STRATEGY TOOLS IN DYNAMIC ENVIRONMENTS – AN EXPERT-PANEL STUDY

Srinath Rengarajan* (srinath.rengarajan@fau.de)

University of Erlangen-Nuremberg, Nürnberg, Germany

Roger Moser (roger.moser@mq.edu.au)

Macquarie Business School, Macquarie University, Sydney, Australia

Gopalakrishnan Narayanamurthy (g.narayanamurthy@liverpool.ac.uk)

University of Liverpool Management School, Liverpool, UK

Declarations of interest: None

* Corresponding Author

STRATEGY TOOLS IN DYNAMIC ENVIRONMENTS – AN EXPERT-PANEL STUDY

ABSTRACT

Strategy tools and frameworks are crucial for managers to navigate their business environment and formulate strategies. Extant research has focused on the characteristics, dimensions, applications, and impact of traditional tools. However, there are questions regarding the suitability of these tools to the increasingly dynamic environments faced by strategy practitioners characterized by blurring industry boundaries, uncertainty, and ambiguity. Using an expert-panel approach, we address this research gap by investigating how strategy experts from practice and academia assess established strategy tools in dynamic environment. We identify the characteristics of strategy tools that experts value in such contexts and which can inform future development of context-specific strategy tools. Additionally, we also investigate why experts select and apply specific tools and how they combine these tools. Our findings further allow us to explore the difference in perspectives of strategy scholars and practitioners, which is necessary to reconcile the gap between strategy theory and practice. Finally, we discuss implications of the study for strategy and management research, education, and practice.

STRATEGY TOOLS IN DYNAMIC ENVIRONMENTS – AN EXPERT-PANEL STUDY

1. INTRODUCTION

Strategy tools and frameworks, as the technologies of rationality shaping managerial behavior and the materialization of strategic thinking, have garnered increasing research attention in recent years (Jarzabkowski and Kaplan, 2015; Vuorinen et al., 2017). Extant work has explored themes such as the application of selected tools and frameworks in strategy making (Jarzabkowski et al., 2013), their properties and characteristics (Jarzabkowski and Kaplan, 2015; Spee and Jarzabkowski, 2009), and perceived usefulness (Wright et al., 2013). In practice, the suitability and information requirements of strategy and decision-making approaches depend on the characteristics of the business environments they are applied to (Bettis-Outland, 2012; Shepherd and Rudd, 2014). Nowadays, strategy practitioners face increasingly dynamic business environments (Eisenhardt and Martin, 2000; Sirmon et al., 2007), characterized by higher levels of uncertainty and ambiguity or information overloads (Alvarez et al., 2018; Bennett and Lemoine, 2014). Additionally, practitioners are increasingly confronted by cases of industry convergence (Geum et al., 2016; Kim et al., 2015) resulting in potential misfits of tools and frameworks specifically designed to analyze classic industry structures.

Given the concurrent advances in information technologies and digitization, some scholars have argued that there is a need for tools and decision-making frameworks that are suited to these specific changes in the business environment (Jacobides, 2010; van Knippenberg et al., 2015). However, other scholars believe that the problem is not a lack of appropriate tools to navigate these new business environments. Instead, the issue is that there is a plethora of tools and frameworks available today (Vuorinen et al., 2017) with insufficient guidance on which business environments they are best suited for (Courtney et al., 2013). Consequently, the

changing role and suitability of strategy tools and frameworks in various business contexts has been identified as an important topic deserving scholarly attention (Burgelman et al., 2018). This requires a nuanced understanding of how strategy practitioners and academics perceive and evaluate the suitability of strategy tools and frameworks in different dynamic business contexts. In turn, this also sheds light on how practitioners leverage affordances offered by these tools (Jarzabkowski and Kaplan, 2015), and divergence between their intended use and actual applications in practice (Wright et al., 2013).

The overarching research question in this paper is how strategy experts perceive the application of established and prevalent strategy tools in dynamic business environments characterized by uncertainty and ambiguity. We adopt a broad understanding of strategy experts, including top and middle management executives, consultants, and business school professors with a strong focus on strategy work (Whittington, 2006). We analyze how these experts assess the adaptability of these tools to diverse industry contexts, and the amount of information inputs and contextual understanding these tools require. Further, we investigate the similarities and differences in the assessments of academicians teaching strategy tools and managers actually applying them in reality. Finally, we explore how and why strategy experts pick and use specific tools, possible in combination with other tools, in dynamic contexts.

This allows us to make three relevant contributions to the literature as well as management practice. Firstly, we add to strategy-as-practice literature by identifying the design characteristics of strategy tools and frameworks that are valued by strategy experts in dynamic environments. Secondly, this is among the first studies to explore how strategy experts combine various strategy tools in practice. Taken together, these findings offer crucial insights for developing future strategy tools tailored to these contexts, as well as for renovating existing tools. Thirdly, by comparing and investigating the evaluations of strategy scholars and

practitioners, we identify some dimensions which offer potential to reconcile the differences in theoretical and practice perspectives on strategy tools.

We continue this paper with a focused review of the extant literature on the application of strategy tools and frameworks in. Setting this against the context of dynamic business environment helps us outline the research gap. Subsequently, we present the research methodology and approach adopted in this study and present the resulting findings. The paper concludes with a discussion on the implications of these findings, the contributions to strategy research and practice, and suggestions for future research.

2. THEORETICAL DEVELOPMENT

2.1. Strategy Tools-in-Use

Strategy tools and frameworks comprise the entire range of concepts, ideas, techniques and approaches that structure or influence the strategic management activities of executives (Knott, 2008, 2006). As technologies of rationality (Jarzabkowski and Kaplan, 2015; March, 2006), they provide the means for executives to filter, gather, organize, and process information, and consequently have a bearing on the insights and decisions made on the basis of that information (Mintzberg et al., 1998). Their applications have been investigated extensively over time. For example, there have been regular surveys chronicling executives' preferences to identify and juxtapose management fads against the more established and enduring frameworks (Jarzabkowski et al., 2013; McCabe and Narayanan, 1991; O'Brien, 2011; Rigby, 2001, 1993; Rigby and Bilodeau, 2018, 2005; Stenfors et al., 2004).

There has also been recent academic attention on diverse aspects of strategy tools and frameworks with a focus on their characteristics and applications (Jarzabkowski and Kaplan, 2015; Spee and Jarzabkowski, 2009; Vuorinen et al., 2017; Wright et al., 2013). Knott (2006) proposed a typology of strategy tools based on their use, associated thinking modes, and outputs. Knott (2008) also proposed that tools have implicit as well as explicit uses. These

implicit uses might represent a subordinate to strategy activity, driven by a process or business objective, or in the form of analyses without deliberate usage (e.g. data gathering or empirical support). Explicit applications, on the other hand, are not merely limited to their intended use of facilitating analyses and implementation. Additionally, working with strategy tools can inspire and stimulate new ideas, facilitate communication and collaboration, and be a catalyst for change. Thus, strategy tools enable executives to have a broader peripheral vision, analyze issues from different angles, and provide guidance to enable a clear thinking processes (Wright et al., 2013). Spee and Jarzabkowski (2009) further explore the instrumental and socio-political uses of strategy tools, and elucidate the design properties crucial for tool selection and deployment. They suggest that widely used tools are simple, clearly designed, and well established. However, the use of strategy tools depends on the executives being in a position where they have an opportunity to use it and where it is contributing to the performance of their responsibilities (Jarzabkowski et al., 2013).

It is important to note here than some of the more established and prevalent strategy tools were developed in the past in very specific settings, i.e. in mature and developed Western market environments (Wright et al., 2013). Though business schools globally continue teaching the instrumental applications of strategy tools to successive generations (Jarzabkowski et al., 2013; Wright et al., 2013), managers leverage the affordances of these tools in practice and adapt them to their specific needs and organizational contexts (Jarzabkowski and Kaplan, 2015). These affordances shape how executives address problems and advance their own interests, with tools enabling or constraining managerial actions and outcomes. This also reflects the persisting gap between management science and practice (Banks et al., 2016). Against this background, scholars have suggested that strategy tools need to be studied in the specific context of their use (Burgelman et al., 2018; Jarzabkowski and Kaplan, 2015). With strategy practitioners having divergent choices regarding tools and their application, there is a need for

more perspicuity on how these tools are used in practice and adapted to fit specific situational needs (Jarzabkowski et al., 2013; Jarzabkowski and Kaplan, 2015; Spee and Jarzabkowski, 2009). Such considerations are relevant for evaluating strategy tools and their specific analytic outputs (Spee and Jarzabkowski, 2009).

2.2. Impact of Dynamic Business Environments

Information acquisition and processing is a necessary precursor to strategy formulation (Makadok and Barney, 2001). From an information processing perspective, organizations have to be proficient at adapting their information processing capacities to address the information requirements resulting from their environment (Galbraith, 1973; Tushman and Nadler, 1978). The fit between the information requirements and the corresponding information processing capacities helps create insights as inputs for strategic decisions, leading to a better firm performance (Daft and Lengel, 1986; Galbraith, 1974; Makadok and Barney, 2001; Moser et al., 2017; Tushman and Nadler, 1978). In this process, strategy tools play a fundamental role as the technologies for identifying, filtering, structuring, and transforming information into inputs for strategy development and decision-making (Jarzabkowski and Kaplan, 2015; March, 2006; Mintzberg et al., 1998).

Meanwhile, organizations are faced with increasingly dynamic environments nowadays, characterized by higher levels of volatility, uncertainty, complexity, and ambiguity across markets, resources, and institutional dimensions (Baum and Wally, 2003; Bennett and Lemoine, 2014; Li et al., 2019; Peng, 2009; Sirmon et al., 2007). Such dynamics in business environments lead to exacerbated information requirements for organizations (Egelhoff, 1991; Moser et al., 2017). Further, the characteristics of the business environment strongly influence the approaches of strategy practitioners (Bettis-Outland, 2012; Ingram and Silverman, 2002; Shepherd and Rudd, 2014).

It is important to note that strategy practitioners play a crucial role in the capability of organizations to process information (Turner and Makhija, 2012; Wooldridge et al., 2008). However, they are increasingly faced with significant challenges stemming from globalization and digitization (Alvarez et al., 2018; Tallman et al., 2018), which are also leading to increasingly blurred industry boundaries (Geum et al., 2016; Kim et al., 2015). This exposes managers to increasing information overloads (Eppler and Mengis, 2004; Hartman et al., 1995; Huber, 1990; Schoemaker et al., 2013), despite rapid technological advances helping organizations improve their information processing capacities (van Knippenberg et al., 2015).

