values are more important, such as Russia (Strizhakova and Coulter 2008).

Self-expression values can be addressed by technological capabilities, too. For example, companies such as Apple provide superior technology that helps customers to express their identity. However, as described before, because technological capabilities are likely to be more imitable and mobile than marketing capabilities, and because marketing measures are easier to adapt to changing market environments than technology, marketing capabilities are more apt to address the diversity of needs of consumers and to communicate identity-related meanings to consumers in countries that put emphasis on self-expression values.

H_{3b}: The relative advantage of marketing over technological capabilities related to new product performance increases the more a country emphasizes self-expression values.

RESEARCH DESIGN

Data Collection and Coding

For this study, we use data from a previous meta-analysis on predictors of new product performance (Evanschitzky

et al. 2012) and extend the data set by adding more recent studies. Evanschitzky and colleagues performed a comprehensive meta-analysis of 33 antecedents of new product success that provided a total of 2,618 effect sizes. We selected effect sizes that refer to effects of marketing and technological capabilities (as defined previously) on new product success. In particular, we selected all effects sizes from the categories marketing proficiency, launch proficiency, and technological proficiency. In total, 42 articles with 48 independent samples reported on 325 effects of capabilities on new product success.

Because the data set included studies that were published up to 2011, we also searched for studies published since then by using keyword searches in electronic databases (e.g., EBSCO) and on Google Scholar (using keywords such as “technological capability,” “technological proficiency,” “marketing capability,” in combination with either “new product success” or “new product performance”). We found eight more articles with nine independent samples. The final data set contains 50 studies with 57 independent samples that provide 341 effect sizes.¹

Table 1 describes the coding and operationalization of the influencing variables. The data for the institutional system variables were annual data per country (except for data on cultural systems), and we assigned the values to each study according to publication year. We subtracted 3 from each publication year because three years is the average time it takes from data collection until publication of a study. For example, if the study was conducted in the United States and was published in 2006, we used indicators for institutional system variables of the United States from 2003. The data for cultural systems by Inglehart are updated approximately every five years, and we assigned the value scores that were closest to the data collection year of each individual study.

As control variables, we refer to the taxonomy of moderators provided and detailed by Evanschitzky et al. (2012) in their meta-analysis of new product success. On the basis of previous meta-analyses (e.g., Henard and Szymanski 2001; Montoya-Weiss and Calantone 1994; Pattikawa, Verwaal, and Commandeur 2006) and their experiences during coding, those authors apply seven moderator variables: data source (senior manager vs. project manager data), data type (subjective vs. objective performance data), product type (services vs. goods), region (North America/Europe vs. Asia), scale type (single-item vs. multi-item performance measure), technology

(low-technology vs. high-technology markets), and timing (short-term vs. long-term performance data). We had to exclude the variable for region because it is highly correlated with some of the institutional system variables. We add performance type as another control variable, because the studies in our meta-analysis differ in whether they investigate technological performance or market-based and financial performance. The distinction between these types of performance variables follows the coding of outcome measures in a previous meta-analysis (Krasnikov and Jayachandran 2008), and it captures the distinction made in research on capabilities and their varying role in terms of market outcomes or efficient integration and use of resources (e.g., Eisenhardt and Martin 2000). We refrain from adding further control variables such as more detailed firm characteristics (e.g., firm size, particular industry) because the information is not readily available in all primary studies.

Two coders independently coded the variables according to instructions in a coding sheet. Coding conformity was achieved in 95% of the cases. The few differences were resolved through discussion.

Meta-Analytic Procedures

The effect size metric selected for the meta-analysis is the correlation coefficient; higher values of the coefficient indicate a stronger effect of capabilities on new product success. All effect sizes were adjusted for unreliability following common guidelines for meta-analysis (e.g., Lipsey and Wilson 2001). For the analysis, the reliability-corrected correlations were transformed into Fisher z-transformed values according to the common procedure in the literature (e.g., Krasnikov and Jayachandran 2008).

To test for the effects of the suggested variables, we model the transformed coefficients as a linear function of the influencing variables. Our data set comprises multiple effect sizes, that is, more than one effect size per study. Furthermore, we have influencing variables varying at the effect size level, that is, variables that differ within a study; and influencing variables at the study level, that is, variables that differ only between studies. We use a variance-known hierarchical linear model (HLM) estimation procedure as it is commonly applied in the literature and highly recommended as the preferred procedure to account for nested data and within-study error correlation between estimates (Bijmolt and Pieters 2001).

