

How Corporate Cultures Drive Advertising and Promotion Budgets

Best Practices Combine Heuristics and Algorithmic Tools

DOUGLAS WEST

King's College London
douglas.west@kcl.ac.uk

JOHN B. FORD

Old Dominion University
jbford@odu.edu

PAUL W. FARRIS

University of Virginia
Darden School of
Business
FarrisP@darden.virginia.
edu

This study provides a survey of the methods used by U.S. advertisers to set advertising and promotions budgets and the effects of culture, risk, and organizational experience on these choices. Findings suggest that heuristics provide checks on analytically based budget methods and may also help managers deal with risks. Understanding the role played by heuristics in budgeting provides the first step toward process improvements in advertising and promotions budgeting.

INTRODUCTION

In a classic *Harvard Business Review* article, Joel Dean (1951, p. 64) summarized all that was wrong about advertising and promotions budgeting:

The fixed-percentage of sales method gets the cart before the horse; advertising outlays should cause sales, not be determined by them. The all-you-can-afford method reflects a blind faith in advertising, which although occasionally rewarding, is nevertheless a confession of ignorance. The objective-and-task method, although it sounds plausible, stumbles before

it starts over the obstacle of not determining whether the objective sought is economically worth attaining. The competitive-parity method represents a narrow goal not usually tailored to the company's full needs.

Following Dean's observations, early studies of advertising and promotions (hereafter "AP") budgeting highlighted the naïveté of prevalent budgeting methods, with an underlying assumption that practice would improve as it became more rational and scientific. Over time, however, it became obvious that more "sophisticated methods" have not

Management Slant

- Budgeting processes used by companies are more complicated than the oft-referenced "rules of thumb" suggest.
- Nevertheless, the process is not as rational as economists and management scientists would prefer and rarely can be demonstrated to produce profit-optimizing budgets (however profit might be defined).
- Instead, whatever the sophistication of the organization, the budget-setting process often combines heuristics (such as maximum advertising/sales ratios) with analytics (e.g., marketing mix models) to help managers striving to improve company performance.
- Heuristics serve to provide checks on other analytically based budget recommendations and may also help managers deal with risks.
- Recognizing the role that heuristics play in budgeting is the first step toward a much-needed process improvement in marketing budgeting.

been adopted as rapidly as was expected or hoped.

This has resulted in several studies examining organizational issues rather than AP budgetary practices in pursuit of understanding why more advanced methods continue to be underutilized. Despite the growing availability of market data that enables the application of more sophisticated methods—specifically those quantifying advertising response—these marketing-mix models often encounter organizational resistance when it comes to implementing the budget recommendations.¹

Not unlike the criticisms leveled at measuring consumer “preference,” it may be that budgeting processes were mainly described or considered by managers in

response to research-generated questionnaires and interviews. Of course, as results were reported and criticized in authoritative marketing texts, subsequent generations of managers learned that certain “rational” budgeting techniques were more defensible than others. And this awareness, in turn, may have affected their willingness to report their own usage.

Few, however, of the existing studies examining AP budgeting have considered the potential insight of contrasting or combining heuristics and algorithmic approaches to determine advertising budgets. At a broader level, a number of studies (See Table 1) indicate that AP budgeting, as an event, is a subset of decision making. As such, cognitive-appraisal theory (Lazarus, 1991; Skinner, 1995; White, Varadarajan, and Dacin, 2003)

provides a useful framework to investigate budgeting practices.

Cognitive-appraisal theory relates to a manager’s interpretations of an event, which, in turn, determines his or her reaction. It recognizes that the interpretation of the same event (*e.g.*, setting an AP budget) is modified by the assessment of how the event affects us.

One study argued that cognitive style—along with perceived organizational culture and information use—are antecedents of market-situation interpretation (involving perceived control that, in turn, affects situation appraisal) that, in turn, affects managerial response. At issue is the assumption that cognitive style and perceived organizational culture both are drivers of how an individual interprets the marketing situation—in this particular

¹ Neff, J. “Marketing-Mix Models Get Pushback as Media Landscape Changes.” *Ad Age* April 24 (2013): 23.

TABLE 1
Selected Research on Advertising and Promotions Budgeting

Area	Year	Authors	Location	Sample	Main Findings
Method and Organization	1975	San Augustine and Foley	U.S.	Top 25 B2C and top 25 B2B	B2C more sophisticated/finance and marketing executives disagree on many budgeting issues.
Method and Organization	1977	Permut	Western Europe	Top 50 B2C and top 50 B2B	B2C more sophisticated/marketing execs in Europe have more control than in the U.S.
Method	1981	Patti and Blasko	U.S.	54 top advertisers	Large firms are sophisticated.
Method	1983	Lancaster and Stern	U.S.	60 top advertisers	Methods are poorly applied.
Method	1985	Hooley and Lynch	UK	X-section 1,775 advertisers	Larger and better performers are more sophisticated.
Method	1987	Lynch and Hooley	UK	X-section 560 B2B advertisers	Larger B2B advertisers are more sophisticated than small ones.
Organization	1987	Piercy (JA)	UK	130 medium-size advertisers	Budget size is related to the power of the marketing department.
Organization	1987	Piercy (JM)	UK	140 medium-size advertisers	Budget method and size are related to the direction of the process.
Method	1987	Lynch and Hooley	UK	X-section 536 B2B advertisers	B2B is increasingly sophisticated.
Method	1989	Synodinos, Keown, and Jacobs	15 Countries	X-section 484 advertisers	Different methods are used in different countries.

