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What Comes to a Manager's Mind: Theory of Local Thinking

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Abstract

This article develops a model of local thinking in managerial decision making. According to the concept, attention is drawn by selectively salient factors or recalls in specific decision-making contexts. Although decision makers are aware of the changing conditions, they do not make a sufficient mental correction for the fact that the relevance of these factors is not generalized. They overestimate the importance of an option that "easily comes to one's mind": They excessively extrapolate from their experiences and extreme news, succumb to reference points and imprinting. The usefulness of the concept of local thinking in explaining decisions taken by managers is demonstrated by a short conceptual review of several empirical studies on local economic and natural shocks, negotiation of bank loans, expert forecasts, workers' compensations, and gender equality. The conclusion brings speculations about further implications of the theory for organizational research.

Keywords

behavioral theory, individual/CEO decision making, organizational behavior, personality, affect/emotions

If a hurricane passes an area where a firm is located, the firm will begin to accumulate short-term liquidity (Dessaint & Matray, 2014). If the frequency of bankruptcies is growing, corporate managers from various sectors in a 100-km radius surrounding the bankrupt firm start reducing investment and indebtedness levels (Addoum, Kumar, Le, & Niessen-Ruenzi, 2015). Once a manager is reminded about the piece rate for workers on his team, the team's productivity will increase (Englmaier, Roider, & Sunde, 2014).

Not a single one of these examples is surprising, although they should be. The locations of hurricanes are governed by a long-term stationary distribution, so the arrival of a hurricane bears no new information about the location of the next arrival. Bankruptcies in an area could indicate a shock to the local economy, but the financial strategy of firms a little farther than 100 km away has been unchanged—a conservative financial strategy cannot be explained by a local business cycle, because economic conditions surely exert influence over more than a 100 km. Finally, managers already know the piece rate, as they had worked for several years under it and this incentive pay constitutes a substantial fraction of their income, so a reminder of the rate should no longer boost their motivation.

The above-mentioned cases are caused by the disproportional influence of temporary salient pieces of information. That is why managers overestimate liquidity or financial risk or intensively perceive a production goal (as I will explain in detail later). Their choice is made on the basis of a characteristic that has been attracting their attention in a particular decision-making context. There is abundant psychological evidence that describes similar behavior as the availability heuristic: the tendency not to process information using the Bayesian approach, but to overestimate information that effortlessly comes to one's mind due to its vividness or immediacy (Tversky & Kahneman, 1973, 1974). Daniel Kahneman (2011) illustrated the heuristic as follows:

> A salient event that attracts your attention will be easily retrieved from memory. Divorces among Hollywood celebrities and sex scandals among politicians attract much attention, and instances will come easily to mind. You are therefore likely to exaggerate the frequency of both Hollywood divorces and political sex scandals. (p. 130)

Nevertheless, the supporting evidence from judgment and decision-making research (or from behavioral sciences in general) is often based on laboratory experiments or surveys; methods, which could have a number of drawbacks (Camerer & Weber, 2013; Levitt & List, 2007) or as Surroca, Prior, and Tribó Giné (2016) put it:

> Interviews may suffer from problems of reliability and replicability, it is difficult to capture past cognitions by means of surveys, and case studies do not necessarily represent broader

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> populations. Moreover, although surveys have proved useful in measuring cognitions, their cross-sectional nature makes it difficult to perform dynamic analyses. (p. 2)

There is indeed evidence that the sizes of many published psychological effects are much weaker and psychology research suffers with other problems of reproducibility (Open Science Collaboration, 2015). Although field studies sometimes corroborate laboratory research, they usually relate to consumer decisions (DellaVigna, 2009; Grubb, 2015; Houdek & Koblovský, 2015). Furthermore, criticism of some organizational researchers warns that not all psychological phenomena are so robust that they could be identified on a managerial or organizational level, "a key question . . . is whether biases will survive in an organizational arena that naturally includes a variety of checks and balances" (Staw, 2010, p. 413; see also Foss, 2003).

Nonetheless, as demonstrated by the examples in the introduction of this article, there are a small but growing number of empirical studies and nonlaboratory field studies using real firms' data that are focused on the prevalence of decision-making biases in organizational environments. They commonly confirm the influence of heuristics or cognitive frames in managerial judgment (Baker & Wurgler, 2013; Loock & Hinnen, 2015; Moore & Flynn, 2008), especially under the perspective of limited attention (Ocasio, 2011).

However, behavioral research is often criticized as a nontheoretical summary of cognitive errors and heuristics, often contradictory and with crucial contextual information removed (Gigerenzer, 2000, 2008; Gigerenzer & Gaissmaier, 2011; Porac & Tschang, 2013).