Table 1. Variables Used in the Meta-Analysis

Variable	Description and Operationalization	Source for Coding / Data Source	Coding and Data Description
<i>Main Variables</i>			
Capability type ^a	Captures whether the capability refers to marketing capabilities or technological capabilities.	Krasnikov and Jayachandran (2008)	0 = marketing capability (143 estimates) 1 = technological capability (198 estimates)
Socioeconomic system	Captures the macroeconomic conditions and dynamics caused by economic change in a society and is measured by the annual percentage growth rate of GDP.	World Bank, World Development Indicators (http://www.worldbank.org/); CIA World Factbook (https://www.cia.gov)	Continuous variable (M: 3.86, min: .08, max: 12.70)
Regulative system	Captures the capacity to establish formal rules and to inspect society members' conformity to these rules and is measured by rule of law from Kaufmann and colleagues' governance indicators (Kaufmann, Kraay, and Mastruzzi 2010). It measures the perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular, the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence.	World Bank, Worldwide Governance Indicators (http://info.worldbank.org/governance/wgi/index.asp)	Continuous variable (M: 1.27, min: -.89, max: 1.90)
Cultural system	Captures the culturally supported values of a society that guide individual and firm behavior and is measured by Inglehart's (1997) cultural theory that is grounded in macro-processes of modernization and industrialization and applies two dimensions: (1) Traditional vs. secular-rational values dimension reflects the contrast between societies in which religion is very important and those in which it is not. (2) The transition from industrial to postindustrial societies brings a polarization between survival and self-expression values.	World Value Survey (http://www.worldvaluessurvey.org)	Continuous variables: Traditional vs. secular-rational values (M: .17, min: -1.55, max: 1.96) Survival vs. self-expression values (M: .96, min: -1.25, max: 1.99)
<i>Control Variables</i>			
Data source	Captures whether the data are gathered from project managers or from senior managers.	Henard and Szymanski (2001)	0 = senior manager data (34 samples) 1 = project manager data (23 samples)

Table 1. Continued

Variable	Description and Operationalization	Source for Coding / Data Source	Coding and Data Description
Data type	Captures whether performance was operationalized through objective data from company records (e.g., return on investment, sales, profit) or through subjective data from managers' assessments.	Henard and Szymanski (2001)	0 = objective performance data (3 samples) 1 = subjective performance data (54 samples)
Performance type ^a	Captures whether the performance measure refers to financial/market-based performance or to technological performance.	Evanschitzky et al. (2012); Krasnikov and Jayachandran (2008)	0 = financial/market-based performance (217 estimates) 1 = technological performance measures (124 estimates)
Product type	Captures whether products are services (e.g., banking) or goods (e.g., food).	Henard and Szymanski (2001)	0 = services (6 samples) 1 = goods (51 samples)
Scale type	Captures whether performance was measured by single item or multi-item scales.	Henard and Szymanski (2001)	0 = single-item measure (18 samples) 1 = multi-item measure (39 samples)
Technology	Captures whether products are traded on high-technology markets (e.g., electronics industry) or low-technology markets (e.g., food sector).	Henard and Szymanski (2001)	0 = low-technology market (9 samples) 1 = high-technology market (48 samples)
Timing	Captures whether performance was measured closer to when the product was introduced (<36 months) or after more time had elapsed since introduction (>36 months).	Henard and Szymanski (2001)	0 = short-term performance data (44 samples) 1 = long-term performance data (13 samples)

^aVariables with data varying within studies; that is, they were collected at the effect-size estimate level (with a total of 341 estimates). The remaining variables are based on data varying at the study level (between studies); that is, they were collected at the level of independent samples (with 57 samples).