In light of the exacerbated information requirements and the possibility of information overloads in dynamic environments, achieving an information processing fit is strongly determined by managerial choices regarding strategy tools and frameworks (Schoemaker, 2018; Tushman and Nadler, 1978). While dynamic environments could result in managers oversimplifying and misrepresenting information through an inappropriate use of strategy tools and frameworks (March, 2006), they adapt the tools accordingly, without limiting them to their intended and instrumental uses (Jarzabkowski et al., 2013; Jarzabkowski and Kaplan, 2015). In this regard, it can be argued that practitioners' use of strategy tools is strongly influenced by how they perceive the usefulness and effectiveness of these tools in the context of their respective environments (Burgelman et al., 2018; Shepherd and Rudd, 2014).

2.3. Research Focus

Building on these foundations, this study investigates how practitioners and strategy scholars select and apply strategy tools in dynamic environments. This begins with an understanding of how strategy experts perceive and evaluate existing strategy tools along three dimensions. Firstly, we seek to understand how they rate the application of established and prevalent tools in the context of blurring industry boundaries. Secondly, given the information requirements stemming from uncertainty in dynamic environments, we explore how they evaluate the level

of information inputs these tools require. Thirdly, given that dynamic environments lead to ambiguity and a lack of understanding (Alvarez et al., 2018; Courtney et al., 1997), we explore how they assess the amount of contextual understanding necessary for using these tools. In addition to understanding their perception and evaluation of tools, given the gap between management science and practice, we investigate how the evaluations of practitioners compare to those of academicians along each dimension (Banks et al., 2016; Jarzabkowski et al., 2013; Wright et al., 2013). Finally, building on the insights gained while attempting to answer these questions, we further explore how and why practitioners select and apply a particular tool, either by itself or in combination with other tools, in dynamic environments.

3. METHODOLOGY

We applied an exploratory research approach comprising two parts to address the outlined questions. In the first part of the study, we adopted a Delphi expert-panel approach since it has been identified to be particularly useful in cases where the subjective views and complex interpretations are of greater interest rather than quantitative results (Daniel and White, 2005). This was used to evaluate how strategy experts perceive and evaluate strategy tools and frameworks, and to highlight the differences in the views of academics and practitioners. Subsequently, the second part of the study focused on understanding expert perspectives on how and why they select and apply certain strategy tools. This was achieved through individual discussions with the strategy experts who participated in the first part of the study, building on and contextualizing the earlier findings. Figure 1 summarizes the individual steps in the research methodology, which are presented in the subsequent sections.
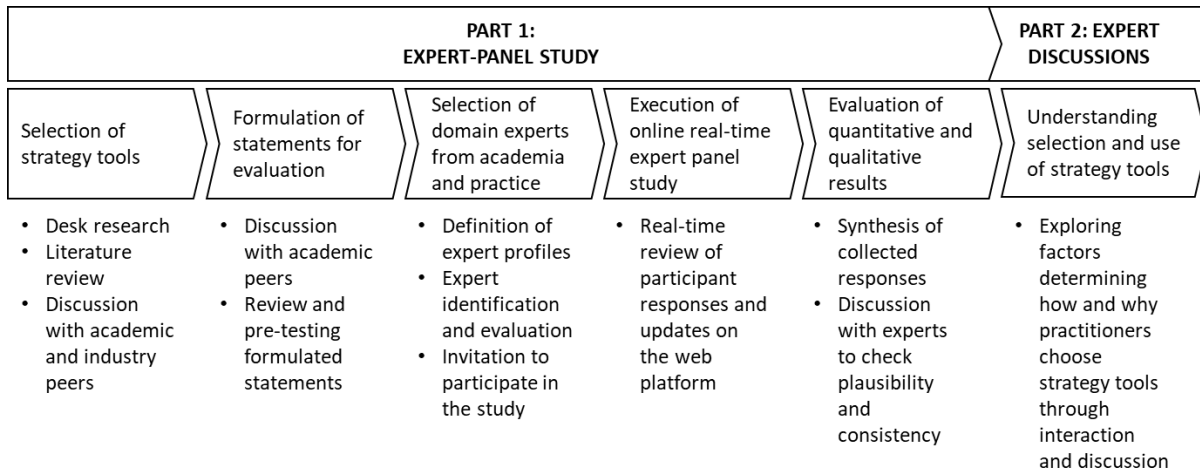
PART 1: EXPERT-PANEL STUDY					PART 2: EXPERT DISCUSSIONS
Selection of strategy tools	Formulation of statements for evaluation	Selection of domain experts from academia and practice	Execution of online real-time expert panel study	Evaluation of quantitative and qualitative results	Understanding selection and use of strategy tools
• Desk research • Literature review • Discussion with academic and industry peers	• Discussion with academic peers • Review and pre-testing formulated statements	• Definition of expert profiles • Expert identification and evaluation • Invitation to participate in the study	• Real-time review of participant responses and updates on the web platform	• Synthesis of collected responses • Discussion with experts to check plausibility and consistency	• Exploring factors determining how and why practitioners choose strategy tools through interaction and discussion

Figure 1: Research Methodology

3.1. Expert-Panel Study

As a method relying on experts' evaluations, Delphi studies with an objective of structuring complex and varied opinions are widely accepted (Kameoka et al., 2004; Rauch, 1979). Though the Delphi technique was originally envisaged as a method for forecasting future trends and seeking a reliable consensus among the participants (Dalkey, 1969; Gordon and Helmer-Hirschberg, 1964), it is also considered as a research approach to facilitate the development of views based on a panel of domain experts (Landeta, 2006). It provides the benefit of allowing the experts to discuss and communicate with each other in a structured setting, making the plurality of opinions more visible in the process (Landeta and Barrutia, 2011; Story et al., 2000). In fact, scholars have suggested that investigating the underlying arguments in case of substantial dissent in experts' views is more insightful than striving for consensus (Gordon and Pease, 2006; Story et al., 2000).

The process of conducting a Delphi study is well established (Belton et al., 2019). Such approaches have recently been applied successfully in studies with similar objectives where the views of experts with significant experience are sought to build a better understanding of the research questions from different perspectives (e.g. Côrte-Real et al., 2019; Winkler et al., 2015). In particular, we employ an online, real-time variation of the Delphi method (Gnatzy et

al., 2011; Gordon and Pease, 2006). Instead of explicit rounds, this provides instantaneous feedback to the participants on the aggregated quantitative assessments and qualitative views of the experts who have participated so far. Additionally, this allows for asynchronous answering procedures where a participant can take part multiple times to update their own answers within the timeframe of the study (Aengenheyster et al., 2017).

Methodological rigor is crucial to ensure validity and reliability. In Delphi studies many potential issues have been highlighted in the literature since each study is unique in its design, sample, and process (Hasson and Keeney, 2011). However, the past literature on Delphi studies also offers guidance on enhancing methodological rigor (Jiang et al., 2017; von der Gracht and Darkow, 2010; Winkler et al., 2015). We adopted the process described in these studies, as described below. Further, we followed the recommendations of Winkler and Moser (2016) to mitigate cognitive biases in the process.

3.1.1. Strategy Tool and Framework Selection

We draw on extant research on strategy tools as a basis for the frameworks selected in this study (Bensoussan and Fleisher, 2012; Jarzabkowski et al., 2013; Rigby, 2001; Rigby and Bilodeau, 2018; Wright et al., 2013).The strategy tools analyzed in these studies represent the most well established and enduring frameworks used by practitioners as well as taught in business schools. We filtered the strategy tools analyzed in these studies based on their intended application in terms of identifying new competitive advantages as well as exploiting existing ones along the strategy tripod (Peng et al., 2009) through extensive discussions with the academic and industry peers.

Through these discussions, we shortlisted the eight prevalent strategy frameworks, each of which was evaluated on three dimensions related to the research objectives in the expert-panel study. We limited ourselves to only eight tools to ensure valid results without causing research fatigue for the respondents. The final selection included the business ecosystem concept (Iansiti

and Levien, 2004) and Porter's Five Forces analyses (Porter, 1979, 2008) from a market-based view (monopoly/Bain rents), PESTEL (Aguilar, 1967; Johnson et al., 2008) and scenario analyses (Gausemeier et al., 1998; Schoemaker, 1995; Schoemaker and van der Heijden, 1992) from an institution-based view (institutional rents), and dynamic capability (Eisenhardt and Martin, 2000; Teece et al., 1997) and VRIN/VRIO analyses (Barney, 1991; Wernerfelt, 1984) from a resource-based view (Ricardo/Schumpeter rents). Further, we included two strategy tools primarily aimed at identifying competitive advantages through alternative value creation models: design thinking (Brown, 2008) and the strategy canvas as part of the Blue Ocean approach (Kim, 2005; Kim and Mauborgne, 2004).

3.1.2. Formulation of Statements about the Strategy Tools and Frameworks

The next step was to finalize the statements about the strategy tools and frameworks to be assessed by the experts during the Delphi study. Corresponding to the research questions, we formulated three statements on which each of the eight shortlisted strategy tools and frameworks were evaluated. The respondents rated each statement for each tool on a scale of 0 and 100 and prompted to provide qualitative reasons for their high/low assessments during the study. A short accompanying text clarified what completely disagreeing or completely agreeing with each statement respectively implied. The statements and explanations are shown in Table 1.

	Statement	Explanation of Quantitative Evaluation	
		Completely Disagree (Rating = 0)	Completely Agree (Rating = 100)
1	The analysis dimensions of this strategy tool/framework can be adapted to suit any industry context of strategic analyses.	*It can ONLY cover the context that it has been designed/intended for*	*The dimensions are easily adapted to any industry context*

2	This tool/framework requires minimal inputs for the strategic analyses.	*It can ONLY be used after extensively gathering a lot of data and information*	*It is easy to use the tool/framework in an agile manner and/or with few basic assumptions*
3	Application of this tool/framework does not require significant contextual understanding (i.e., prior experience in the industry context, understanding of local environment, appreciation of cultural factors, etc.).	*It can ONLY be applied when the practitioner has significant contextual understanding*	*It is easy to apply the tool/framework even in cases of higher ambiguity*

Table 1: Statements and explanation of ratings for expert panel study

We ensured that the statements were short, unequivocal, and concise, so as to prevent any ambiguity in interpretation (Linstone and Turoff, 2002). Further, methodological rigor and specificity were ensured by checking the statements for clarity in interpretation and precise wording by three academic peers in the strategic management domain. Further, we pre-tested the statements with four strategy experts to improve reliability and validity.

