

Judgement and decision making in auditing



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INTRODUCTION

“ Accounting at its core is about the judgment and decision making (JDM) of individuals such as investors, managers, and auditors” (Bonner, 2008, 1).

Accounting at its core is about individual or group JDM. This paper discusses JDM in auditing using previous research to understand auditor decisions while in an auditee environment or location (i. e. onsite judgment calls). As Libby and Luft stated, “ we must understand a decision process to improve it” (1993, 425). My goal is to understand the JDM process and the related factors, hence, improve my ability to conduct behavioral research in auditing.

During the literature review, it was found that JDM has many names, such as Human Information Processing, Behavioral Economic Research, Behavioral Finance Research or Behavioral Decision Research in Accounting. Is all boils down to JDM. However, the vast amount of literature on JDM in Accounting has been categorized into financial accounting, managerial accounting, and auditing. JDM research in financial accounting focuses on the process used by external stakeholders (i. e. investors, bankers, financial advisors, etc.) (Maines, 1995). While research conducted in managerial accounting concentrates on internal decision makers (i. e. Board of Directors, management, etc.) (Waller, 1995). Auditing research centers on determining how and by what means audit decisions are made, what the decision should be made, and how the process can be improved (Solomon and Shields, 1995).

Libby's 1985 study is on auditor decisions while in an auditee environment. Pinsker's 2009 study evaluates the influence of training and the decision environment on the attitudes of tax preparers and auditors. He finds that attitudes are affected by decision environments. My interest lies in what environmental pressures/factors affect an auditor that is located onsite (audit location).

Although each theory develops at various periods, the theories are discussed in logical order of use to minimize placing any specific emphasis on a particular area. First, JDM will be defined. Second, a historical perspective will be provided by a literature review. Finally, future research will be discussed.

JUDGMENT AND DECISION MAKING

Decision Process

Judgment is the ability to objectively form an idea or opinion about a state or occurrence. Decision is the act of making a choice between alternative actions or conditions. Broadly defined, JDM research in accounting and auditing is an analysis of the JDM process used by primary decision makers, from forming the idea to making a decision between, at least, two actions (Gibbins, 1984; R. Ashton and A. Ashton, 1995; Bonner, 2008). JDM is not one specific theory, but it is an umbrella of numerous theories from Psychology, Economics, and Finance. This area is so vast that all related theories and models cannot be included.

Gibbins (1984) identified the decision making process as a very simple process that involves five steps. First, information or data is obtained. Second, a triggering event or "stimulus" will cause an individual to identify

that a choice is needed (1984, 105). Third, the individual will gather more information to generate alternative solutions. There may be environmental motivations to promote a decision or response. Fourth, the alternative choices will be created and ranked based on preference, level of importance, or as the best cost-benefit solution. Finally, a judgment is made from the alternatives. All along the process, more information and feedback may be gathered. Although Gibbins describes a simple process, there are many influencing factors that must be controlled for during the process that affects the ultimate decision.

LITERATURE REVIEW

Tasks

The judgment process is conditioned by the information. Gibbins stated that “arriving information not only affects the choice, it affects the way a choice is made” (1984, 111). According to Maines (1995), the study design dictates the decision inputs and decision outputs. Information that is used as inputs or cues must be carefully selected and worded (also known as framing). This will improve a subject’s ability to understand the task, which is “a piece of work assigned to or demanded of a person” (Webster, 1994). Tasks can be assigned to an individual (Kennedy, 1993; Pinkser, 2007; Pinkser 2011) or group (Bonner and Lewis, 1990; Tversky and Kahneman, 1986). Tversky and Kahneman find that an individual auditor makes a more conservative decision than audit groups (1986).

Certain tasks are common to every audit. An auditor gathers the data, completes an analytical analysis, performs procedures, completes a risk assessment, reviews relevant regulations/policies/etc., brainstorms, selects

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the test samples, performs tests, documents process and findings, interprets the appropriate opinion, writes the report, and presents the report. This process varies between clients, client industry/environment, client need at that time, regulatory environment, audit management environment, and other unforeseeable problems. Although the tasks that auditors perform may remain constant, other variables affect the performance of the task. To understand how an auditor performs these tasks, each task must be analyzed in detail (Nelson and Tan, 2005).