We specify the estimated model as follows:

$$(1a) \quad Z_{ij} = \beta_{0j} + \beta_{1j}X_{1ij} + \beta_{2j}X_{2ij} + e_{ij},$$

$$(1b) \quad \beta_{0j} = \gamma_{00} + \sum_1^n \beta_{nk}U_{kj} + u_{0j},$$

$$\beta_{1j} = \gamma_{10} + \sum_1^m \beta_{mk}U_{kj}, \text{ and}$$

$$\beta_{2j} = \gamma_{20},$$

where Z_{ij} is the i th effect size reported within the j th sample, and β_{1j} and β_{2j} describe parameter estimates for both influencing variables X_{1j} and X_{2j} that vary at the study level (i.e., within studies), where $X_{1ij} = 1$ if the correlation is between technological capabilities and new product performance and 0 if the correlation is between marketing capabilities and new product performance, and $X_{2ij} = 1$ if the correlation is between capabilities and technological performance and 0 if the correlation is between capabilities and financial/market-based performance.

Whereas Equation 1a describes the impact of different capability types and performance types, which vary within a study, Equation 1b describes the effect of study characteristics U_k on the intercept and slopes in the level 1 equation where γ_{n0} represents the fixed effects in the intercept and slopes β_{0j} and β_{1j} and u_j is the study-level residual error term. The study characteristics are coded as follows:

U_{01j} = socioeconomic system: GDP growth rate,

U_{02j} = regulative system: rule of law,

U_{03j} = cultural system 1: traditional versus secular-rational values,

U_{04j} = cultural system 2: survival versus self-expression values,

U_{05j} = data source: senior manager versus project manager data,

U_{06j} = data type: objective versus subjective performance data,

U_{07j} = product type: services versus goods,

U_{08j} = scale type: single-item versus multi-item performance measure,

U_{09j} = technology: low-technology versus high-technology markets, and

U_{10j} = timing: short-term versus long-term performance data.

We include all study characteristics U_{kj} as predictors for the intercept β_{0j} , and we include U_{01j} to U_{04j} as predictors of the slope β_{1j} to measure cross-level interactions as suggested in our hypotheses. To ensure that this model specification is sound, we compare different model specifications with the

suggested model empirically (e.g., an intercept-only model, a model with random effects in the intercept, a model with random effects in the intercept and slopes). To verify the models, we use the deviance statistics. The change in deviance ΔD follows a chi-square distribution and can be used to test for model fit improvements. When we compare the fit of the models, the suggested model is supported.

Collinearity is a common problem both in meta-regressions and in cross-national studies that apply nation-based measures such as cultural indicators (e.g., Steensma et al. 2000). Because there is no direct diagnostic for multicollinearity in HLM, we performed a weighted regression analysis and checked the collinearity statistic. Because we found high variance inflation factor values (>5) for rule of law and survival/self-expression values, we ran separate regression models in which we excluded either rule of law or survival/self-expression values, similar to the procedure in other meta-analytic studies that deal with national moderators (e.g., Samaha, Beck, and Palmatier 2014). Because the results of both models resemble the findings of the model that includes all predictors, we report the findings of the model with all predictors. We run HLM 7 to estimate our model.

RESULTS

The average of 341 correlations indicates a significant positive relationship between capability and new product success ($r = .26, p < .001$). The range of the individual correlations varies from $-.49$ to $.60$ and is considered heterogeneous, as indicated by the homogeneity test ($Q = 5,548.23, p < .001$). The relevant parameter estimates of the HLM for the hypothesis tests are presented in Table 2.

The positive effect of capabilities is once more supported by the significant intercept in the model ($\beta = .52, SE = .24, t = 2.19, p = .03$). We find support for three cross-level interactions. To facilitate interpretation, the interaction effects are plotted in Figure 2.

Socioeconomic system moderates the influence of capability type on new product performance ($\beta = .04, SE = .01, t = 2.93, p = .004$). The first diagram in Figure 2 shows the interaction effect: the advantage of marketing capabilities compared with technological capabilities for new product success decreases with increasing growth rate in a country; the relative advantages of both capabilities even reverses in countries with high growth rates. This finding supports H_1 .