3.1.3. Selection of Experts

Reliability and validity of Delphi studies are strongly influenced by the selection and participation of appropriate experts (Tersine and Riggs, 1976; Welty, 1972). Given the nature of the study, we explicitly sought the views of practitioners with significant experience in strategy to build an understanding of how they assess established strategy tools (Gordon and Pease, 2006; Winkler and Moser, 2016). This included industry experts who have worked for at least 10 years in the strategy domain. Additionally, we also included academic peers engaged in researching and teaching strategy at leading business schools. Though affiliated to universities in tenured roles, we ensured that these were experts who are also deeply connected to practice through regular consulting projects, advisory roles, or as directors or board members of firms. Based on their respective professional and academic backgrounds, we expected these experts to be interested in the results of the study and sufficiently qualified to provide suitable evaluations (Jiang et al., 2017).

We searched for experts with profiles satisfying these criteria in our professional as well as personal networks, drawing on our past projects and collaborations with various organizations and companies. Care was taken to ensure panel heterogeneity in experience, industry background, education, location, and current position. Table 2 summarizes the demographics of our expert panel. Through ex-ante communication of the purpose, methods, and importance of the study to the experts, we tried to ensure a high response-rate and sufficient expert motivation and engagement to participate in the study (Hsu and Sandford, 2007).

There are no prescribed rules for what constitutes an optimal panel size in Delphi studies, with the research scope, desired heterogeneity, and availability of experts on the topic being deciding factors (Loo, 2002). We invited 43 experts to participate in the study. While 35 of them participated in the study, five of them did not complete the entire study and were excluded from the analyses, resulting in a satisfactory response rate of 69% (Côrte-Real et al., 2019; Linstone and Turoff, 2002). In the end, our final panel consisted of 30 experts, with 14 being from academia and 16 from practice. This was in line with what has been considered an adequate panel size in past studies (Skulmoski et al., 2007; Tersine and Riggs, 1976; Winkler et al., 2015).

Background Classification Criteria	Number of Experts
Industry/Sector	
Automotive	4
Industrials/Machinery	3
Finance & Equity	2
Consumer Goods	2
Digital & Media	2
Management Consulting	3
Academia	14
Experience (years)	
10 to 15	7
15 to 20	8
20 to 25	7
Over 25	5
Job Position	
C-Suite/Board	6

Top Management	5
Middle Management	5
Researcher/Scholar	14
Education	
Advanced (e.g. Ph.D.)	17
Masters/MBA	10
Bachelors	3
Geography	
Asia	9
Europe	19
Others	2
Total Participants	**30**

Table 2: Panel demographics

3.1.4. Execution of Expert Panel Study

The eight shortlisted strategy tools and frameworks with the developed and pretested statements were subsequently programmed into an online real-time Delphi tool similar to the ones used by Gnatzy et. al. (2011) and Winkler et. al. (2015). Figure 2 shows a screenshot of its interface. Data was collected between March and May 2019. Each expert was provided with an individual link to access to the web-based Delphi platform. Upon clicking this link, an introductory text described the objective and provided an overview of the study, followed by a brief tutorial of the software and on interpreting the quantitative and qualitative answers of the previous respondents.

Figure 2: Screenshot of Expert-Panel Tool

Each tool was presented along with a textual and visual description to ensure that the experts had the same understanding (Georghiou, 1996) and to help them keep the strategy tool and frameworks in mind while evaluating them. To reduce an information overload, only one tool was presented for evaluation at a time (Gnatzy et al., 2011). The experts rated each tool on the statements capturing the tool's industry specificity and the information inputs and contextual understanding it requires and provided the reasons for their ratings as text. These qualitative arguments were especially crucial in this study, since they not only provided a deeper understanding of the experts' evaluations (Graefe and Armstrong, 2011), but also helped to explain the consensus or the lack of it.

After submitting their first evaluations, the experts were shown the aggregated ratings of prior participants, the consensus, and qualitative justifications. Providing an overview of both the quantitative and the qualitative responses helps improving the accuracy and the strength of the study (Best, 1974; Nielsen and Thangadurai, 2007). To prevent influential behaviors, the experts' inputs were kept anonymous (Jiang et al., 2017). Providing feedback instantaneously corresponds to the multiple rounds in conventional Delphi studies and is equally effective (Gnatzy et al., 2011; Markmann et al., 2013). It enables the experts to adjust their opinions on that statement immediately, thereby increasing efficiency by speeding up the completion of the study and reducing drop-out rates (Jiang et al., 2017; Winkler et al., 2015).

3.2. Expert Discussions

The synthesized results from the expert-panel were used as inputs for the second part of the study. Building on the three characteristics of strategy tools explored in the expert-panel, the objective was to create a deeper understanding of how and why strategy experts select and apply specific tools. To achieve this, we conducted individual discussions with the expert-panel participants. Adopting a qualitative approach gave us the flexibility to collect and analyze rich data (Patton, 1990). The background and experience of the strategy experts in the panel allowed us to gather perspectives most relevant to the research objective (Corbin and Strauss, 1990).

The results of the expert-panel study were shared upfront with the experts, allowing them to reflect on the findings. The individual discussions with each expert ranged from 20 to 30 minutes during which their views and perspectives on the findings were collected and collated. Researchers have stressed the need to study strategy tools in the context of their application (Jarzabkowski et al., 2013; Spee and Jarzabkowski, 2009). Therefore, we prompted the experts to share concrete examples of projects where they applied specific strategy tools, either individually or in combination with other tools. Specifically, we encouraged the experts to reflect on the process and the reasons for selecting these tools. These discussions were

transcribed into textual data, which was analyzed to understand how and why strategy tools are selected for application.

4. RESULTS

Upon completion of the expert-panel, the quantitative results were analyzed by calculating the mean and interquartile range (IQR) for each statement and strategy tool. The interquartile range, representing the middle 50% of the responses, serves as a measure of consensus among the experts (Sekaran and Bougie, 2016; von der Gracht, 2012). Further, the responses were also analyzed to identify any outliers. The collated findings, summarized in Table 3, were shared with the participating experts and their reflections, comments, and feedback were also synthesized in the results.

Strategy Tool/ Framework	Statement 1				Statement 2				Statement 3			
	Academics		Practitioners		Academics		Practitioners		Academics		Practitioners	
	Avg.	IQR	Avg.	IQR	Avg.	IQR	Avg.	IQR	Avg.	IQR	Avg.	IQR
Porter's Five Forces	82	13.75	81	11.25	45	33.75	50	22.50	42	43.75	40	27.50
Business Ecosystems	78	18.75	82	12.50	41	30.00	36	22.50	31	10.00	38	17.50
VRIN/VRIO Analysis	80	15.00	60	29.50	57	35.00	53	31.25	38	18.75	36	22.50
Dynamic Capabilities	70	10.00	58	51.25	35	27.50	44	30.00	31	28.75	36	13.75
PESTEL Analysis	86	13.75	78	13.75	40	40.00	46	30.00	34	23.75	46	30.00
Scenario Analysis	83	13.75	69	28.75	44	35.00	42	30.00	34	17.50	32	20.00
Strategy Canvas (Blue Ocean)	79	18.75	63	21.25	51	50.00	37	17.50	41	41.25	29	11.25
Design Thinking	76	35.00	77	16.25	52	45.00	53	32.50	47	30.00	54	50.00

Table 3: Summary of quantitative evaluations

The following three sub-sections describe these quantitative evaluations and the supporting qualitative arguments provided by strategy experts on the dimensions of industry specificity

and requirements on information inputs and contextual understanding. This is followed by sub-section 4.4 comprising insights from expert discussions on how and why strategy tools and frameworks are selected and applied.

4.1. Applicability across Industries

At an aggregated level, both academics and practitioners tend to value the applicability of the analyzed strategy tools across different industries. This is especially relevant for the tools originating from a market-based view, with high degrees of consensus among both academics and practitioners. Though the experts concurred that "*the notion of clear-cut industries is no longer valid, industries converge so as such*" and "*disruptions can occur in all industries*", they felt that Porter's five forces framework is "*highly elastic once the 'industry' is defined*" since the "*subfactors can be adapted and potentially weighted to a specific industry use case*". Practitioners rated business ecosystems approaches even higher, stating that "*each industry can be characterized with the parameters of the framework*", even if "*the dynamics of each parameter differs from industry to industry*". As one expert explained, it is "*critical in majority of sectors today, faced with the threat of disruptors and innovations, since limiting oneself to traditional definitions of industry boundaries and players will only be myopic*".

On the other hand, the applicability of the strategy tools from a resource-based view was seen much more critically by practitioners as compared to academicians. This is also evidenced in the stark contrast in the consensus in the two groups of respondents. An academician suggested that there is "*no doubt that the VRIN/VRIO analyses can be applied across diverse contexts*" and that "*the wide applicability of dynamic capabilities is one of its charms*". Further, academicians expressed that "*given the dynamic environments and blurring industry boundaries, they have become extremely relevant and important across contexts*". However, practitioners were more critical of both tools. They argue that "*VRIN can be successfully applied only when it is already known as to what mix of resources leads to competitive*

advantages", which is not the case for emerging markets and converging industries. Similarly, some felt that the "*challenge lies in adequately defining what dynamic and core competencies are needed to build a longer-term competitive advantage*". Taken together, both strategy frameworks were perceived by the practitioners as too theoretical, limited in focus, and insufficiently insightful.

Practitioners rated the applicability of PESTEL and scenario methods across industry contexts relatively lower and were more apprehensive compared to academicians. However, both sets of experts agreed that PESTEL dimensions are "*extremely broad and structured*", can be "*applied to most purposes*", and "*adapted to the trends/developments which influence one's own business*". Similarly, scenarios can be "*elaborated for any industry*" and analyses can be done in an "*industry-agnostic manner*". Given these advantages, the respondents rated the applicability of these tools highly, even if they "*miss out on internal view/capability*".