Evaluation or Estimation Tasks

There are evaluation or estimation tasks based on encoding. Subjects encode evaluation task information as positive or negative and will change their belief in support of an idea based on positive evidence (vice versa for negative evidence). Estimation tasks are referred to as “moving averages” (Hogarth and Einhorn, 1992, 9). Basically, subjects are more sensitive to the original opinion or starting point than the fluctuation caused by the evidence. A subject’s belief adjustment is analyzed using either a single piece of information (a cue) or as an aggregate of cues.

Task Variables

Each task has variables that vary in characteristic and complexity. Task variables affect JDM quality (Bonner, 2008). Identified task variables or variation include complexity, anchors, order effects, presentation, and response mode. Anchoring is discussed in the Heuristics and Biases section.

Complexity

Novice and expert subjects approach complex tasks differently; expert subjects process cues aggregately while novice participants will separate the cues into manageable pieces (Kennedy, 1993; Hogarth and Einhorn, 1992). Also, tasks complexity can vary based on whether a subject is familiar or non-familiar (simplicity) with a task. For example, Kennedy found that in judging the going concern of a company, auditors (more familiar with the task) processed the cues more easily than Executive Masters of Business Administration (EMBA) students (unfamiliar with task) (1993). Researchers can provide too much information creating a dilution effect or redundancy that may cause participants to tire (Hogarth and Einhorn, 1992). Not only does the amount of information matter, but how the information is presented matters.

Presentation and Response Mode

Presentation format of cues can be sequenced or simultaneous. Subject response mode is either end-of-sequence (EoS)(decision after each cue or simultaneous) or step-by-step (SbS)(decision after each cues or sequential) (Hogarth and Einhorn, 1992). Pinsker's 2011 long series study divides subjects into four groups that (1) receives 20 positive and 20 negative simultaneous or End-of-Sequence (EoS) tasks; (2) received a reverse order of simultaneous tasks; (3) receives 20 positive and 20 negative tasks sequentially or step-by-step (SbS); and (4) receives a reverse order of sequential tasks. He compares the group results to determine whether there was a force to primacy (a Hogarth and Einhorn prediction that is discussed below).

Order Effects

Judgment should be influenced by the cue or evidence; however, it has been shown that the order of the information, cues, or tasks have more weight (known as an order effect). “ EoS induces primacy; SbS induces recency” (Hogarth and Einhorn, 1992, 7). Primacy occurs if a subject puts more decision weight on cues at the beginning of the cue set. Recency happens if a subject puts more decision weight on the cues at the end. Kennedy finds that recency can be minimized by using subject accountability (1993). This process also depends on whether it is a short series (i. e. between 2 to 10 cues) or a long series (i. e. over 17 cues)(Hogarth and Einhorn, 1992). Pinsker (2011) finds that subjects stopped using direction sequence information midway through a long series presentation of simultaneous cues. (Kennedy, 1993; Pinsker, 2011). The substance of the information is more important to the actual judgment than the sequence of the information (Kennedy, 1993). Thus, once the information cues and tasks are prepared, all of stages must be re-checked to determine the relevance of the information and the order of the information.

Subject or Auditor

Libby and Luft (1993) argue that JDM in accounting is affected by the accounting setting, such as ability, knowledge, motivation, and environment. The subject or auditor’s ability, knowledge, motivation is the accounting setting.

Knowledge and Experience

Typically, an auditor has a minimum of a four year (undergraduate) education; however, each educational program differs. Although a Certified Public Accountant (CPA) License is an attempt to nationally standardize the auditing field minimum requirements, there are auditors that do not meet that minimum that work under another individual (i. e. audit manager) that has met that minimum. Therefore, there is no guarantee that the subject conducting the audit has the knowledge or necessary training.