This article takes the challenge and introduces an integrative concept of local thinking based on the cognitive frames approach (Hodgkinson & Healey, 2008).

> Through cognitive frames, managers reduce complexity and ambiguity by selectively organizing and interpreting signals from the organizational context . . . structure and content of a particular cognitive frame lead to a particular interpretation of a situation and, in turn, to a particular managerial response. (Hahn, Preuss, Pinkse, & Figge, 2014, p. 465)

The concept uses research about availability heuristics, psychological theories of salience, and selective recall, and it was already successfully formalized in economics for consumer choice in a series of articles as a model of local thinking (Bordalo, Gennaioli, & Shleifer, 2012, 2013, 2015; Gennaioli & Shleifer, 2010).

The model of managerial local thinking could conceptualize several aspects of how managers process information and make sense of risk and ambiguity, as well as how they make risk-free choices. The approach offers prolific inspiration for management research and specific caveats for practice, for example, identifying in situ what circumstances could lead to irrational decision making. In the following section, I sketch a theory of managerial local thinking. The subsequent three sections concern overreactions by managers to some information that easily comes to their minds, that is, extreme news, primary and strong personal experiences, and their (biased) expectations. The conclusion brings speculations about further implications of the theory for organizational research and mentions caveats to the theory as well.

Theory of Managerial Local Thinking

Local thinking means assessing a situation in which one's attention is skewed by salient factors in the decision-making context; to put it simply, "people focus their attention on some but not all aspects of the world" (Bordalo et al., 2012, pp. 1279-1280). Attributes or features of a decision-making problem could be given disproportional weight for external or internal reasons and attention is further allocated to those salient attributes of choice.

The external reasons concern new information themselves—their form and content. For example, (a) extreme and/or recent information (Dessaint & Matray, 2014) as well as (b) information contrasting with existing expectations are more salient. These reference expectations could purely result from the status quo or could be biased in varying degrees by selective recall (Bordalo et al., 2015) and attention (Bordalo et al., 2012, 2013). Moreover, certainly, there could be rational forward-looking expectations.

On the other hand, internal reasons originate in personalities and personal histories of decision makers: (c) Specific strong personal experiences could create a general tendency for perceiving and evaluating all information (Dahl, Dezső, & Ross, 2011; Malmendier, Tate, & Yan, 2011) and (d) primary work-related experiences could influence even unrelated present decisions in organizations (Law, 2013; Marquis & Tilcsik, 2013).

The focus of a decision maker is attracted to the most dissimilar characteristic of choice in contrast to the expectations, or to the characteristic, which he or she strongly recalls or is reminded of (either by natural arrival of a situation or by salient reminder). The significance of this information is overrated, even though it may no longer be relevant to the current decision-making process. Other, more relevant information may fail to be recalled and/or considered. A specific cognitive frame occurs or is chosen and it then guides an individual's attention toward its specific attributes of a choice.

Although people may be aware of changing conditions and/or of their goals, they do not make a mental correction for the proper level of importance and relevance of the salient factors and for the fact that further relevant factors and diverse future circumstances may exist. It is no coincidence that the Central Intelligence Agency (CIA) in its field manual for organizational sabotage advises saboteurs to have focused the attention of colleagues to possible negative consequences of their decisions. Nothing ruins the ability to make a decision as much as the salient fear of a mistake.

> Advocate "caution." Be "reasonable" and urge your [colleagues] to be "reasonable" and avoid haste which might result in embarrassments or difficulties later on . . . Be worried about the propriety of any decision—raise the question of whether such action as is contemplated lies within the jurisdiction of the group or whether it might conflict with the policy of some higher echelon. (CIA, 1944 [unclassified 2008], p. 28)

The mechanism of selective attention causes reference-dependent choices, because the same characteristics will be perceived at a different intensity in varying situations. For example, by making some people aware of different pay rates, a study (Bracha, Gneezy, & Loewenstein, 2015) found out that lower paid individuals supplied less work than when they were unaware of the higher pay rates. Or if wages are increased unexpectedly during a job, the rise is more salient and therefore it has a greater impact on the workers' productivity than if the wages were increased by the same amount at the beginning of the job (Gilchrist, Luca, & Malhotra, 2014; Ockenfels, Sliwka, & Werner, 2015). Higher saliency of unexpected wage increase had another positive effect. The latter field experiment shows that workers were more honest and were more willing to do voluntary work after a surprising wage increase.