Regulative system moderates the influence of capability type on new product performance ($\beta = .28, SE = .07,$

Table 2. Variance in the Capability–New Product Performance Relationship: HLM Estimates

Predictor Variables	Hypothesis	β (SE)	t
<i>Effect-Size Level (Within Studies)</i>			
Capability type: marketing vs. technological capability (X_1)		-.05 (.02)	2.59**
Performance type: financial/market-based vs. technological performance (X_2)		-.06 (.01)	4.84***
<i>Study Level (Between Studies)</i>			
Intercept		.52 (.24)	2.19*
Socioeconomic system: GDP growth rate (U_{01})		-.01 (.03)	.46
Regulative system: rule of law (U_{02})		-.12 (.11)	1.08
Cultural system 1: traditional vs. secular-rational values (U_{03})		.01 (.05)	.26
Cultural system 2: survival vs. self-expression values (U_{04})		.01 (.07)	.18
Data source: senior manager vs. project manager data (U_{05})		.09 (.09)	1.07
Data type: objective vs. subjective performance data (U_{06})		-.01 (.17)	.02
Product type: services vs. goods (U_{07})		-.12 (.15)	.82
Scale type: single-item vs. multi-item performance measure (U_{08})		-.01 (.09)	.12
Technology: low-technology vs. high-technology markets (U_{09})		-.07 (.10)	.72
Timing: short-term vs. long-term performance data (U_{10})		.07 (.10)	.69
<i>Cross-Level Interactions</i>			
Capability type \times Economic system ($X_1 \times U_{01}$)	H ₁	.04 (.01)	2.93**
Capability type \times Regulative system ($X_1 \times U_{02}$)	H ₂	.28 (.07)	3.77***
Capability type \times Cultural system 1 ($X_1 \times U_{03}$)	H _{3a}	.01 (.02)	.57
Capability type \times Cultural system 2 ($X_1 \times U_{04}$)	H _{3b}	-.11 (.03)	3.49***
<i>Model Fit</i>			
ΔD		119.97***	

* $p < .05$ (two-tailed tests).

** $p < .01$ (two-tailed tests).

*** $p < .001$ (two-tailed tests).

Notes: ΔD refers to the change in deviance between the unconditional model (intercept-only model without influencing variables) and the conditional model (model with influencing variables) and follows a chi-square distribution.

$t = 3.77, p < .001$). The interaction effect is depicted in the second diagram in Figure 2: the relative advantage of marketing capabilities, compared with technological capabilities, decreases with increasing rule of law. These findings are in line with H₂.

Although cultural system 1 (traditional vs. secular-rational values) shows a nonsignificant moderation effect ($t = .57, p = .57$), cultural system 2 (survival vs. self-expression values) moderates the relationship between capability type and new product performance ($\beta = -.11, SE = .03, t = 3.49, p < .001$). The third diagram in Figure 2 shows the interaction effect: the relative advantage of marketing over technological capabilities increases the more a society emphasizes self-expression values over survival values. These findings reject H_{3a} but support H_{3b}.

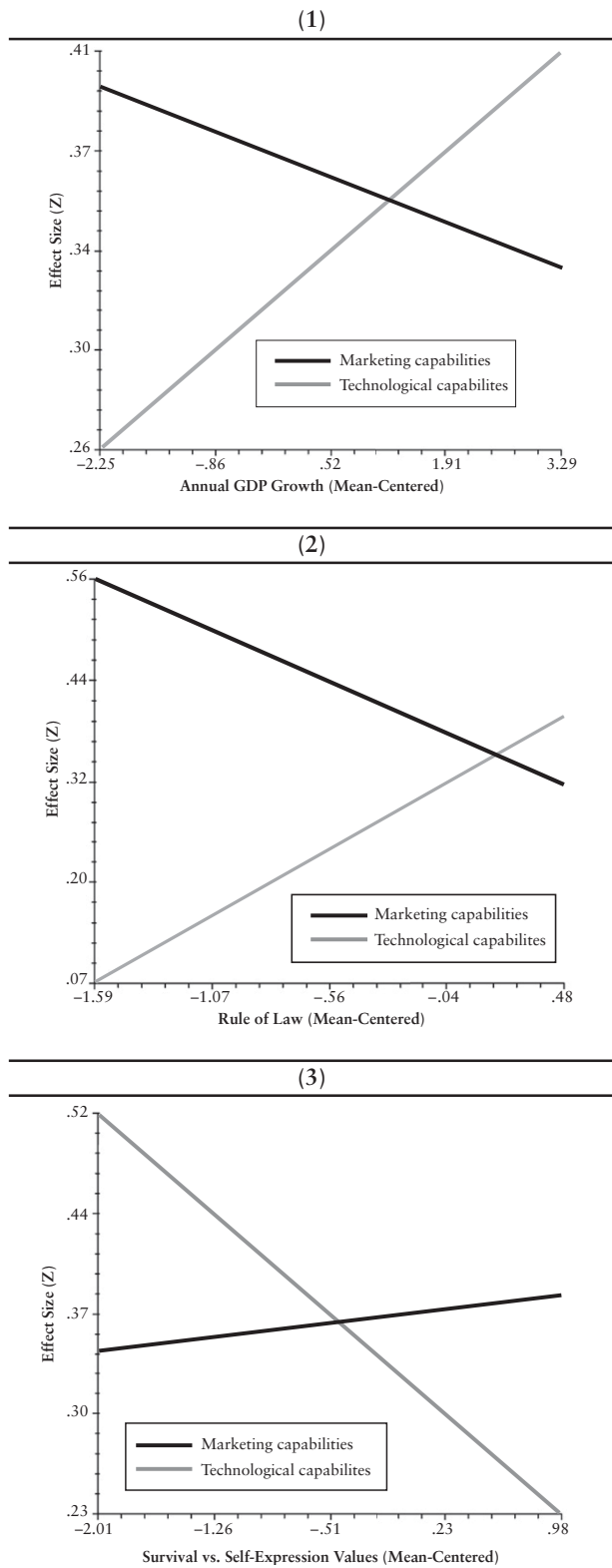
We do not find an effect on the intercept β_{0j} for any of the control variables except for performance type: the effect