A similar evaluation from academicians and practitioners is also evident in case of the strategy canvas. The reason is that it "*can be applied to products, services, and fields of business*" and the dimensions can be "*adjusted according to each case*", even though it may require firm-specific or industry-specific adaptations. On the contrary, the assessment by academicians of design thinking methods was more divergent. Some respondents felt that it is a creative tool with a stronger focus on innovation and consequently "*more useful for innovative industries*". Others, including most practitioners, felt that its advantage is that it is generic, clear, and easy. As one expert reasoned: "*While developed specifically with customer-centric innovations in focus, principles of design thinking can in fact be applied (at a more abstract level) for a wide variety of topics across industries*".

4.2. Level of Information Inputs

Both academicians and practitioners seem inclined towards the fact that strategy tools typically require some minimum level of information inputs. However, even in cases where their

agreement with the statement is above 50% on average, there is significant lack of consensus between the respondents. While academicians seem to have significantly diverging views in their evaluation for each tool, practitioners seem to concur that business ecosystems and strategy canvas require much more information inputs compared to all the other tools. In this case, it becomes especially interesting to investigate these divergent assessments (see Table 4).

Two arguments recur across all the tools regarding why some experts may not agree with the statement. Firstly, mitigation of biases requires more detailed and granular analyses, which is associated with a much higher level of information requirement. This is exacerbated in cases where there are more aspects to be considered for the analysis to be comprehensive. This may be due to new competitors, large number of trends, or simply new/converging industries. In some of these cases, access to data is also an additional constraint. The second challenge is of defining the right focus and boundaries of analyses, be it in terms of 'ecosystems', resources, dynamic capabilities, PESTEL trends, scenario dimensions and implications, or value levers from a customer-centric perspective (design thinking).

The qualitative explanations indicate two major reasons why some experts rate their agreement with the statement high. Firstly, there is a line of argument that experts with significant prior experience can draw on it, and therefore expend lesser efforts in information gathering. This is especially true for industry incumbents who have at least experienced one industry cycle already. Secondly, most experts agree that the granularity of analyses is much lower when the experts only use the tool for initial analyses, high-level evaluation, or directional assessment. In such cases, the strategy tools only provide a broad guidance for the experts and are not intended for detailed strategic analyses and decision support, which eases the need for comprehensive information gathering and processing.

| **Statement:** |
| This tool/framework requires minimal information inputs for a strategic analysis. |

Framework	Low Assessment	High Assessment
Porter's Five Forces	*"A cursory application will bias the output"* *"To do the analysis thoroughly, you need time and data"*	*"... for directional purposes and for high level assessment, it can be used in an agile manner with few basic assumptions"* *"For more experienced executives with deep knowledge of the industry and the players, the framework can be deployed with minimum inputs"*
Business Ecosystems	*"more robust insights if the data quality and quantity is high"* *"number of parameters to be dealt with in this framework are comparatively higher"*	*"... a rough ecosystem can be quickly drawn just using descriptive data already at hand (with executives)"*
VRIN/VRIO Analysis	*"Data is a must to avoid bias/guts argumentation"* *"Identifying (all) the relevant resources and then evaluating them, not only for own firm but also for other industry players, requires substantial information"*	*"VRIN parameters can rather easily be assessed through daily business experiences"*
Dynamic Capabilities	*"Getting data on do this well is extremely difficult. I have written an entire book on one company to establish that it has dynamic capabilities"* *"quite comprehensive input necessary to define an adequate and useful set of competencies"*	*"Requires a good understanding of the company (and the industry), but not necessarily extensive intelligence gathering"*
PESTEL Analysis	*"A structured PESTEL analysis requires collecting intelligence to have a better/comprehensive view"* *"With so many trends, figuring out which trends are most important for any industry and for what time frame is very challenging"*	*"Industry incumbents should theoretically have a strong grasp of the environmental factors"* *"high level analysis possible - there is enough (secondary) data available"*
Scenario Analysis	*"Thorough derivation of scenarios starts with defining the right axes/dimensions, identifying (and quantifying) trends/developments in the timeframe of interest, and then deriving the implications for each relevant scenario. The framework thus requires significant and varied qualitative as well as quantitative inputs"*	*"Can be used highly cursory but also more data driven, e.g. if enriched by back-casting"* *"By definition, scenarios are often educated guesses"* *"One can draw rough/generic scenarios that provide first good insights into existing options for action"*

Strategy Canvas (Blue Ocean)	*"The identification and qualification of the value levers from a customer viewpoint requires substantial insights"*	*"The framework affords a high degree of freedom in implementation, with practitioner choices on dimensions determining intelligence inputs needed"*
Design Thinking	*"A comprehensive understanding of your end user is required"* *"If you want to do it properly, in particular the information finding phase in the field, it takes a lot of effort"*	*"Design thinking goes hand in hand with agile methods. The focus on iterative analyses in incremental steps implies that the upfront intelligence requirements are mitigated (and spread out over subsequent iterations, depending on the evolving needs)"*

Table 4: Qualitative reasons for high/low assessments

4.3. Contextual Understanding

In the case of the third statement, the average agreement across the tools appears to sink further. However, there were more cases of consensus among academicians as well as practitioners. The consensus appears to be higher in cases where the experts are critical in their agreement with the statement. The accompanying qualitative assessments are presented in Table 5.

Across all the tools, a major reason for the lower quantitative assessments is the increasing importance of dynamic business environments. Its impact is also reflected in the individual features and dimensions of most strategy tools – be it the bargaining power of the players in Porter's Five Forces model, the drivers and interdependencies in scenario analyses, or the evaluation of the value of resources and competencies. As one expert argued in case of the dynamic capabilities concept, "*since the dynamism of the business environment has increased, a deeper understanding of the contextual changes is necessary to constantly adapt/develop the core competencies of a firm*". Similarly, the experts also see contextual understanding as being critical for adapting the tools for the specific industry and firm context, interpreting the relevance of gathered information inputs, and making sense of findings. Finally, the experts also expressed that contextual understanding is crucial to avoid biases, since it mitigates the chances of being negatively influenced by limited data availability.

All participating experts seemed to concur that prior experience attenuates the amount of contextual understanding required in deploying a strategy tool. This is especially the case for the market and resource-based tools, where the experts can leverage their extant experience to make evaluations along the tools' dimensions. In contrast, some experts felt that with PESTEL and scenario analyses, an improved contextual understanding is more of a result than a precondition. In case of the strategy canvas and design thinking approaches, some experts felt that the knowledge of the customers was a lot more crucial than the understanding of contextual factors and environmental dynamics. The adaptability of the strategy canvas and the iterative nature of design thinking were respectively mentioned as factors that could mitigate the need for deep contextual understanding beforehand.

Statement:
The application of this tool/framework does not require significant contextual understanding of the business environment it is applied to.

Framework	Low Assessment	High Assessment
Porter's Five Forces	*"deeper contextual understanding to rightly judge the (bargaining) power of each player and the competitive dynamics at play"*	*"Prior industry experience makes application much easier and more valuable"* *"... as long as any contextual influence does not materialize in one of the five forces"*
Business Ecosystems	*"very important to understand and design the 'cultural fit' of the ecosystem players"* *"... necessary to create relevant insights"*	*"Experience in specific industry drivers and its impact adds better decision strengths"* *"Not too much context is required. But to figure out how to create and capture value is not easy"*
VRIN/VRIO Analysis	*"High degree of subjectivity involved in assessing a simple 'yes/no' for a resource, thereby making contextual understanding quite key"* *"A resource which is VRIN in one context may not be so in another"*	*"A small time spent in understanding the industry should be enough"*
Dynamic Capabilities	*"Identifying the right competences and DCs is also dependent on the context"* *"very business specific interpretation required"*	*"As a generic tool, context independent to use"* *"Strong focus on company, less on the environment"*

PESTEL Analysis	*"Necessary to deeply understand the intricacies of the different external factors and experience in the industry with exposure to the vagaries of the influencing factors is required"* *"highly relevant to make sense of findings"*	*"One of the benefits of conducting a (thorough) PESTEL analysis is that the practitioner gains a much deeper contextual understanding. In that sense, contextual understanding is more of a result than a prerequisite"*
Scenario Analysis	*"specific scenarios require a lot of experience and understanding to build realistically"* *"not only drivers, but even their interdependency needs to be understood"*	*"A better contextual understanding is a result of a well conducted scenario analysis"*
Strategy Canvas (Blue Ocean)	*"requires specific experience and a deep contextual understanding of competitors"*	*"Strategy frameworks are generally harder to apply in cases of ambiguity. However, relative to other frameworks, blue ocean analyses are relatively more adaptable to such an environment. Again, choice of dimensions can have a major influence on the amount of understanding necessary"*
Design Thinking	*"Industry scenario and its business dynamics are necessary to interpret the differentiation"*	*"Given the iterative nature of design thinking frameworks, the amount of knowledge/expertise needed upfront to start the analyses can be lower - with successive iterations, the practitioner's knowledge/expertise also evolves with the analyses"*

Table 5: Qualitative reasons for high/low assessments

4.4. Tool Selection and Combination

The second part of the study built on the results collected in the expert-panel on the three characteristics of the selected strategy tools. As one expert explained, "*Ex-ante consideration of uncertainty and ambiguity helps in better selection of strategy tools. This helps me reframe long-term strategies with the development of feasible scenarios to keep abreast of the changing environment.*" Another expert also echoed this, saying, "*Tool selection is not only based on the goals and challenges that we face in the moment, but also on the different scenarios for any uncertainty and ambiguity in the future.*" Concurrently, it is important to choose the right tools and apply them the right way: "*When the often good-enough tools are used correctly, they can*

bring great insights at an affordable price to minimize our uncertainty and ambiguity. On the other hand, inappropriate tools are rather costly and may also cause confusions." This underscores the importance of investigating tool selection and application.

Based on their own experiences of applying the strategic tools, the experts explained how and why they picked specific strategy tools. In addition to the instrumental uses for which these tools have been developed, the experts also mentioned additional reasons for picking a tool, and the combinations in which they often applied them in practice. Quoting one of the respondents, "*The tools used depends on the identified opportunity that we want to address. We consistently use multiple tools to analyze our position from different perspectives and to determine potential improvements to improve performance and maximize margins.*" These factors and combinations are summarized in Table 6 and Figure 3 respectively.