Evaluation of a job seeker could be dependent on the performance of the job seeker before him or her. The well-known effect of a decoy could be explained in the same way (Tversky & Simonson, 1993): It is possible to affect the choice between two dominant alternatives when a third inferior alternative is added, depending on which one of the dominant alternatives is more similar to the inferior alternative—the contrast between the inferior and its closest dominant alternative makes this dominant alternative a better option by salience; the effect of the decoy is observed in the recruitment process as well (Highhouse, 1996).

Context-sensitive decision making leads to errors in prediction due to the mechanisms of selective attention and projection bias. As stated above, selective attention means that a salient factor at a given moment catches the attention of decision makers and then occupies their minds. Salient circumstances, attributes, or information receive disproportionately greater weight in a particular judgment and people make biased predictions of future conditions based on them. They extrapolate from current salient attributes directly or with an inadequate adjustment (Loewenstein, O'Donoghue, & Rabin, 2003), or they have an incorrect prediction of their future preferences with correctly estimated future circumstances (Gilbert & Wilson, 2007). They do not (adequately) consider or do not remember other important aspects of the choice that did not readily come to mind.

Overestimation of Risks and Underestimation of Incentives

It is not possible to measure the focus of attention or expectations of managers by using real firms' data. That is why related hypotheses are tested, that is, the assumption that certain cognitive styles occur and that they have a steady influence on the studied behavior, about which there are firms' data. In managerial practice, selective attention to certain risk factors could lead to an overestimation of frequency or importance of these risks and could sidetrack a firm's risk management, and of course, vice versa, the selective attention to potential business opportunities can tarnish consideration of their potential risks.

As shown by Dessaint and Matray (2014) in their article regarding the arrival of hurricanes, managers raise cash holding (a form of corporate general insurance) when the sudden *salience* of liquidity risk occurs due to the hurricane passing through the nearby area, although there had been no indication that the objective risk of a natural or business disaster is greater than before. During the 12 months after the hurricane, firms with headquarters in nearby areas of the impact of the hurricane increased their cash holdings by 0.84 percentage points of their total assets on average, compared with firms that were farther away (for whom the hurricane had not been so salient). The increase to the cash holding is short-term only (less than a year) and then returns to its original level, as the salience of the last hurricane fades. Corporate managers without any previous experience with hurricanes and managers of small and young companies, that is, less experienced ones, suffer more. Dessaint and Matray present a similar finding in the case of earthquakes. Managers of U.S. companies based in the areas where earthquakes are frequent react with the same detention of liquidity when a strong earthquake occurs somewhere in the world (outside the United States). The reactions of companies are clearly not caused by regional economic problems connected to a natural disaster, but rather by overestimating the salient risks in the managers' minds. Dessaint and Matray also prove that this behavior reduces the value of the company for shareholders.

Local bankruptcy acts similar to a hurricane in a neighboring region. The study of Addoum et al. (2015) using a sample of 1,883 bankruptcies from 1986 to 2006 showed that companies geographically close to a bankruptcy reduce their investment expenditures and debt. The effect is stronger when the CEO is dismissed from the bankrupt company and when its board members are also members of nonbankrupt companies. Direct personal experience with the bankruptcy of a board member's company increases the salience of bankruptcy for other managers. Addoum et al. confirmed that the choice of a conservative financial strategy is an overreaction of managers to the reminder of the possibility of bankruptcy and it is not a rational response by bankruptcy-threatened companies. Another explanation of this phenomenon could be that companies have difficult access to resources on the financial and banking market due to the increase in local creditors' risks.

In both examples, managers were surprised by the occurrence of a business risk, which they had forgotten or underestimated, and overreact to this salient information by implementing nonoptimal conservative finance strategy.

For a case of a reminder of piece rate, the logic is already apparent (Englmaier et al., 2014). The study used an agricultural company and lettuce picking, teamwork in which each team member has allocated tasks and the manager oversees the daily picking norm regarding the quality and quantity of lettuce. The manager determines the speed of the harvest machine, the matching of workers to tasks, the training of incoming workers, and so on. Even when managers are motivated to meet the piece rate, they are preoccupied with other duties, which is why this goal may not come to their attention. In the controlled experiment, the piece rate note for random selected teams was posted at the harvest machine, that is, was made salient for them. These teams later attained roughly a 4% increase in productivity and daily manager's remuneration increased by the same level (although there was also a nonsignificant reduction of quality of production). The study notes that although it could be expected that certain crucial factors should always be considered, in fact they are not. The significance of priorities may simply fade away and managers forget about them (or the information about them is being processed slowly; Hirshleifer & Teoh, 2003). In these cases, a reminder is an effective tool to improve the decision-making process.