(continued)

TABLE 1

Selected Research on Advertising and Promotions Budgeting (continued)

Area	Year	Authors	Location	Sample	Main Findings
Method	1990	Lynch and Hooley	UK	X-Section 1,380 advertisers	Top performers are more likely to use objective and task methods.
Method	1991	Hung and West	Canada, UK and U.S.	100 top advertisers	Larger firms are more sophisticated.
Organization	1993	West and Hung	Canada, UK and U.S.	100 top advertisers	Type of process (bottom-up/top-down) affects the method chosen.
Method and Organization	1993	Mitchell	UK	52 top advertisers	Objective and task are prevalent—managers take account of organizational setting and power.
Organization	1995	West	Canada	X-section 310 advertisers	Large companies set budgets after sales forecasts rather than before or simultaneously.
Method	1997	Miles <i>et al.</i>	U.S.	43 large agribusinesses	Generally sophisticated sector.
Organization	1999	Low and Mohr	U.S.	8 large B2C advertisers	Institutional pressures affect media allocations.
Organization	2002	Kissan and Richardson	U.S.	COMPUSTAT	Level of managerial ownership of a firm affects the use of affordability methods (agency cost theory).
Method	2003	Yoo and Mandhachitara	Thailand	2 large scotch brands	Competition spending need not be matched.
Organization	2005	Supanvanij	U.S.	198 S&P 500 companies	Executive compensation is linked to spending.
Method and Organization	2006	Prendergast, West, and Shi	China	X-section 206 advertisers	IJVs and top performers are more sophisticated.
Method	2007	Büschken	Germany	35 top auto companies	Just under 10% of spends are wasted, and efficiency can be increased with purchase intention feedback.
Method	2007	Bass, Bruce, Majumdar, and Murthi	U.S.	Top telecom	Different campaign themes yield better forecasts of response models than aggregate data.
Organization	2008	Wang and Zhang	U.S.	COMPUSTAT (S&P Global 1200 companies)	Temporary intensive advertising campaigns do not achieve long-term goals.
Organization	2009	West and Prendergast	UK	77 top advertisers	Cultural norms, personalities, processes, access to data, and practices dominate choices.
Organization	2011	Corstjens, Umblijs, and Wang	France	7 global advertisers	Budgeting decisions are overwhelmingly conservative in nature and risk averse.

instance, setting an advertising and promotions budget, and providing direction for managerial response.

Cognitive style is something that is affected sequentially by perceived organizational culture. How the individuals choose to process the information is determined to a certain extent by their perception of the nature of the organizational culture that permeates their work environment.

Organizational environment and training, in turn, will affect the cognitive style chosen by the individual manager (in this case, the manager looking to set the advertising and promotional budget). As a result, the perceived organizational culture would be an antecedent of the type of cognitive style chosen by the individual as well as the risk propensity, along with the individual's knowledge and experience to setting an advertising and promotions budget as identified in cognitive-appraisal theory.

The focus of the current article is on budgeting studies that focus on the processes that managers use (or claim to use) to set AP budgets and what managers actually do and why they do it, including issues with applying these in practice.

Most prior studies have focused on either the analyses of methods used—related to one or two main explanatory variables—or assessed the nature and sophistication of organizational processes of AP budgeting. Implications for practice derived from this research generally assumed that formal algorithmic and/or response-based techniques were superior to heuristics or rules of thumb.

The current study, by contrast, examines marketers' budgetary choices from the perspective of factors favoring management's use of heuristics—in fact, the widely derided budgeting heuristics—as compared to decisions based on algorithmic processes.

Cognitive style is something that is affected sequentially by perceived organizational culture.

Why has progress in this area been so slow? Is the lack of significant progress because the problem is even more difficult than once thought? The study will assess the antecedents, cognitive style, and nature of AP budgetary methods in turn. Overall, the study seeks to provide a solution to the long-standing debate as to why practitioners continue to use simplistic budgetary methods.

Although heuristics often are appropriate to AP budgetary tasks, it is not clear whether they are indicative of good decision making or prevalent because they are familiar, inbred, and part of the heritage of an organization's decision making. In many cases, in fact, they may continue in practice not because they benefit the larger enterprise but simply because they are but politically expedient.

COGNITIVE STYLE

Perceived organizational culture—specifically, the propensity to take risk and the knowledge and experience of managers—will affect the cognitive style a company adopts.

Within a broader decision-making context, the debate over AP budgeting may be positioned in the realm of logic, probability, uncertainty, and heuristics—central concepts underlying decision making and problem solving.

- Logic focuses on mental models and cognition to solve problems and preserve the truth in well-structured problems.
- Even when these approaches use information prone to error and necessitate risky bets about the future, they have

more to do with risk and probability than true “uncertainty” (Knight, 1923).

- By contrast, heuristics tend to be used when the problem is ill defined and difficult to quantify, when time is limited, and the probabilities are unclear.

When it comes to heuristics “...the mind resembles an adaptive toolbox with various heuristics tailored for specific classes of problems—much like the hammers and screwdrivers in a handyman's toolbox” (Gigerenzer, 2008, p. 20). The literature classifies heuristic decision making as “System 1” thinking and algorithmic as “System 2” thinking (Kahneman, 2012).