Framework	Reasons for Selection	Selected Supporting Quotes
Porter's Five Forces	• Evaluating industry attractiveness; evaluating bargaining power of players • Familiarity (widely used framework); generic tool enabling high-level assessments	*"For a traditional industry sector with a clearly defined value chain, this is very suitable to analyze the industry, upstream and downstream bargaining power, and consequently our business model. That said, for our products which are part of the digital economy or with a platform business models, the complexity of relationships and interconnectedness with other players, this has severe limitations."* *"This is a generic and widely used tool that can work with little as well as loads of data, to assess the attractiveness of existing and new segments even if it only provides a high-level assessment."*
Business Ecosystems	• Identifying keystone player positions; identifying and co-evolving with diverse stakeholders • Analysis of complex, interconnected and overlapping industries	*"The framework illustrated different dependent organizations and specialized stakeholder groups, where we could place ourselves as a keystone player with critical industry resources and ensure a thorough and engaging process with demonstrable and unique value creation to support that perception."* *"We are at the center of an ecosystem with various stakeholders. This tool helps us co-evolve by utilizing their capabilities while aligning them with our strategic goals, creating a shared vision for all direct and indirect stakeholders to achieve mutual benefits."*

VRIN/ VRIO Analysis	• Identifying valuable/ unique/ vital internal resources, capabilities, and competences • Holistic approach involving all functions leads to unique perspectives	*"Experience and expertise are crucial to understand and evaluate our own resources and outcomes, but with that and the right data, we refocus our supply chains and operations to deliver higher customer value."* *"We understood that if we were able to identify the vital resources and their advantages compared to the competition, then we could adjust our business model to increase profits. Recognizing resources requires critical evaluation to identify what aspects distinguish it, where expertise plays an important role."*
Dynamic Capabilities	• Creating core competencies; bringing together internal and external resources • Internal reorganization to adapt to external developments; acquisition integration	*"While redesigning an organization, it is important to look at all layers and identify intangible corporate assets, which requires time and effort. Without a thorough evaluation of our core capabilities and resources, we would be unable to identify our real strengths or weaknesses and can't develop our sensing, seizing, and transforming capabilities."* *"My firm relies on its people – their skills, capabilities, experience, and expertise. Understanding and evaluating these helps build our DCs by complementing internal resources with externally acquired ones. Thus, we constantly reorganize our DCs to adapt to industry and customer trends."*
PESTEL Analysis	• Comprehensive insights on most important external dimensions and trends; customizable dimensions for different contexts • Ease of use; gain insights and develop knowledge in new contexts; gather inputs for other frameworks	*"To constantly understand the challenges and opportunities of my company, I take some key dimensions and adjust the framework to my interests."* *"Experience can lead to issues with subjectivity and confirmation bias if there is too much of an inward focus. PESTEL is critical to maintain an external view to perform balance checks and broader complementary analysis on trends."* *"Though effort-intensive to collect information in different market contexts, the tool is easy to use and provides comprehensive insights on external trends to improve our business model, innovate new products, and explore new opportunities."*
Scenario Analysis	• Identifying risks and uncertainties in the future; preparing for differing predictions of the future • Helps understand external developments	*"We spend a lot of time gathering information and making it insightful. Once we have identified the driving forces along different dimensions, analyzing plausible scenarios help us identify critical uncertainties along them. This is key for us to understand the market conditions, our competition, and the approach to achieve our strategic objectives."* *"In an industry beset by rapid technology evolution, changing regulatory controls, nimble competitors, and fluid customer demands, my management team identifies and considers possible future outcomes*

		considering different conditions. These scenarios help us think, mitigating future risks and uncertainties." *"Scenario analysis is very common in developing sales strategies catering to different predictions on mutually exclusive growth drivers. However, it can be a costly exercise requiring a lot of inputs and contextual understanding."*
Strategy Canvas (Blue Ocean)	• Evaluating product characteristics to identify new customer segments • Developing value creation and capture mechanisms; creating inputs for subsequent strategizing; business model extension	*"Strategy canvas is critical for identifying unexplored customer segments and products to create competitive advantages and revenue maximization. Manager from various departments come together to focus on identifying sweet spots that have rare or no competition for meaningful and value-adding products and services."* *"The effort in applying this tool as an input to subsequent strategizing phases is minimal. Industry experience, insights, and deep contextual understanding help us identify and qualify value levers from a customer perspective to fill the missing pieces in our business model. Expertise is crucial in determining potential value creation and capture activities and devising value delivery mechanisms."*
Design Thinking	• Customer-centric approach to create value through innovative products/services • Inputs for applying resource-based strategy frameworks; easy to use, together with agile methods; approach to constantly learn and innovate	*"Though time intensive and requiring deep inputs on customer needs and requirements, DT is critical human-centered approach to build innovative products and services for future value capture. For this, extensive knowledge of subject matter experts has to be combined with functional areas iteratively to ideate, test, and experiment."* *"As a solution-based tool, DT helps us address gaps in existing customer problems. Additionally, any failure is a learning step towards constantly gathering feedback from the involved stakeholders to develop corresponding actions. It is led by innovation and driven by experience, thereby mitigating the hassles of cumbersome quantitative models and calculations"*

Table 6: Reasons for tool selection and application

Strategy tool are adapted in practice towards contexts and applications beyond their intended use. For example, the strategy canvas has been used for extending business models, and dynamic capability perspectives have found application in internal reorganization and integration of acquired targets. The expert discussions revealed that the simplicity of, and familiarity with, strategy tools plays a key role in selecting the tool. As one expert explained,

"It is important to select tools that are simple to communicate and palatable to a wide audience

to ensure their buy-in." This was especially the case with well-established tools like Porter's Five Forces, PESTEL analysis, and design thinking approaches. Additionally, strategy experts also suggested that they use strategy tools to support data gathering, as in the case of PESTEL and scenario analyses, strategy canvas, and design thinking approaches. The information gathered through these tools is then fed into the market-based tools to determine competitive strategies, or as inputs to determine the necessary internal resources, capabilities, and competencies in the application of resource-based tools. Another related way that experts use these strategy tools is to improve their understanding of various factors and to gain different perspectives – be it in applying an ecosystem perspective at an industry level or involving different functions internally at an organizational level. Finally, outlining the socio-political uses of strategy tools, one expert stated that "*Detrimental effects of organizational inertia from cognitive biases and corporate politics can be so strong that overcoming them to create effective corporate strategy by using the right tools and frameworks becomes critical.*"

The expert discussions also shed light on how strategy tools and frameworks are often combined. The most prominent example pointed out by the experts is of PESTEL analysis, since its dimensions can be tailored, and a comprehensive view of the external environment can thus be generated. Given the rapid rise of agile methods recently, experts pointed out that design thinking principles are often applied in the strategy process. For example, the customer-centric insights it generates allow executives to determine products and services, allocate appropriate resources, analyze relevant contextual factors, and rejig their business models depending on different scenarios. The discussions also revealed that market-based tools are increasingly combined, given the increasingly blurring industry boundaries and the complex stakeholder relationships. While Porter's Five Forces provides an analysis of industries from a classical perspective, the business ecosystems perspective complements it by allowing the user to analyze complex and interconnected relationships. Similarly, the resource-based tools also find

complementary use in extending the analysis of resources into developing capabilities and core competences.
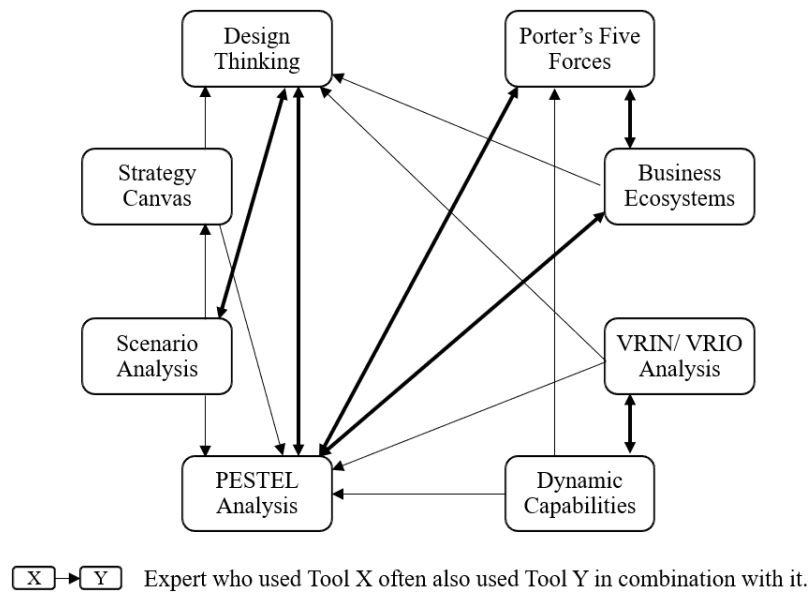

Figure 3: Frequently cited combinations of strategy frameworks

5. DISCUSSION

This paper investigated how strategy experts regard established strategy tools in dynamic environments and decomposed their perceptions of these tools with respect to their adaptability to different business contexts, as well as the required information inputs and contextual understanding. Based on these findings, we further explored how and why strategy experts pick and potentially combine specific frameworks. The implications of these results are discussed in this section, leading up to the contributions to strategy research and practice.

5.1. Research Implications

Extant research suggests that "*research on strategy tools per se is limited*" (Jarzabkowski and Kaplan, 2015) and that the "*field of strategy tools appears fragmented and perhaps somewhat underdeveloped*" (Vuorinen et al., 2017, p. 9). Meanwhile, strategy practitioners are beset with increasingly dynamic environments resulting from globalization and digitalization (Alvarez et al., 2018; Eisenhardt and Martin, 2000; Sirmon et al., 2007; Tallman et al., 2018). In light of

this, some scholars have suggested that there may be a need for new tools and frameworks to navigate these environments (Jacobides, 2010; van Knippenberg et al., 2015). On the other hand, given the amount of existing strategy tools and frameworks (Courtney et al., 2013), it is important to first understand how strategy practitioners use their strategy toolkits in increasingly dynamic business contexts (Burgelman et al., 2018; Spee and Jarzabkowski, 2009). Reconciling these views and building this understanding is fundamental in identifying and developing strategy tools to deal with dynamic environments (Vuorinen et al., 2017).

5.1.1. Tool Characteristics in Dynamic Environments

This study takes an important step by evaluating the characteristics of strategy tools that ease their selection and application in dynamic contexts. We investigated how strategy experts evaluate the industry-agnostic applicability and the level of information inputs and contextual understanding that established strategy tools require. Based on these results, we engaged in discussions with the experts in our panel to understand how and why they select specific tools while strategizing in practice to identify what tool characteristics they value.