Experience contributes to a subject's knowledge and performance (Bonner, 1990; Fredrick, 1991). Bonner and Lewis (1990) find that a subject's knowledge and ability is linked to performance. Variation between subjects' ability and knowledge is expected because of different levels of personal knowledge, training, and previous experience. The ability to retrieve previous experiences from memory (i. e. availability) and adapt that solution to a current situation separates experts from the novice subjects (Libby and Luft, 1993; Libby, 1985; Bonner, 2008). Subject selection must take into account what is being examined to ensure the appropriate participants are obtained.

Interpersonal Interaction

Nelson and Tan identifies previous studies on interpersonal interaction, such as interactions between “ an auditor and other auditors, auditors and clients, and auditors and participants in the financial reporting process” (2005, 55). Of all the information that I reviewed, I did not find a study on the interpersonal interaction between (1) an auditor manager and subordinate auditor or (2) a Supervisor (non-audit experience) and a subordinate who is

an auditor (e. g. internal auditor reporting to another CPA who has no audit experience).

Each auditor decision is subjected to his personal judgmental biases and limitations, regardless of whether the auditor is a novice or expert. Although auditors are supposed to limit personal biases, in reality that does not always happen. These personal biases are discussed in the Heuristic and Bias section. Interpersonal interaction is also effected by an Auditors motivation and environment, which are additional factors that must be considered.

Motivation and Environment

Accountants and Auditors are highly motivated to make high quality decisions by the nature of the professional environment. However, motivation cannot always be controlled and study participants need to have a motivation that is not linked to the test outcome. On several occasions, my previous instructors have offered students extra credit points in return for surveys to be completed by friends and family. Pinsky (2011) stated that he uses Zoomerang, a fee based internet survey company, to obtain participants that fit a specific criteria. Although the accounting setting may affect JDM, it is closely tied to the study participants. Also, every individual has varying rubrics of attitude, behavior, and expectation affecting heuristics and causing bias.

Heuristics and Biases

Heuristics is the practice of using previous knowledge or “ rules of thumb” to find an answer or solution (Webster, 1994). A bias is a mental predisposition or favoritism that can be in any form (Webster, 1994). Tversky and

Kahneman (1974) describe representativeness, availability, and adjustment and anchoring heuristics.

Representativeness

Representativeness occurs when participants ignore well-known facts about probability outcomes, such as incorrectly associating independent probabilities (i. e. flipped coin); forgetting the larger a sample the more it represents that population; or will resort to previously held beliefs or prejudices (i. e. stereotypes).

Ability

The ability of a person to recall previous events is referred to as availability. Biases can occur because of a subject's inability to retrieve the memory in totality or in part, or to alter the experience to create an alternative solution (referred to as imaginability) (Tversky and Kahneman, 1974).

Anchoring and Adjustment

Anchoring occurs when a subject opts to maintain the original opinion rather than adjusting his belief (Tversky and Kahneman, 1974). Adjustment and anchoring biases occur “ because adjustments are typically insufficient,” leading to an underestimation (Tversky and Kahneman, 1974, 1128). Regardless of whether the subject is a novice or expert, each is susceptible to these biases. A good researcher will anticipate the weaknesses and strengths and control or modify the research design.

Type of Decision

There are two primary types of decisions, problem analysis and decision making (also JDM). Problem analysis involves learning of a deviation and seeking a corrective measure or solution. Decision making (i. e. JDM) is the process used to make a choice. Thaler (1999) points out that there are three components to accounting decisions: the experienced or perceived outcomes; the actual decision process; and the evaluation of the decision.

Normative Versus Current View

Past research evolved from the normative view (i. e. what people should do) to the current view (i. e. what have people done). Economists assume that people always act rational; however, research has shown that this is not so (Nicholson and Snyder, 2008). There are potential weaknesses (i. e. recency) than can be controlled (i. e. accountability) and some biases that can be minimized by framing or test design. Also, some models are better than others for certain situations or information.