The types of decisions in heuristics can be varied (Gigerenzer, 2008). One form of heuristic is isomorphic behavior (colloquially known as “tit for tat”), which involves cooperating, keeping a memory of the outcome, and then imitating your partner's last behavior (Axelrod, 1984). Another form is isomorphic (imitation) behavior, which transpires either by examining the majority or looking at the most successful people around and following them (Boyd and Richerson, 2005).

How do such heuristics remain so popular? It is partly because they are easy to use and partly that they provide customizable solutions to problems that can be adapted to many situations: You do not have to follow the algorithm produced from the analysis of logic and/or probability; instead, you work with what intuitively seems to be the best approach.

Applied to AP budgeting, heuristics may offer considerable insight into the use of what many have regarded as less sophisticated AP methods and organizational

processes. What is somewhat surprising is that there have been instances in which heuristic decision making has been able to outperform more elaborate computer models (Czerlinski, Gigerenzer, and Goldstein, 1999) in situations where optimization is often difficult or impossible.

In the case of AP budgeting, the optimization technique most often recommended is to specify (or estimate) a profit-advertising response function and spend until the point is reached where zero marginal profit is returned. Of course, specifying response functions with a great level of precision not only is impossible in practice but also in theory (Taylor, Kennedy, and Sharp, 2009).

One source of error in estimating precise response functions is the problem of over fitting. For example, forecasting studies indicate that relevant information often is merged with irrelevant (noise), which produces an over-fit relative to more robust simpler models (Cosmides and Tooby, 1992).

One possible solution? Heuristics based upon ordered cues may offer a means to reduce over-fit by minimizing noise (or even removing it) from any forecast and, in such instances, they often outperform algorithmic cognitive advantages (Hertwig and Todd, 2003). In essence, heuristics enable decision makers to “forget” data and focus only on the pertinent issues. This is particularly pertinent because behavior based upon the past often will fail given that environments can change quickly.

Of course, it should be noted that bad corporate practices based upon choosing the path of least resistance in decision making (*i.e.*, advertising and promotional budget setting) will not effectively address many of the issues raised, but the possibility still exists that sound reasoned and practiced heuristics may be more useful than previously thought.

In the context of AP, the research questions in the current study are as follows:

- What factors influence the relative dominance of either heuristics or algorithmic methods in the budgeting process?
- How do we distinguish one from the other?

ANTECEDENTS

Organizational Culture

Any aspects of decision making have to be considered within the context of organizational culture. Obviously, the culture that pervades the organization will have an effect on all aspects of business operations, including the budgeting process.

One study work offers a validated model of organizational cultural types based upon two key variables: the organizational emphasis on organic versus mechanistic processes and the emphasis on internal-versus-external maintenance (Deshpande, Farley, and Webster, 1993). This model of cultural types proposes market, hierarchy, clan, and adhocracy types of culture. In more detail (See Figure 1):

- Market culture reflects an environment focused on external positioning and mechanistic processes. It is

characterized as focused primarily on the achievement of goals and maintaining competitiveness.

The type of leader who would fit best with this culture would be concerned with maintaining firm competitiveness and the establishing of a series of goals and following through to their achievement. This would be accomplished strategically through the gaining of competitive advantage and market dominance.

The market culture would suggest a greater preference for competitive-based models such as competitive parity or competitive absolute (heuristics).

- The hierarchy culture is reflective of a focus on internal maintenance and mechanistic processes. This type of firm follows a set of guidelines, rules, and procedures and prioritizes the maintenance of order.

The concern is one of order, and the appropriate leadership style would be to be a good administrator and coordinator. This organization is centralized and risk is minimized—a

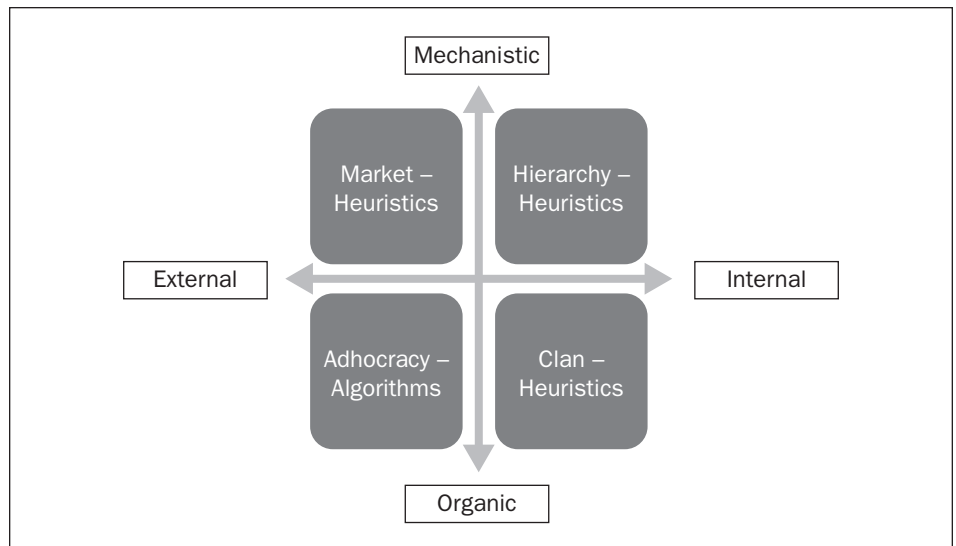


Figure 1 Corporate Culture and Advertising Budget-Setting Methods

“don’t-rock-the-boat” enterprise with everything operating at a stable, uniform, and totally predictable level.