Firstly, our results indicate that established tools are not ideal for dealing with dynamics like the convergence of conventional industries (Geum et al., 2016; Kim et al., 2015). However, for want of tailored frameworks suited to current environments (Vuorinen et al., 2017), strategy experts leverage the affordances offered by existing tools and adapt them to reckon with such cases (Jarzabkowski et al., 2013; Jarzabkowski and Kaplan, 2015). This is especially case with market-based and institution-based tools as well as the strategy canvas.

Secondly, the results suggest that the information requirements are significant for tools which have multiple dimensions or have a broader scope of application. This is also contingent on how practitioners intend to apply strategy tools (Knott, 2006), with generic and directional application requiring lesser inputs than when conducting more granular analyses. Thus, the challenge faced by managers is defining the scope of analyses and identifying what is really

important in the respective contexts they face. While strategy tools, as the technologies of rationality, are supposed to help managers deal with uncertainty (March, 2006), even experienced strategy practitioners seem to struggle in applying established tools in highly dynamic environments. However, the respondents suggest that prior experience in an industry and in the broader business environment can help mitigate this challenge.

Thirdly, we find that contextual factors not only influence how practitioners adapt strategy tools, but also impact how they make sense of the output generated by their application. In this regard, the experts highlight the importance of prior experience, especially in case of the market and resource-based tools. Surprisingly however, only a few experts seem to value PESTEL and scenario analyses in dealing with ambiguity, while a majority believe that their application is rather impeded by a lack of contextual understanding. This could mean that practitioners value the implications derived from these tools, rather than relying on them to generate insights about the most relevant developments for detailed or future-oriented analyses.

Further, we explored how and why strategy experts select and apply specific tools in practice. Taken together with the above three dimensions, we can identify some key tool characteristics that strategy experts seem to seek and value in dynamic environments, beyond their instrumental purposes. We find that in addition to the instrumental uses for which a strategy tool was developed, the design properties of the tool also play a crucial role in its selection (Spee and Jarzabkowski, 2009). Experts tend to prefer tools which are easy to apply, generic, and legitimate. However, while it is convenient to use well established tools given their legitimacy (Spee and Jarzabkowski, 2009), traditionally developed tools are found to be inadequate in dynamic environments with morphing industry structures and stakeholders. Thus, managers not only leverage more complex tools, like resource-based frameworks and ecosystems perspectives, but also tend to prefer tools like PESTEL analysis which they find suitable to tailor to their specific context. To compensate for the information requirements and

contextual understanding of more advanced tools, strategy practitioners then need to rely on their own past experiences and expertise to make assumptions while applying the tools. Needless to say, incorporating the advances in information and communication technologies can play a key role in shifting this reliance on subjective factors towards more objective and data-backed analysis (van Knippenberg et al., 2015; Vuorinen et al., 2017). We also find that experts select tools in which implicit uses like information gathering are extended through a facilitative role in promoting communication with stakeholders and collaboration across functions (Knott, 2008). Related to this, strategy tools are also selected to generate and integrate various perspectives (Wright et al., 2013).

Our study identifies these design properties of strategy tools as being crucial for strategy experts in dynamic environments. We believe that scholars engaged in developing new strategy tools would consequently benefit from incorporating these characteristics in their work. This not only applies to developing new and innovative strategy tools to navigate dynamic environments, but also for renovating existing tools and frameworks to fit these contexts better.

5.1.2. *Tool Combinations in Dynamic Environments*

Given that traditional strategy tools are not best suited to dynamic environments, adapting them is one approach that strategy experts take. A complementary approach taken by them is combining extant tools while developing strategies in their specific contexts. While scholars have recommended practitioners to leverage multiple tools (Vuorinen et al., 2017), to our knowledge, this study is among the first to explore how they do so in practice.

Our results show that this is specially the case with PESTEL analyses which was cited as a combination with each of the other tools. In addition to being customizable to dimensions that are most relevant, it is easy and simple in application. Additionally, it is well established tool for evaluating the external environment, which is a valuable complement to internally focused resource-based tools, as well as providing inputs for evaluating market and industry

perspectives, generating future scenarios, or determining product characteristics. These factors also play a role in why strategy experts pick design thinking. It is intuitive in application and provides unique insights which are not available from other frameworks, which positions it as a strong complement to the other frameworks. Thus, we believe that a strategy tool lends itself to being combined if it is easy to apply and generates unique insights that can be used as an input for more complex strategy frameworks.

The tool combinations also reveal that market-based tools are often combined with each other. This is understandable, given the limitations of Porter's Five Forces in analyzing industries with blurring boundaries and complex stakeholder landscapes. Strategy experts therefore apply it for individual business units in traditional industries, while resorting to business ecosystem approach at a corporate level or for new digital and platform business models. On the other hand, VRIN/VRIO analyses and dynamic capabilities are cited as a frequent combination given their shared resource-based origins and that resources are critical components for creating capabilities and core competencies. This supports our belief the fact tools which are complementary in nature also lends themselves to be combined.

5.1.3. Reconciling Strategy Research and Practice

Finally, in addition to exploring their design characteristics, we also contribute to extant literature on strategy tools by exploring the mismatch between management theory and practice perspectives (Banks et al., 2016). In contrast to the historical development of tools for instrumental purposes (Wright et al., 2013), scholars have suggested that practitioners leverage the affordances of strategy frameworks while applying them (Jarzabkowski and Kaplan, 2015). However, strategy scholars have continued to take a traditional perspective, with contemporary advances in strategic thinking not being transformed into usable tools (Vuorinen et al., 2017). We believe that our study contributes to this dialogue by identifying where efforts in future development of strategy frameworks could be focused.

As one example, our results show that despite significant scholarly attention to understanding the role of resources and capabilities, the VRIO/VRIN and dynamic capability approaches are perceived as being too theoretical. This is reflected in the evaluations of managers, who seem to find them difficult to implement and apply in practice. The resource-based view has been crucial in providing retrospective explanations on the sources of competitive advantage in firms and industries. However, the results indicate that it could be limited in application while building forward-looking strategies. While this was mentioned as a drawback by some respondents in case of emerging industries, it also shows indicates to potential for developing resource-based tools that managers find easier to use. Meanwhile, our results reveal that practitioners already find ways to apply resource-based tools using combinations of big data approaches, inputs from other strategy frameworks, and by collaborating across functions. The design thinking approach offers a case in contrast. While practitioners find it much more pragmatic and widely applicable, strategy scholars seemed to be biased by its innovation-oriented origins. The need to develop strategy tools to deal with dynamic environments while leveraging advanced analytical (big data) approaches has also been echoed in other recent research on strategy tools (van Knippenberg et al., 2015; Vuorinen et al., 2017).

5.2. Practice Implications

We believe that our study also has important implications for the practice of strategy. From a practitioner perspective, executives can compare their own perceptions of popular strategy tools and frameworks against the results gathered from our panel of strategy experts. However, more importantly, the findings provide insights into the critical managerial competence of selecting and deploying various strategy tools. In addition to evaluating the design characteristics of strategy tools in dynamic environments, managers have to develop skills to think critically to define and limit the scope of their strategy analyses to manage their information requirements.

Additionally, we recognize that while the role of past experience and expertise is crucial in strategy analyses and development, managers rely on these subjective dimensions to cope with the limitations of strategy tools and the lack of information inputs or contextual understanding. However, this also increases the risks of them being biased, and potentially suppresses creative or innovative solutions. To increase rationality in decision-making, it is important for scholars to create tools tailored to dynamic environments, and for organizations to improve the access to data, information, insights, and knowledge available to managers.

It is quite likely that there are white spots in strategy toolkits available to executives. A better understanding of tool requirements enables practitioners and research scholars to build and deploy tailored tools and frameworks. In this regard, it is important that executives are as proficient at innovatively customizing decision-specific frameworks as they are capable of applying pre-existing mental models and extant strategy toolkits developed in the past. This implies that going forward, management education should not only focus on building practitioners' knowledge and awareness of existing tools, but also increasingly equip them with the proficiency to pick and integrate the right elements of different frameworks in a specific decision context.

5.3. Limitations and Future Research Directions

In addition to this, the limitations of this study also offer avenues for further research on strategy tools and frameworks. One is our exploratory methodology relying on an expert-panel approach. Despite reasons justifying our choice, we are aware that the approach also has well-documented limitations. Consequently, our findings are only a snapshot of the opinions of the group of experts who participated in the study at this time. While these are useful in informing thinking, practice, and theory, the conclusions have to be verified against further relevant evidence and research (Hasson and Keeney, 2011). We partially addressed this through the second part of the study, based on qualitative data collected through interactions and discussions

with the strategy experts. Nevertheless, we see potential for future research to validate and extend our findings through quantitative and mixed method approaches.

The limits of the methodology placed on the participants also resulted in a research design choice of selecting only eight prevalent strategy tools out of the many that are a part of the strategist's toolkit (Rigby, 2001; Vuorinen et al., 2017; Wright et al., 2013). Future research could be directed towards analyzing a wider gamut of tools used by strategy practitioners.

Another layer of granularity would logically be to test the contingent effects of industry, country, and cultural environments on managerial perception and evaluation of strategy tools. Evaluating these dimensions could provide further insights into the need for strategy framework renovation in diverse settings, as well as valuable inputs towards developing new tools that help strategy practitioners deal with various dynamic contexts successfully.

6. CONCLUSION

This paper sheds light on how strategy experts perceive, select, and apply strategy tools and frameworks as technologies of rationality in dynamic environments. By identifying the design properties and characteristics of tools that are valued in such contexts, this paper lays the foundations to develop suitable strategy tools. On the other hand, we also explore how strategy experts combine tools and identify some dimensions to reconcile academic and practice perspectives on strategy tools. We strongly believe that ultimately, a comprehensive understanding of strategy tools will result in better choices of strategy and decision-making frameworks, leading to better organizational outcomes and to the generation and realization of new and existing competitive advantages in dynamic environments.

REFERENCES

Aengenheyster, S., Cuhls, K., Gerhold, L., Heiskanen-Schüttler, M., Huck, J., Muszynska, M., 2017. Real-Time Delphi in practice — A comparative analysis of existing software-based tools. Technol. Forecast. Soc. Change 118, 15–27. https://doi.org/10.1016/j.techfore.2017.01.023

Aguilar, F.J., 1967. Scanning the business environment, First. ed. Macmillan, New York, NY.