Significant Changes in Relation to the Status Quo Reference

Distinctive characteristics do not manifest only in extreme events. People most often compare alternatives against the status quo and worse expected alternatives are obviously most salient and nobody is overly willing to accept them, even when conditions of a deal have changed substantively. Reference expectations thus naturally gravitate to status quo (of course, this is not always the case; Köszegi & Rabin, 2006, 2007). Dougal, Engelberg, Parsons, and Van Wesep (2015) demonstrated that historically acquired loan rates affect the current conditions of the loan in this manner. Although historical data should not affect the current capital costs of the project (it depends on the expected cash flow), companies which had obtained low rate bank loan due to the favorable market conditions in the past receive lower rates again, even if the loan interest moves higher, compared with companies which had received a loan when rates were higher (with comparable credit ratings, loan type, etc.). Rather than the expected risk, a significant reference point in the past (an anchor) is the basis for the negotiations about the new conditions for bank loans.

The existence of mental anchors was demonstrated also by Baker, Pan, and Wurgler (2012) in the case of negotiations about mergers and acquisitions. The behavior of both parties is disproportionately dependent on historical peaks (salient points) in the prices of shares, 52 week, 39 week, and others. Shareholders of the buyer firm are responding to the purchase price near the peak with displeasure, because they see the premium as overpaying. Conversely, the probability of acceptance from the selling company will increase if the offered price is higher than the 52-week maximum. These patterns explain why the frequency of mergers and acquisitions correlates with the movement of stock exchange indexes. Both parties will reach an agreement more easily when markets are growing, because the buying price is closer to the recent peak. As shown, even in high-stakes negotiations, salient reference points from the past matter, although they should not play a significant role in influencing the decision making of senior managers; see also Kristensen and Gärling (1997).

Similarly, in their field study, Tanjim Hossain and John List (2012) found that if workers at a Chinese manufacturing facility were expecting "losses" in their conditional bonus incentives, they increased productivity more than if they were expecting possible "gains" (in loss schema, employees were provisionally given the bonus before the work begins, but were notified that if the production does not reach a certain threshold, it will be retracted; in gain schema, employees were notified that if production reaches a certain threshold, a bonus will be paid). The prospect of losing an earned bonus is an unusual, salient method of remuneration, and in addition, it exploits loss aversion, a tendency to prefer avoiding losses to getting gains, as has been noted already by Adam Smith (1759/2002):

> Pain . . . is, in almost all cases, a more pungent sensation than the opposite and correspondent pleasure. The one, almost always, depresses us much more below the ordinary, or what may be called the natural state of our happiness, than the other ever raises us above it. (p. 141)

Both of the factors have the power to occupy the mind of workers deeply and, consequently, greater productivity follows. Nevertheless, very high performance-contingent bonus could have a detrimental effect on job performance because potential loss of a big bonus can cause choking under pressure (Ariely, Gneezy, Loewenstein, & Mazar, 2009; for more examples, see Camerer & Malmendier, 2007).

Strong and Primary Personal Experience

There are not only salient endogenous incidents in a person's mind but also significant incidents from one's personal history. As described by Gilbert and Wilson (2007), "It seems that everyone remembers his/her best day and his/her worst day and yesterday" (p. 1353). It is understandable that when managers have their own strong experience, for example, with a deep recession, they are more conscious with credit and business risks, which is because the risks of bankruptcy can easily arise in their mind. Managers who were growing (Malmendier et al., 2011) or managers who started working (Schoar & Zuo, 2011) during depressions have indeed a higher aversion to debt and they use internal financing more. Bernile, Bhagwat, and Rau (2015) found more comprehensive, inverse U-shaped relation between a CEO's early-life exposure to disasters and corporate risk taking, i.e. results showing that experiencing disasters without extreme consequences rather desensitizes CEOs to the negative consequences of risk.

It can also be expected that the early-career exposure to an organization's culture, mentors, and peers imprint in individuals specific hard-boiled types of behaviors, attitudes, and knowledge (Azoulay, Liu, & Stuart, 2009; Vranka & Houdek, 2015). For instance, financial analysts who had worked with more optimistic coworkers in their early career are more optimistic in their subsequent careers; they issue stronger buy recommendations, higher earnings forecasts, and higher price targets (Law, 2013). The persistence of (quite) nonvariable behavioral styles despite subsequent environmental changes supports the concept of imprinting in an organizational decision-making process, which complements the theory of local thinking (Marquis & Tilcsik, 2013).