The implication for a hierarchy culture would be a greater preference for affordable or percentage-of-sales (heuristics) type approaches, where the sums to be spent are more certain.

- The clan organization reflects organic processes and internal maintenance and, as such, thrives in a strong environment of teamwork and family. This organization would depend on the creation of a tightly knit environment with strong personal bonds and a high morale.

The leader best suited to this culture would be one seen as a father or mother figure with a nurturing nature. The building of relationships and traditions and commitment would be important for this environment.

Overall, the clan culture would point to heuristics approaches that are based on negotiation and agreement rather than algorithms.

- Adhocracy describes organizations that thrive on entrepreneurial spirit with strategic emphasis placed on creativity and innovation. They tend to be externally positioned while utilizing organic processes. Such organizations would require both decentralization and personnel empowerment.

Adhocracy is the culture most obviously linked to algorithmic budgetary methods. In a more entrepreneurial type of culture, the assumption would be that there would be less information available for decision making and information processing, as corporate memory would be limited.

The likelihood is that more information (as opposed to the lesser requirement of the other models) would be needed in an adhocratic culture to cross the sufficiency

threshold, thereby stressing the potential need for algorithmic (System 2) budgeting methods to be employed.

As a result of the above discussion, the study posits the following hypotheses:

H1a: Algorithmic AP budgeting methods will be positively associated with adhocracy organizational culture.

H1b: Heuristic AP budgeting methods will be positively associated with market, clan, and hierarchy organizational cultures.

Propensity to Take Risk

Taking risk is an inherent part of decision making. Indeed, the concept of risk has been recognized as a possible explanatory variable for budgeting sophistication (Kissan and Richardson, 2002; Supanvanij, 2005).

One argument could be made on the fact that heuristic (System 1) methods are likely to be more risky than the use of algorithmic (System 2) methods. The rationale for this would follow from the fact that, according to one study, heuristic processing utilizes learned knowledge structures involving simple decision rules whereas systematic decision making requires an incorporation of as much information as possible (Zuckerman and Chaiken, 1998).

Managers and owners often have divergent risk preferences. People decide at what level they think they should be performing; if they fall below this “target,” they are likely to become risk seeking. The reason is straightforward: Taking risks offers the opportunity to get back on track quickly.

Managers in companies performing below target have been found to conform to this pattern (Fiegenbaum and Thomas, 1988). This occurs regardless of the time period considered, the underlying

environmental conditions, or the size of the performance decrements involved. In such instances, the worse an advertiser performs relative to aspiration levels, the greater becomes the likelihood of making risky advertising and promotions decisions, which would mean the use of heuristic AP techniques.

By comparison, a firm that regularly is achieving its advertising targets is more risk averse. The study, therefore, offers the following hypothesis:

H2: Heuristic (System 1) AP budgeting methods will be associated positively with individuals who have high risk-taking propensities.

Knowledge and Experience

It also may be expected that risk will have a bearing on decision making in conjunction with one’s knowledge and experience.

As individuals increase their knowledge of (and experience in) advertising, it is to be expected that they will gain in confidence. As such, they will be more likely to make decisions based upon intuition and sense than solely on analysis and logic. That does not mean that they will forgo analysis and logic; rather, they will interpret data in light of their experience.

There is considerable historic evidence that this element of personal confidence, in fact, introduces an element of risk. For example, it has been found that older decision makers are likely to have higher aspiration levels than younger ones. Controlling for resources, older decision makers may either take more risks (MacCrimmon and Wehrung, 1988) or at least be more willing to forgive higher levels of risk. Similarly, it has been found that the longer a person has position and status, the more his or her aspiration level is adapted and the more likely risks will be understood and allowed. Furthermore, there are strong indications that

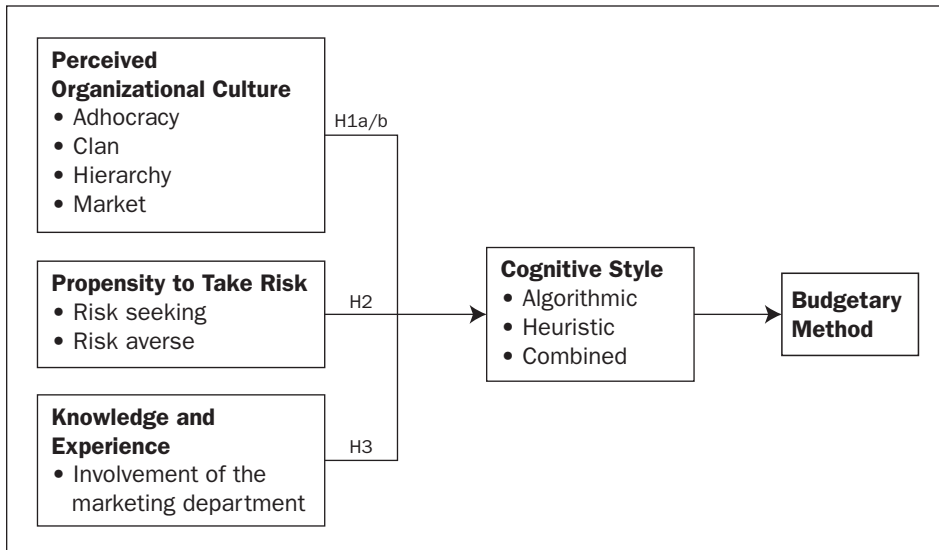


Figure 2 Antecedents to Setting an Advertising and Promotion Budget Framework

risk-taking managers are often the ones who land the top jobs (Grey and Gordon, 1978).