on technological performance is weaker than on financial/market-based performance ($\beta = -.06, SE = .01, t = 4.84, p < .001$), which shows that capabilities are more influential on market outcomes than efficient integration and use of resources (e.g., Eisenhardt and Martin 2000). Furthermore, we find a main effect for capability type, indicating that marketing capabilities ($\beta = -.05, SE = .02, t = 2.59, p = .01$) have stronger effects than technological capabilities, supporting the strong effect of marketing capabilities that has been found in prior research (Krasnikov and Jayachandran 2008).

DISCUSSION AND IMPLICATIONS

This study shows that the relative advantage of marketing over technological capabilities on new product performance depends on the institutional context in a country. Meta-analytic data of 341 effect sizes of the relationship

Figure 2. Cross-Level Interactions



between capabilities and new product performance show that marketing capabilities have a stronger influence than technological capabilities on new product performance but that this effect is moderated by institutions: the relative advantage decreases and even reverses with increasing growth rates; it further decreases with increasingly stronger rules of law in a country; and it increases in societies that put emphasis on self-expression values over survival values.

Theoretical Implications

The study findings contribute to the capabilities framework by investigating the differential effect of two important capabilities as drivers of new product success and firm performance (e.g., Kaleka 2011; Krasnikov and Jayachandran 2008; Vorhies and Morgan 2005). Previous findings have suggested that, in general, marketing capabilities are more influential than other capabilities (Krasnikov and Jayachandran 2008; Vorhies and Morgan 2005). However, most research has been done in the same cultural context, namely, in Western societies. At the same time, international marketing scholars who have employed the capabilities framework to study the origins of competitive advantage in global markets have looked at different cultural contexts but usually focused on the effects of either marketing or other capabilities (e.g., Ju et al. 2013; Kaufman and Roesch 2012; Kemper, Engelen, and Brettel 2011). Adding to these research streams, the current study shows that the relative influence of different capabilities depends on institutions, too. That is, a single capability can have different effects across countries and institutions, *and* these effects can alter the advantage of one capability over another. By applying an institution-based perspective on capabilities and testing the moderating effect of institutional context, this study identifies conditions under which either of two major capabilities related to new product development is a superior or inferior driver of performance. Thus, the study introduces new contingencies to the capabilities framework. The rationales explaining the contingent effects of institutions are based on the source of relative advantages of capabilities related to new product success: mobility and imitability. Both can change depending on the context, which changes the relative advantages, too.

This empirical insight of our research supports the claims by other authors who have pointed out that prior research in marketing has mainly focused on Western societies and developed markets that substantially differ from other societies and markets in the world and have provided conditions that challenge the assumptions of theories

developed in Western economies (Burgess and Steenkamp 2006). For example, the insight that marketing capabilities contribute more to the competitive advantage of firms than technological capabilities, because technological capabilities have a higher degree of imitability and mobility than marketing capabilities, applies primarily to Western markets, in which licensing is more common and thus knowledge about technological capabilities is more easily accessible. Our study supports the idea that in other markets, the relative advantage disappears or even reverses.