Specific personal or family relationships can also bring attention to specific aspects of a problem. Daughters could make women's issues more salient to fathers, and fathers may adopt more feminist attitudes and behavior. Indeed, judges who have daughters are more pro-feminist than judges without daughters in cases that explicitly involved employment discrimination on the basis of gender by private actors, employment discrimination on the basis of pregnancy by private actors, reproductive rights or abortion, and claims made under Title IX (Glynn & Sen, 2015). Similarly, Dahl et al. (2011) found that the birth of a first daughter to a CEO resulted in a 1.4% increase in women's wages (more than double the increase experienced by male employees), and an approximately 0.8% decrease in the gender wage gap. If the first daughter was also a first child, female employees experienced a 3.2% increase in wages, an effect more than 6 times larger than the one for male employees.

Conclusion

The theory of local managerial thinking conceptually integrates knowledge of how managers evaluate and process information in various areas of their decisions. It shows that managers systematically overestimate salient information or risks that come easily to their minds. These cognitive frames usually lead to negative consequences (and in some cases positive ones). The theory and documented evidence can provide tools for caution by pointing out that managers can be influenced by unconscious propensities, under what circumstances these irrational tendencies could prevail, and how to fix them (Mahoney & Sanchez, 2004; Soll, Milkman, & Payne, 2015). Of course, it will not always be a panacea solution. For example, frequent reminders of important and momentarily nonsalient information can quickly become useless warnings that will lose any significance or quickly create attention poverty in managers' minds.

Because saliency causes, by definition, narrow thinking, it is always advisable for a manager to look at a decision at hand from a different perspective. Narrow thinking could be significantly reduced by forcing people to consider the other possible outcomes of a choice (Haran, Moore, & Morewedge, 2010). It is also possible to reduce a person's biased beliefs simply by averaging his or her assessment of a situation with a forced second one that exploits his or her different knowledge (Herzog & Hertwig, 2009; Vul & Pashler, 2008). An organization should maintain a corporate culture where a manager meaningfully considers arguments against reasons for some proposed course of action and/or where multiple individuals deal with important decisions from different perspectives (Kerr & Tindale, 2004). "One possibility is to appoint a 'chief naysayer' whose job is to play devil's advocate, punching holes in proposals before the company commits to them" (Paredes, 2004, p. 681). Another response to shortcomings in decision making could be in placing greater accountability on managers (Lerner & Tetlock, 1999). Suitable conceptual solution can be an implementation of high reliability organization, an organizational design facilitating the discovery of (behavioral) anomalies (Weick, Sutcliffe, & Obstfeld, 2008). Organizational mindfulness creates cognitive infrastructure that reveals unexpected threats to a company and proposes corrections before risks can escalate out of control.

The theory of local managerial thinking can also be used as a behavioral model to explain wider economic phenomena such as the emergence of managerial fads, whether those are leadership techniques or economic cycles. It was shown that financial fraud and shady reporting are spreading among geographically close companies (DeFond, Francis, & Hu, 2008; Parsons, Sulaeman, & Titman, 2014; as well as the fear of bankruptcy, as noted above), and the same may occur with other practices—not necessarily unfair—such as styles of motivation and compensation of employees and other aspects of corporate culture. Overoptimism of managers can be explained as a focus on the advantages and positive differences in their companies and projects. If there are currently good economic conditions and business outcomes, people make optimistic expectations and overestimate the likelihood of future positive results. Conversely, if there are significant negative circumstances, people overestimate the likelihood of future negative outcomes, they are pessimistic and are excessively risk-averse. These reactions can skew the expectations of executives (CEO, CFO) on future sales growth and thus influence the activity of company investments and investment-economic cycle (Shleifer, Gennaioli, & Ma, 2015).

The take home message of this article is rather simple—information in particular conditions could become easily salient relative to what is normal, disproportionately draw managers' attention, and cause negligence of important alternative information. But I hardly touched on the possible applications of the local thinking concept in management and organizational research. Future studies should focus on its implication in business ethics, leadership, entrepreneurship, strategic management, team-level performance, and so on (Artinger, Petersen, Gigerenzer, & Weibler, 2015; Flynn & Staw, 2004; Juster & Preston, 2014; Welsh, Ordóñez, Snyder, & Christian, 2015).

There are, of course, various caveats to the concept as well. In particular, all information requires a certain threshold of exposure to come to the front of one's mind, a challenge for further research is to determine under what circumstances exactly (external ones as well as decision maker's preferences, history, personality characteristics, etc.) the information exceeds a given threshold and become an "attention-grabbing" attribute of a choice.

A vast majority of referenced studies use data from the United States and are singular findings, it is not yet clear to what extent the results are generalizable to other cultural and legal contexts. It is necessary to replicate these findings in other environments.

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