To frame data, experienced managers may have to deal with a variety of sophisticated mechanisms that have not proved to be of consistent value over time and may decide to return to mechanisms that may be less sophisticated but that have become standards for performance over time. It can be seen how such behavior easily can become the norm rather than the exception.

As a result, the study presents the following hypothesis:

- H3: Heuristic (System 1) AP budgeting methods will be associated positively with individuals with higher levels of knowledge and experience.

An overview of the relevant linkages and related hypotheses can be seen in Figure 2.

METHODOLOGY

Measures

All study scales have been utilized and validated in prior research, but as some were created in a non-advertising setting,

these particular items were assessed for appropriateness in an advertising context.

In-depth interviews with five advertising executives were undertaken, and the resulting instrument is appropriate for the context of the present research. The five executives scrutinized the study’s questionnaire and added several refinements.

The questions probed general marketing activities, the budgeting process employed, budgeting methods used, advertising and promotions in practice, general business practice, and the market environment and organizational demographics.

To distinguish between mainly heuristic and mainly algorithmic AP budgeting methods, 11 budgeting techniques were selected from the extant literature (See Table 2). Three judges, two senior academics—each with several years of agency experience—and one marketing practitioner coded each AP budgetary method as either “mainly heuristic” or “mainly algorithmic” based upon Gigerenzer’s (2008) typology. Rust and Cooil’s (1994) proportional reduction in loss (PRL) was then used to measure inter-judge agreement/reliability. The resulting inter-judge

score of 0.9393 provided a highly reliable PRL (equivalent to Cronbach alpha) for all definitions. This led to the following consensus categorized by System 1 (heuristic) and System 2 (algorithmic).

The results show that the individual budgetary methods were largely deemed to be heuristic. The types of heuristics were clustered around

- satisficing: choosing the budget that exceeded aspirations and ignoring alternative spends (arbitrary budgetary method);
- equality: allocating resources across all competing claims on spending (affordable budgetary method);
- isomorphism: copying the decisions of others (competitive absolute and competitive relative budgetary methods); and
- default: choosing the budget in the way that it is normally done (percentage of last year, percentage of anticipated sales and unit sales budgetary methods).

Four of the 11 budgetary methods (incremental testing, objective task, quantitative methods, and return on investment [ROI]) were coded as algorithmic in that each required logic, mental modeling, and cognitive structures.

This new categorization of AP methods enabled the assessment of the key factors that would influence either the use of System 1 (heuristics) or System 2 (algorithmic) budgeting methods. Framing budgeting in terms of heuristics and algorithmics places the context squarely in the line of decision making. Decision making, of course, is undertaken at the organizational and individual level in terms of unit of analysis.

Culture was measured using Deshpande, Farley, and Webster’s (1993) quadratic cultural scale. This model of cultural types—market, hierarchy, clan, and adhocracy cultures—is strongly rooted in the work of

TABLE 2
Budgeting Method and Classification

	System	Heuristic
HEURISTIC:		
Arbitrary: Solely determined on the basis of what is “felt” to be necessary	1	Satisficing
Affordable: Determine how much can be afforded	1	Equality
Competitive Absolute: Set in line with the closest rival	1	Isomorphic
Competitive Relative: Set in line with market share	1	Isomorphic
Percentage of Last Year’s Sales: Might also be a fixed rate per case or non-dollar measure of sales	1	Default
Percentage of Anticipated Sales Next Year: Same as above, except uses forecast of sales to set budget	1	Default
Unit Sales: The company allocates a fixed % of unit price for “Advertising and Promotions” and then multiplies this amount by projected sales volume (e.g., 5% unit price × 200,000 units sold)	1	Default
ALGORITHMIC:		
Incremental Testing: The budget is allocated in an incremental series of market tests. Spending is increased or decreased in line with results	2	—
Objective Task: We start by setting particular Advertising and Promotions objectives and then derive a budget that will enable us to achieve these	2	—
Quantitative Models: Computer simulation models are used involving statistical techniques such as multiple regression analysis.	2	—
Return on Investment (ROI): Advertising and Promotions is considered an investment and monies are spent to maximize ROI	2	—

Cameron and Freeman (1991) and Quinn (1988) and integrates two major theoretical perspectives from organizational behavioral literature: the systems-structural theory (Van de Ven, 1976; Zey-Ferrell, 1981) and the transactional cost theory from the field of economics (Williamson, 1975).

The in-depth interviews confirmed that risk-taking in AP budgeting—as in other aspects of business (Pfeffer and Salancik, 1977; Piercy, 1987a)—managers have much less trouble understanding basic objects, such as risk, than consumers do (Pfeffer and Salancik, 1977; Piercy, 1987a).

Furthermore, it has been found that added items often undermine respondent reliability (Drolet and Morrison, 2001).

With these perspectives in mind, a one-way/between-groups analysis of variance was conducted to explore the specific impact of the degree of risk on approaches to budgeting as measured by the question: “Considering your most recently finished advertising and promotions campaign, how much risk do you think was taken?” Responses were measured on a 5-point scale from “no risk” to “100 percent risk” (West, 1999).