Such insights not only support the body of scholarly work on capabilities that has made conceptual suggestions that the utility of capabilities and their effect on performance depends on institutions in markets (Eisenhardt and Martin 2000) but also adds to the institution-based view of firms by developing an institution-contingent perspective on capabilities. The institutional view suggests that the market environment shapes which strategies firms employ, what kind of choices they make, and how they perform. However, the related international marketing literature has focused on country-specific influences on firm performance (e.g., Chang, Bai, and Li 2015; Dwyer, Mesak, and Hsu 2005) but has offered limited insights into how exactly country institutions explain the relative advantages of different kinds of capabilities.

Managerial Implications

Marketing-related and technology-related capabilities are the core capabilities and major drivers of new product performance (Henard and Szymanski 2001; Moorman and Slotegraaf 1999). Generally, the two capabilities have synergistic effects, which is why firms should always try to develop both capabilities (Song et al. 2005). Most firms, however, have a clear advantage in one or the other capability. Our findings provide important implications for such firms.

First, our findings show which country markets are more apt for successful new product introductions depending on the superior capability of a firm. For example, a company that excels in marketing capabilities is best advised to focus on countries with low growth rates (e.g., the Netherlands, Australia), or countries with low rules of law (e.g., Taiwan). A company that excels in technological capabilities should select countries with high growth rates (e.g., India) and consumers who focus on survival over self-expression values (e.g., China).

These findings are obviously important for international and global firms that develop products for different markets: they call for a strategic adaptation over standardization where the organizational units within a firm that are responsible for different markets need to focus on developing capabilities with varying emphasis. Furthermore, the evolutionary path of standardization→customization→personalization is amplified both in speed and breadth of industries that benefit as “hard” marketing (new product development; new product launch, physical distribution, and product packaging) gives way to branding, high degrees of promotions, and proliferation of multicompeter categories (Rodriguez, Bowersox, and Calantone 2005).

LIMITATIONS AND FUTURE RESEARCH

One major limitation of meta-analysis is that it is constrained to main effects analysis and does not provide meaningful ways to integrate interaction effects. Prior research has addressed how companies develop multiple capabilities simultaneously and how these capabilities can either have complementary effects and help enhance performance (Moorman and Slotegraaf 1999) or be counterproductive because of opposing objectives (Grewal and Slotegraaf 2007). Simultaneous effects are contingent, and thus we can assume that in some environments, the interaction of multiple capabilities enhances performance, and in other environments, single and focused capabilities might be more helpful (e.g., Song et al. 2005). Further research that goes beyond meta-analytic data is needed to address this issue in more detail.

The definitions of marketing and technological capabilities vary from study to study, some interpreting them as a strategic orientation, others as an organizational culture, others as a set of practices, and so on. We have chosen a very narrow definition that is in line with measures used in prior research that captures the idea of both capabilities as related to new product success. Such definition is practical because it allows us to identify a sufficient number of studies for our meta-analysis that have investigated the relationship between both capabilities and new product performance. At the same time, the definition clearly influences the findings, and a different or broader definition might have brought different results. Also, the focus on new product success as a performance measure might narrow the idea of firm performance, which is usually the major focus in capabilities research. However, a recent meta-analytic study has shown that new product success as a performance measure of firms is strongly related to

other performance measures of a company, with a correlation of .75 (Eisend, Evanschitzky, and Gilliland 2015).

Another issue that has to be considered when interpreting the results of this meta-analysis refers to the underlying heterogeneity and conditional nature of the meta-analytic effects. The relative impacts of marketing and technological capabilities depend on the company itself and the company's position within the market. In this vein, our meta-analysis, like any other meta-analysis, provides a generalization of the direction and strength of the differential relative impacts of marketing and technological capabilities, rather than an analysis of single companies. As the field evolves, updated analyses on the capability–new product performance link should be undertaken in due course. One could think of including additional influencing factors of the capability–new product performance link, such as competitiveness of industry or the position of the company in the market. Analyzing these additional factors would result in a more complete model explaining new product performance, an endeavor worth pursuing.

NOTE

1. The list of studies is available from the authors upon request.

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