Alvarez, S., Afuah, A., Gibson, C., 2018. Editors' Comments: Should Management Theories Take Uncertainty Seriously? Acad. Manag. Rev. 43, 169–172. https://doi.org/10.5465/amr.2018.0050

Banks, G.C., Pollack, J.M., Bochantin, J.E., Kirkman, B.L., Whelpley, C.E., OBoyle, E.H., 2016. Managements Science-Practice Gap: A Grand Challenge for All Stakeholders. Acad. Manag. J. 59, 2205–2231. https://doi.org/10.5465/amj.2015.0728

Barney, J., 1991. Firm resources and sustained competitive advantage. J. Manage. 17, 99–120. https://doi.org/10.1177/014920639101700108

Baum, J.R., Wally, S., 2003. Strategic decision speed and firm performance. Strateg. Manag. J. 24, 1107–1129. https://doi.org/10.1002/smj.343

Belton, I., MacDonald, A., Wright, G., Hamlin, I., 2019. Improving the practical application of the Delphi method in group-based judgment: A six-step prescription for a well-founded and defensible process. Technol. Forecast. Soc. Change 147, 72–82. https://doi.org/10.1016/j.techfore.2019.07.002

Bennett, N., Lemoine, G.J., 2014. What VUCA Really Means for You. Harv. Bus. Rev. 92, 27.

Bensoussan, B.E., Fleisher, C.S., 2012. Analysis Without Paralysis: 12 Tools to Make Better Strategic Decisions, Sécond. ed. Pearson Education, Upper Saddle River, NJ.

Best, R.J., 1974. An Experiment in Delphi Estimation in Marketing Decision Making. J. Mark. Res. 11, 448. https://doi.org/10.2307/3151295

Bettis-Outland, H., 2012. Decision-making's impact on organizational learning and information overload. J. Bus. Res. 65, 814–820. https://doi.org/10.1016/j.jbusres.2010.12.021

Brown, T., 2008. Design Thinking. Harvard Buiness Rev. 86, 84.

Burgelman, R.A., Floyd, S.W., Laamanen, T., Mantere, S., Vaara, E., Whittington, R., 2018. Strategy processes and practices: Dialogues and intersections. Strateg. Manag. J. 39, 531–558. https://doi.org/10.1002/smj.2741

Corbin, J.M., Strauss, A., 1990. Grounded theory research: Procedures, canons, and evaluative criteria. Qual. Sociol. 13, 3–21. https://doi.org/10.1007/BF00988593

Côrte-Real, N., Ruivo, P., Oliveira, T., Popovič, A., 2019. Unlocking the drivers of big data analytics value in firms. J. Bus. Res. 97, 160–173. https://doi.org/10.1016/j.jbusres.2018.12.072

Courtney, H., Kirkland, J., Viguerie, P., 1997. Strategy Under Uncertainty. Harvard Buiness Rev. 75, 67–79.

Courtney, H., Lovallo, D., Clarke, C., 2013. Deciding How to Decide. Harvard Buiness Rev. 91, 62–70.

Daft, R.L., Lengel, R.H., 1986. Organizational Information Requirements, Media Richness and Structural Design. Manage. Sci. 32, 554–571.

Dalkey, N.C., 1969. The Delphi Method: An Experimental Study of Group. Santa Monica, CA.

Daniel, E.M., White, A., 2005. The future of inter-organisational system linkages: findings of an international Delphi study. Eur. J. Inf. Syst. 14, 188–203. https://doi.org/10.1057/palgrave.ejis.3000529

Egelhoff, W.G., 1991. Information-Processing Theory and the Multinational Enterprise. J. Int. Bus. Stud. 22, 341–368. https://doi.org/10.1007/s13398-014-0173-7.2

Eisenhardt, K.M., Martin, J.A., 2000. Dynamic capabilities: what are they? Strateg. Manag. J. 21, 1105–1121. https://doi.org/10.1002/1097-0266(200010/11)21:10/11<1105::AID-SMJ133>3.0.CO;2-E

Eppler, M.J., Mengis, J., 2004. The Concept of Information Overload: A Review of Literature from Organization Science, Accounting, Marketing, MIS, and Related Disciplines. Inf. Soc. 20, 325–344. https://doi.org/10.1080/01972240490507974

Galbraith, J.R., 1974. Organization design: An information processing view. Interfaces (Providence). 4, 28–36. https://doi.org/10.1287/inte.4.3.28

Galbraith, J.R., 1973. Designing Complex Organizations, First. ed. Addison-Wesley Longman Publishing Co., Inc., Boston, MA.

Gausemeier, J., Fink, A., Schlake, O., 1998. Scenario Management: An approach to develop future potentials. Technol. Forecast. Soc. Change 59, 111–130. https://doi.org/10.1016/S0040-1625(97)00166-2

Georghiou, L., 1996. The UK technology foresight programme. Futures 28, 359–377. https://doi.org/10.1016/0016-3287(96)00013-4

Geum, Y., Kim, M.S., Lee, S., Kim, N., Lee, H.H., Kim, W., Lee, H.H., Suh, J.H., 2016. How industrial convergence happens: A taxonomical approach based on empirical evidences. Technol. Forecast. Soc. Change 107, 112–120. https://doi.org/10.1016/j.techfore.2016.03.020

Gnatzy, T., Warth, J., von der Gracht, H., Darkow, I.-L., 2011. Validating an innovative real-time Delphi approach - A methodological comparison between real-time and conventional

Delphi studies. Technol. Forecast. Soc. Change 78, 1681–1694. https://doi.org/10.1016/j.techfore.2011.04.006

Gordon, T., Pease, A., 2006. RT Delphi: An efficient, "round-less" almost real time Delphi method. Technol. Forecast. Soc. Change 73, 321–333. https://doi.org/10.1016/j.techfore.2005.09.005

Gordon, T.J., Helmer-Hirschberg, O., 1964. Report on a Long-Range Forecasting Study. RAND Corporation.

Graefe, A., Armstrong, J.S., 2011. Comparing face-to-face meetings, nominal groups, Delphi and prediction markets on an estimation task. Int. J. Forecast. 27, 183–195. https://doi.org/10.1016/j.ijforecast.2010.05.004

Hartman, S., Lundberg, O., White, M., Barnett, T., 1995. Information processing techniques in planning: An investigation of preferences of executive planners. J. Bus. Res. 33, 13–24. https://doi.org/10.1016/0148-2963(94)00002-V

Hasson, F., Keeney, S., 2011. Enhancing rigour in the Delphi technique research. Technol. Forecast. Soc. Change 78, 1695–1704. https://doi.org/10.1016/j.techfore.2011.04.005

Hsu, C.-C., Sandford, B.A., 2007. The Delphi Technique: Making Sense of Consensus. Pract. Assessment, Res. Eval. 12, 1–8.

Huber, G.P., 1990. A Theory of the Effects of Advanced Information Technologies on Organizational Design, Intelligence, and Decision Making. Acad. Mangement Rev. 15, 47–71.

Iansiti, M., Levien, R., 2004. The Keystone Advantage: What the New Dynamics of Business Ecosystems Mean for Strategy, Innovation, and Sustainability. Harvard Business School Press, Boston, MA.

Ingram, P., Silverman, B.S., 2002. Introduction: The new institutionalism in strategic management, in: Advances in Strategic Management. pp. 1–30. https://doi.org/10.1016/S0742-3322(02)19001-2

Jacobides, M.G., 2010. Strategy tools for a shifting landscape. Harvard Buiness Rev. 88.

Jarzabkowski, P., Giulietti, M., Oliveira, B., Amoo, N., 2013. "We Don't Need No Education"- Or Do We? Management Education and Alumni Adoption of Strategy Tools. J. Manag. Inq. 22, 4–24. https://doi.org/10.1177/1056492612460588

Jarzabkowski, P., Kaplan, S., 2015. Strategy tools-in-use: A framework for understanding "technologies of rationality" in practice. Strateg. Manag. J. 36, 537–558. https://doi.org/10.1002/smj.2270

Jiang, R., Kleer, R., Piller, F.T., 2017. Predicting the future of additive manufacturing: A Delphi study on economic and societal implications of 3D printing for 2030. Technol. Forecast. Soc. Change 117, 84–97. https://doi.org/10.1016/j.techfore.2017.01.006

Johnson, G., Scholes, K., Whittington, R., 2008. Exploring Corporate Strategy, Eighth. ed. Prentice Hall, New York, NY.

Kameoka, A., Yokoo, Y., Kuwahara, T., 2004. A challenge of integrating technology foresight and assessment in industrial strategy development and policymaking. Technol. Forecast. Soc. Change 71, 579–598. https://doi.org/10.1016/S0040-1625(02)00397-9

Kim, N., Lee, Hyeokseong, Kim, W., Lee, Hyunjong, Suh, J.H., 2015. Dynamic patterns of industry convergence: Evidence from a large amount of unstructured data. Res. Policy 44, 1734–1748. https://doi.org/10.1016/j.respol.2015.02.001

Kim, W.C., 2005. Blue Ocean Strategy: From Theory to Practice. Calif. Manage. Rev. 47, 105–121. https://doi.org/10.1177/000812560504700301

Kim, W.C., Mauborgne, R., 2004. Blue Ocean Strategy. Harvard Buiness Rev. October, 69–80.

Knott, P., 2008. Strategy tools: Who really uses them? J. Bus. Strategy 29, 26–31. https://doi.org/10.1108/02756660810902297

Knott, P., 2006. A typology of strategy tool applications. Manag. Decis. 44, 1090–1105. https://doi.org/10.1108/00251740610690630

Landeta, J., 2006. Current validity of the Delphi method in social sciences. Technol. Forecast. Soc. Change 73, 467–482. https://doi.org/10.1016/J.TECHFORE.2005.09.002

Landeta, J., Barrutia, J., 2011. People consultation to construct the future: A Delphi application. Int. J. Forecast. 27, 134–151. https://doi.org/10.1016/j.ijforecast.2010.04.001

Li, S., Easterby-Smith, M., Hong, J.F.L., 2019. Towards an understanding of the nature of dynamic capabilities in high-velocity markets of China. J. Bus. Res. 97, 212–226. https://doi.org/10.1016/j.jbusres.2018.08.007

Linstone, H.A., Turoff, M., 2002. The Delphi Method - Techniques and applications. delphi method - Tech. Appl. 1–616. https://doi.org/10.2307/1268751

Loo, R., 2002. The Delphi method: a powerful tool for strategic management. Polic. An Int. J. Police Strateg. Manag. 25, 762–769. https://doi.org/10.1108/13639510210450677

Makadok, R., Barney, J.B., 2001. Strategic Factor Market Intelligence: An Application of Information Economics to Strategy Formulation and Competitor Intelligence. Manage. Sci. 47, 1621–1638. https://doi.org/10.1287/mnsc.47.12.1621.10245

March, J.G., 2006. Rationality, foolishness, and adaptive intelligence. Strateg. Manag. J. 27, 201–214. https://doi.org/10.1002/smj.515

Markmann, C., Darkow, I.-L., von der Gracht, H., 2013. A Delphi-based risk analysis —

Identifying and assessing future challenges for supply chain security in a multi-stakeholder environment. Technol. Forecast. Soc. Change 80, 1815–1833. https://doi.org/10.1016/J.TECHFORE.2012.10.019

McCabe, D.L., Narayanan, V.K., 1991. The life cycle of the PIMS and BCG models. Ind. Mark. Manag. 20, 347–352. https://doi.org/10.1016/0019-8501(91)90010-D

Mintzberg, H., Ahlstrand, B., Lampel, J., 1998. Strategy Safari - A Guided Tour Through the Wilds of Strategic Management. The Free Press, New York, NY.