Marketing organizational knowledge and experience was measured on a 7-point scale. The question asked: “Please indicate to what extent any of the following parties participate in the advertising and promotions budget setting process” from marketing, sales, finance, human resources, operations/production, research and development, corporate head office, business unit, advertising/promotions agencies, and distributors and retailers.

Organizations rating marketing more highly than other functional areas were deemed to have higher marketing organizational knowledge and experience.

Pre-Test

The instrument was pre-tested to ensure that all questions were appropriate and clearly understood. To test the hypotheses, interviews were undertaken with local advertisers to ensure appropriateness of the various constructs and related scales. The final refinement involved a pre-test with 20 advertising executives chosen at random from the *Standard Directory of Advertisers: The Advertising Red Book* (Lexis-Nexis, New Providence, NJ), a listing of more than 13,000 advertisers in the United States and Canada.

The pre-test resulted in a variety of additional refinements in the survey instrument. At this point, the questionnaire was deemed to be ready for mailing out to the sample population.

Survey

The questionnaire consisted of 22 questions over six pages. It began with the requisite instructions and statements of confidentiality and provided the following definition of “the advertising and promotions budget”: “The financial statement and program put before top management for approval for spending on media, advertising production, and advertising services in order to meet AP objectives.”

Sample

The sample chosen for the study were advertisers listed in the aforementioned *Standard Directory of Advertisers*. A key-informant approach was used with the unit of analysis being the organization rather than the individual.

The questionnaire was sent to the identified "contact person" from the *Advertising Red Book* listing who was responsible for APs. Not being a cross-national study, the Canadian listings were eliminated, and 1,000 U.S. advertisers were chosen at random from the remaining population members to receive a mailed questionnaire and cover letter.

Response

Of the 1,000 mailings, 137 were returned to sender as undeliverable (addressee not known, company no longer in business, etc.). This reduced the sample population to 863, and after two waves of mailings, 125 useable completed surveys were received (an effective response rate of just under 15 percent). Such a low response rate is quite common among recent mail surveys of this type; marketing managers regularly receive such requests and understandably have become increasingly reluctant to fill out such long surveys.

Nonetheless, the issue of non-response bias had to be addressed. To assess the potential for bias, an attempt was made to generate responses on the survey questions from advertisers on the mailing list who had not responded on the first two mailings. Though this was not a perfect mechanism—the efforts to get these respondents to participate were more rigorous than the efforts to reach the earlier respondents—significant differences in responses would be grounds for concern. In this case, there were seven advertisers who responded and filled out the surveys, and their responses as a group were compared to the other 125.

No significant differences were found.² As a result, despite the low response rate, the respondents were deemed to be appropriate and representative.

As to the respondents' demographics, a range of positions from the various companies was represented, but the majority of respondents identified themselves as "President," "Vice President," "Director," and "Managers." They all indicated that they were responsible for AP. The companies that they represented ranged in size with gross sales of \$100,000 to \$10 billion, from three-man bands to up to 110,000 employees (mean, 4,000). The various respondents had been in business anywhere from three to 236 years (mean, 65 years) and were located throughout the United States.³

FINDINGS

Descriptive

In a top-line analysis of the disaggregate results, heuristics (System 1) methods proved to be the most popular accounting for just under 60 percent (See Table 3). The choices (in order of importance) were managerial judgment at 39 percent (affordable and arbitrary), sales-based at 17 percent (anticipated, last year, and unit), and competitive-parity at 3 percent (relative and absolute).

The objective and task at 26 percent proved to be the top algorithmic choice with measurement at 15 percent (ROI and incremental testing⁴).

Any disaggregated breakdown, in fact, disguises the use of multiple methods. On average (mean), the companies used two budgetary methods with a maximum

of six methods used by one company (See Table 3).

TABLE 3
SME Budgetary Categories and Methods

# Methods	N = 111	%
1	50	45.0
2	38	34.1
3	19	17.1
4	3	12.7
5	0	0
6	1	0.9
TOTAL:	111	100.0

Category*	N = 111	%
Judgment	63	35.8
Objective and Task	52	29.5
Sales	30	17.0
Measurement	25	14.2
Competitive	6	3.4
TOTAL:	176	100.0

Methods* (Systems)	N = 111	%
Affordable (1)	55	27.4
Objective and Task (2)	52	25.9
Return on Investment (2)	25	12.4
Arbitrary (1)	23	11.4
% of Anticipated Sales Next Year (1)	21	10.4
% of Last Year's Sales	10	5.0
Competitive Relative (1)	5	2.5
Incremental Testing	5	2.5
Unit Sales (1)	4	2.0
Competitive Absolute (2)	1	0.5
Quantitative Models (2)	0	0.0
Other	0	0.0
TOTAL:	201	100.0

*Multiple answers

² Armstrong and Overton's (1977) method, where the first 25 percent of the responses are compared to the last 25 percent of the responses, also was utilized and, again, no differences were found.

³ A detailed breakdown of respondents can be provided to interested readers.

⁴ No respondents reported that their companies used quantitative models.

In terms of Systems 1 (heuristic) and 2 (algorithmic), these breakdowns were 41 percent solely heuristics, 28 percent solely algorithmic, and 31 percent a combination of heuristics and algorithmic methods.⁵ It was not possible to identify any single mechanism used by any particular firm as optimal. From the research sample, it was found that triangulating using more than one method seemed to be the most reliable means to produce the best results.

HYPOTHESES

Starting with organizational culture, a one-way/between-groups analysis of variance was conducted to explore the impact using Moorman's (1995) refinement of Deshpande, Farley, and Webster's (1993) scale of corporate culture on approaches to budgeting as measured by the System test.

Respondents were divided into three groups according to their heuristics scores (heuristics, algorithmic, and both). There was a statistically significant difference at the $p < 0.05$ level in heuristics scores for the three budgetary groups for adhocracy [$F(2, 122) = 3.933, p = 0.022$]. Calculated using eta squared, the effect size of 0.08 was medium.

Post hoc comparisons using the Tukey HSD test indicated that the means scores for heuristics ($M = 4.10, SD = 1.22$) were significantly different from those who utilized both heuristic and algorithmic methods ($M = 4.79, SD = 1.11$). In this case, the expectation was that those who reported that they were from an adhocracy would be more likely to use algorithmic budget setting methods, and this is what was found.

Adhocracy culture was the only culture in which there was a significant difference

⁵ A combination was defined as a method using more than one method with a minimum of one method being heuristic or algorithmic (e.g., affordable [heuristic], and incremental testing [algorithmic] was coded as a combination as opposed to affordable and percentage of last year's sales as purely heuristic).

All firms in the current study tended to use at least two or more methods, which indicates that there is no optimal tool or panacea.

in budgeting methods: The data indicated that adhocracies were more likely to use algorithmic methods than any of the other cultural variants, whereas the other three were found to primarily use heuristics as expected.

As a result, H1a was supported.

H1b, however—the likelihood that market, clan, and hierarchy would be more likely heuristic in terms of budgeting method—was not supported. Instead, these results indicated that algorithms can be found to work effectively in conjunction with heuristics across all corporate cultural types, even in cultures in which it was expected that heuristics would prevail.

All firms in the current study tended to use at least two or more methods, which indicates that there is no optimal tool or panacea. Adhocracies, by their very nature (being the opposite of bureaucratic), argue for the need for more sophisticated mechanisms for budget setting. A decentralized and empowered-personnel approach, they argue, moves the decision making lower down the hierarchical structure and responds to the need for wider support and approval for decision making—especially in comparison to the tried-and-trusted top-down approach of hierarchies.

In terms of risk, the analysis indicated that there was no statistically significant difference for the three budgetary groups across the use of heuristics and algorithms based upon level of perceived risk taken by the firm. A one-way/between-groups analysis of variance was conducted to explore

the specific impact of the degree of risk on approaches to budgeting as measured by the question. H2 was not supported; risk taking was not associated with any heuristic preponderance for budgetary choices. Probing this finding further by examining the different cultural orientations of the firms and risk, some interesting differences were discovered.

Those who scored higher on adhocracy were found to have taken more risk on recent projects (2.85 versus 2.43 for market, 2.35 for clan, and 2.33 for hierarchy), but these differences did not prove to be significantly different at the 95 percent level. Again, the concept of risk may reflect more of a tolerance for acceptance of higher levels of risk, and it may be that, as there are no optimal mechanisms, an array of tools is necessary no matter the level of perceived risk.

Turning to organizational experience, a one-way/between-groups analysis of variance was conducted to explore the impact of the participation of the marketing department on approaches to budgeting. Respondents were divided into three groups (heuristics, algorithmic, and both). There was a statistically significant difference at the $p < 0.05$ level in heuristics scores for the three budgetary groups for the participation of the marketing department [$F(2, 120) = 5.888, p = 0.004$]. Calculated using eta squared, the effect size of 0.09 was medium. Post hoc comparisons using the Tukey HSD test indicated the means scores for heuristics ($M = 5.82, SD = 1.424$) were significantly different from those of algorithmic ($M = 6.57,$

$SD = 0.698$) and both ($M = 6.42, SD = 0.826$), whereas algorithmic and both did not differ significantly.

The indication here is that with marketing/advertising knowledge and experience, the individuals involved in the budgeting process were more likely to use algorithmic (probability and logic-based) mechanisms (System 2) than heuristics (System 1), so there was support found for H3. This finding indicates that experience drives the use of algorithms and algorithms combined with heuristics rather than heuristics alone.

DISCUSSION

The paper originally argued that three organizational antecedents drive the nature of the budgeting process (which may be done by an individual or a group of individuals). It was suggested that the type of decisions made would be a result of the perceived organizational culture (White *et al.*, 2003) using cognitive-appraisal theory. In addition, it was proposed that risk propensity was another necessary antecedent along with organizational knowledge and experience.

Only those organizations with predominantly adhocracy organizational cultures were more inclined to use algorithmic budgeting methods than any of the other cultural types (using Deshpande, Farley, and Webster's [1993] framework), however. Perhaps in a more entrepreneurial type of culture, there would be less information available for decision making and information processing as corporate memory would be somewhat limited. As was previously suggested, the likelihood in this situation is that more—as opposed to less—information would be needed to cross the sufficiency threshold, thereby stressing the potential need for algorithmic budgeting methods to be employed.

There was no significant difference found for risk taking in terms of System 1

(heuristics) or System 2 (algorithmic). Experience in advertising, however, did have an impact: The results clearly showed that the greater the participation of the marketing personnel, the more likely algorithmic methods would be used to augment, but not totally replace, heuristic methods.

What appears to be the case is that marketers preferred logic and probability; when their participation was more diluted by other functional areas, the likelihood of using heuristics increased.