Moser, R., Kuklinski, C.P.J.W., Srivastava, M., 2017. Information processing fit in the context of emerging markets: An analysis of foreign SBUs in China. J. Bus. Res. 70, 234–247. https://doi.org/10.1016/j.jbusres.2016.08.015

Nielsen, C., Thangadurai, M., 2007. Janus and the Delphi Oracle: Entering the new world of international business research. J. Int. Manag. 13, 147–163. https://doi.org/10.1016/j.intman.2006.07.003

O'Brien, F., 2011. Supporting the strategy process: A survey of UK OR/MS practitioners. J. Oper. Res. Soc. 62, 900–920. https://doi.org/10.1057/jors.2011.2

Patton, M., 1990. Qualitative evaluation and research methods.

Peng, M.W., 2009. The institution-based view as a third leg for a strategy tripod. Acad. Manag. Perspect. 23, 63–81.

Peng, M.W., Sunny Li Sun, Pinkham, B., Hao Chen, 2009. The institution-based view as a third leg for a strategy tripod. Acad. Manag. Perspect. 23, 63–81. https://doi.org/10.5465/AMP.2009.43479264

Porter, M., 1979. How Competitive Forces Shape Strategy. Harv. Bus. Rev. 137–145. https://doi.org/10.1097/00006534-199804050-00042

Porter, M.E., 2008. The five competitive forces that shape strategy. Harv. Bus. Rev. 86, 25–40.

Rauch, W., 1979. The decision Delphi. Technol. Forecast. Soc. Change 15, 159–169. https://doi.org/10.1016/0040-1625(79)90011-8

Rigby, D., 2001. Management Tools and Techniques. Calif. Manage. Rev. 43.

Rigby, D., Bilodeau, B., 2018. Management Tools & Trends [WWW Document]. Bain Company, Inc. URL http://www.bain.de/Images/BAIN_BRIEF-Management_Tools_and_Trends.pdf

Rigby, D., Bilodeau, B., 2005. The Bain 2005 management tool survey. Strateg. Leadersh. 33, 4–12. https://doi.org/10.1108/10878570510607997

Rigby, D.K., 1993. How to manage the management tools. Plan. Rev. 21, 8–15. https://doi.org/10.1108/eb054443

Schoemaker, P.J.H., 2018. Attention and Foresight in Organizations. Futur. Foresight Sci. in press. https://doi.org/10.1002/ffo2.5

Schoemaker, P.J.H., 1995. Scenario Planning: A Tool for Strategic Thinking. Sloan Manage. Rev. 36, 25–40.

Schoemaker, P.J.H., Day, G.S., Snyder, S.A., 2013. Integrating organizational networks, weak signals, strategic radars and scenario planning. Technol. Forecast. Soc. Change 80, 815–824. https://doi.org/10.1016/j.techfore.2012.10.020

Schoemaker, P.J.H., van der Heijden, C.A.J.M., 1992. Integrating scenarios into strategic planning at Royal Dutch/Shell. Plan. Rev. 20, 41–46. https://doi.org/10.1108/eb054360

Sekaran, U., Bougie, R., 2016. Research methods for business : A skill-building approach, Seven. ed. Wiley, Chichester, UK.

Shepherd, N.G., Rudd, J.M., 2014. The Influence of Context on the Strategic Decision-Making Process: A Review of the Literature. Int. J. Manag. Rev. 16, 340–364. https://doi.org/10.1111/ijmr.12023

Sirmon, D.G., Hitt, M.A., Ireland, R.D., 2007. Managing Firm Resources in Dynamic Environments to Create Value: Looking Inside the Black Box. Acad. Manag. Rev. 32, 273–292. https://doi.org/10.5465/amr.2007.23466005

Skulmoski, G.J., Hartman, F.T., Krahn, J., 2007. The Delphi Method for Graduate Research. J. Inf. Technol. Educ. 6, 1–21. https://doi.org/10.1.1.151.8144

Spee, A.P., Jarzabkowski, P. a., 2009. Strategy tools as boundary objects. Strateg. Organ. London, UK 7, 223–232. https://doi.org/10.1177/1476127009102674

Stenfors, S., Tanner, L., Haapalinna, I., 2004. Executive Use of Strategy Tools: Building Shared Understanding through Boundary Objects. Front. E-bus. Res. 2004 635–645.

Story, V., Hurdley, L., Smith, G., Saker, J., 2000. Methodological and Practical Implications of the Delphi Technique in Marketing Decision-Making: A Re-Assessment. Mark. Rev. 1, 487–504. https://doi.org/10.1362/1469347002562579

Tallman, S., Luo, Y., Buckley, P.J., 2018. Business models in global competition. Glob. Strateg. J. 8, 517–535. https://doi.org/10.1002/gsj.1165

Teece, D.J., Pisano, G., Shuen, A., 1997. Dynamic capabilities and strategic management. Strateg. Manag. J. 18, 509–533. https://doi.org/10.1002/(SICI)1097-0266(199708)18:7<509::AID-SMJ882>3.0.CO;2-Z

Tersine, R.J., Riggs, W.E., 1976. The delphi technique: A long-range planning tool. Bus. Horiz. https://doi.org/10.1016/0007-6813(76)90081-1

Turner, K.L., Makhija, M. V., 2012. The role of individuals in the information processing

perspective. Strateg. Manag. J. 33, 661–680. https://doi.org/10.1002/smj.1970

Tushman, M.L., Nadler, D.A., 1978. Information processing as an integrating concept in organizational design. Acad. Manag. Rev. 3, 613–624. https://doi.org/10.5465/AMR.1978.4305791

van Knippenberg, D., Dahlander, L., Haas, M.R., George, G., 2015. Information, Attention, and Decision Making. Acad. Manag. J. 58, 649–657. https://doi.org/10.5465/amj.2015.4003

von der Gracht, H. a., Darkow, I.-L., 2010. Scenarios for the logistics services industry: A Delphi-based analysis for 2025. Int. J. Prod. Econ. 127, 46–59. https://doi.org/10.1016/j.ijpe.2010.04.013

von der Gracht, H.A., 2012. Consensus measurement in Delphi studies. Review and implications for future quality assurance. Technol. Forecast. Soc. Change 79, 1525–1536. https://doi.org/10.1016/j.techfore.2012.04.013

Vuorinen, T., Hakala, H., Kohtamäki, M., Uusitalo, K., 2017. Mapping the landscape of strategy tools: A review on strategy tools published in leading journals within the past 25 years. Long Range Plann. https://doi.org/10.1016/j.lrp.2017.06.005

Welty, G., 1972. Problems of Selecting Experts for Delphi Exercises. Acad. Manag. J. 15, 121–124.

Wernerfelt, B., 1984. A Resource based view of the firm. Strateg. Manag. J. 5, 171–180. https://doi.org/10.1002/smj.4250050207

Whittington, R., 2006. Completing the Practice Turn in Strategy Research. Organ. Stud. 27, 613–634. https://doi.org/10.1177/0170840606064101

Winkler, J., Kuklinski, C.P.J.-W., Moser, R., 2015. Decision making in emerging markets: The Delphi approach's contribution to coping with uncertainty and equivocality. J. Bus. Res.

68, 1118–1126. https://doi.org/10.1016/j.jbusres.2014.11.001

Winkler, J., Moser, R., 2016. Biases in future-oriented Delphi studies: A cognitive perspective. Technol. Forecast. Soc. Change 105, 63–76. https://doi.org/10.1016/j.techfore.2016.01.021

Wooldridge, B., Schmid, T., Floyd, S.W., 2008. The Middle Management Perspective on Strategy Process: Contributions, Synthesis, and Future Research, Journal of Management. https://doi.org/10.1177/0149206308324326

Wright, R.P., Paroutis, S.E., Blettner, D.P., 2013. How Useful Are the Strategic Tools We Teach in Business Schools? J. Manag. Stud. 50, 92–125. https://doi.org/10.1111/j.1467-6486.2012.01082.x

Author Biography

Srinath Rengarajan is a research associate at the Chair of Supply Chain Management at the University of Erlangen-Nuremberg (FAU), Germany. His research interests in the strategy and international management domains include strategic decision-making, institutional interactions, social capital theory, and strategy-as-practice in organizations. He further draws upon practical experiences gained in strategy at leading industry and management consulting firms, and as an external research partner at the University of St. Gallen.

Roger Moser is Senior Lecturer at Macquarie Business School in Australia and serves as faculty at the University of St. Gallen in Switzerland and the Indian Institute of Management in Udaipur, India. After completing his PhD in Germany, he established endowed chairs for sourcing and supply chain management in China and India and served as assistant professor at the University of St. Gallen. He has published in numerous journals including Technological Forecasting & Social Change, Journal of Supply Chain Management, and Journal of Operations Management. His primary research focus is on intelligence gathering and processing as part of strategic management.

Gopalakrishnan Narayanamurthy is a Senior Lecturer in the Department of Operations and Supply Chain Management at the University of Liverpool Management School, UK. He researches in the area of transformative service research, healthcare operations management, operational excellence, digitization, decision intelligence, and sharing economy. His research has been accepted for publication in Journal of Service Research, International Journal of Operations and Production Management, Journal of Business Ethics, International Journal of Production Economics, and Technological Forecasting and Social Change, among others.