CONCLUSION

Many of the budgeting heuristics (*e.g.*, advertising-to-sales ratios and competitive parity) may be useful because they help decision making and are robust under a wide variety of circumstances when the problem is inherently too complex or under too much time-pressure to be solved by algorithmic options (Kahneman, 2012). Marketers have not abandoned logic and probability. The current research clearly shows that more experienced and knowledgeable marketers more likely will report that they rely primarily on algorithmic methods or combine them with heuristics rather than base their decisions solely on heuristics. Of course, it might be that marketers have been taught over a number of years at business schools and elsewhere that heuristics are “bad” and algorithms are “good” budgeting tools. And so, marketers might be more wary of reporting a reliance on heuristics. In this study, however it has been argued that one more defensible reason for the continued use of heuristics in budgeting is that they have attributes that fit the managerial environment.

Not only can more sophisticated techniques produce budgets that are consistent with heuristics, but even companies—applying algorithms intended to maximize profits—may need heuristics as additional

checks. Constant-elasticity response functions are subject to what has been termed the “flat-maximum principle” (Farris and West, 2007), meaning there is a wide variety of budget levels that would return almost equal levels of profit.

It is easy to see how an historic perspective on advertising-to-sales ratios—plus an updating on changes that may have occurred along with some idea of desired share of voice—could determine the choice of budget within the range of nearly equivalent profits. In isolation, the affordable heuristic method of budgeting has little to offer. In conjunction with an algorithmic analysis that produces a wide range of budgets that are projected to return very similar profits, using heuristics as a “tie breaker” seems to make perfect sense. Heuristics may serve management systems of checks and balances rather than solely relying upon formal analytics.

The Institute for New Economic Thinking (INET) carries on its Web site a video entitled, “What Can Economists Know?” by Gerd Gigerenzer,” (2012). In it, the German psychologist describes how coaches often tell baseball players to run to where the fly ball will land; but are athletes able to calculate the exact ball speed and trajectory accurately to know where the ball will land? Not really.

What the baseball player will do is run toward the ball, constantly adjusting his speed to maintain as constant an angle as possible. A series of adjustments are made as the forward progress advances. The catch is made largely because of the outfielder responding to a series of heuristics. Another example: In ground warfare, forward observers send continuous corrections to artillery soldiers, who track the trajectory of shells being fired at targets.

It is the contention in this study that managers should think of heuristic budgetary processes in similar ways and have

Companies need to become more open about their budgeting processes and acknowledge the role that heuristics play.

confidence in their value in conjunction with algorithmic techniques.

In other contexts, different guidelines that are often referred to as “heuristics” or “rule-of-thumb” (such as competitive parity or affordability) might be invoked. If new competitors enter and begin to spend aggressively, evaluating the budget in terms of “share-of-voice” may be deemed more relevant. Exogenous financial constraints also may shape the entire budgetary discussion, of course, as a matter of practicality and expediency: CFOs focus on maintaining needed cash flows and meeting investor profit goals regardless of the long-term profitability of advertising spending—even if that means cutting budgets that otherwise would have been implemented.

The full variety of heuristic budgeting methods may present perfectly reasonable “guidelines” in particular managerial contexts. And is not surprising that experienced managers continue to utilize them in conjunction with algorithmics.

Future Research and Limitations

One key limitation of this study: The findings do not address whether low-risk situations lead to the increased reliance on heuristics—or, instead, whether the budgets that are consistent with (and perhaps derived from) heuristics are deemed less risky than those based on sophisticated analytics that managers may only partially understand.

Another limitation: The reliance on single-item measures for corporate experience based upon the amount of participation of the marketing department, which is

one view of corporate experience. A multi-item measure for this variable certainly would have provided deeper findings.

Managerial Recommendations

The budgeting process used by companies is more complicated than the often-referenced rules of thumb may suggest, but the process also is not as rational as economists and management scientists would prefer to think. And, as a result, rarely can it be demonstrated that those practices that are deemed to be rational produce profit-optimizing budgets (however profit might be defined).

Instead, even in sophisticated companies, the budget-setting process mixes heuristics (such as maximum advertising/sales ratios) with analytics (e.g., marketing mix models) to help managers striving to improve or maintain company performance. Heuristics serve to provide checks on the reasonableness of other analytically based budget recommendations and also may help managers deal with risks.

Companies need to become more open about their budgeting processes and acknowledge the role that heuristics play. Some of those roles will be deemed appropriate and others less so.

Even that consideration alone, however, will be the first step toward much-needed process improvement in marketing budgeting. **JAR**

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DOUGLAS WEST is professor of marketing at King’s College London, United Kingdom. Dr. West has published widely on marketing and marketing communications. He is formerly Executive Editor, and currently Contributing Editor of the *Journal of Advertising Research*.

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JOHN B. FORD is professor of marketing and international business at Old Dominion University, Norfolk, VA. He has published widely on cross-cultural and international advertising and marketing in a number of marketing-related journals, including the *Journal of Advertising Research (JAR)*, *Journal of Advertising*, and *Journal of the Academy of Marketing Science*. Currently he is co-Executive Editor of the *JAR*.
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PAUL W. FARRIS, PhD, is the Landmark Communications Professor of Business at the University of Virginia’s Darden School of Business, where he teaches MBA and executive education programs. Previously, he worked in marketing management for UNILEVER, Germany, and the LINTAS advertising agency. He is a current or past board member for several international companies, a past academic trustee of the Marketing Science Institute, and the co-author of award-winning work in marketing metrics and advertising research.

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