Models

JDM has two major types of models: linear models and process tracing models. Linear models are used to analyze whether a relationship exists between variables and which variables are dependent and independent (Kutner, Nachtsheim, and Neter, 2004). In process tracing models, the decision process is determined through decision tree analysis; decision trees are created using verbal cues in transcripts or participant description of their thought process (Maines, 1995). Modifications of these models, using specific controls for weaknesses, have been used to evaluate almost every aspect of

the JDM process from the collection of information to reviewing the final decision and feedback.

Earlier studies use the Expected Utility Theory, which assumes that an individual will make the best choice between alternatives to maximize his utility. A maximized expected utility decision is made while considering other variables, such as alternative choices, the environment in which the decision was made (state of nature), the knowledge at that time, and the expected value or probable cost in that situation (Waller, 1995, 37).

Ijiri, Jaedicke, and Knight's 1966 article suggests that (1) a decision maker might adapt his judgment based on changes in the accounting processes and (2) individuals will use functional fixation (or heuristic), or revert to using a proven decision process in a new situation. In an attempt to validate that suggestion, Ashton (1976) uses a multiple regression modeling of cognitive processes to find that the decision maker's ability to adjust his decision after an accounting change causes weight fluctuations in the information value.

Uecker (1978) is the first to analyze an accountant's decision process. He uses the Bayesian Probability Model, a modification of the Expected Utility model, to analyze managerial accountants' decision strategy and find their inability to adapt to a more desirable information system for decision makers, even after the tasks have been simplified. The Bayesian Probability Model is also used to examine the relationship between the conditional variables (also refer to in the literature as Bayesian conditionalization). Other studies use Uecker's work as a foundation, such as Hilton and Swieringa's (1981) work on subjects' perceived effect of uncertainty on information value

and Luft and Shields (2003) map of theory-consistent empirical research in management accounting. Another branch of decision analysis, the Belief-Adjustment Model, is used to evaluate the level of heuristics, the intuition used in judgments, and other influencing factors.

Hogarth and Einhorn use two processes and two response modes to evaluate cues. The authors' order effects comparison figure is presented in Figure 1(1992, 13).

[Insert Figure 1.]

As one can see, the SbS Response Mode and SbS Process can be used for all tasks. However, the SbS Response Mode and EoS Process can't be used together. If a long series or complex tasks are used, the EoS Response Mode and SbS Process can be used. Alternatively, if a short series or simple tasks are used, the EoS Response Mode and EoS Process can be used. Figure 1 does not consider whether the original opinion or heuristic was weak or strong. Hogarth et al mentions that the level of adjustment is affected by the strength of the heuristic. If a subject is given a negative cue, a subject that changes a strong belief is assumed to have a "harder fall" than a subject that has a weak heuristic (Hogarth and Einhorn, 1992, 14).

Using the Belief-Adjustment Model, Hogarth and Einhorn makes predictions depending on the encoding, process, and adaption or adjustment process. Refer to Figure 2. As one can see, predicted outcomes are possible based on a breakdown of the various inputs and anticipated outputs.

[Insert Figure 2]

It is assumed that the belief adjustment baseline begins at a heuristic point or at zero. The evidence or cue types are separated into all, mixed, or consistent. Further division is required to place responses into EoS or SbS. The final division occurs on whether the study uses a short or long cue sequence. One can see there are variations in the prediction from no effect to a force toward primacy. Also, Hogarth and Einhorn (1992) cautioned that subjects may use sequential processing in a simultaneous response mode to ease task complexity. Many authors have based their study on Hogarth and Einhorn's Belief-Adjustment Model. Pinsker's evaluation of the disclose pattern and directional effects on investor beliefs supports Hogarth and Einhorn's long sequence, consistent evidence prediction of primacy (2007, 211). However, Pinsker re-analyzed the 2007 data to learn whether there is a force to primacy. This article is discussed below.

There are 127 undergraduate students used as proxies for nonprofessional investors in Pinsker's study (2007). There are four groups of participants: (1) a simultaneous, two lump sum of ten positive/ten negative cues; (2) the reverse order of the simultaneous process; (3) a sequential ten positive/ten negative cues; and (4) the reverse order of the sequential process. Pre-testing determined that the participants perceived the cues to be a simple or familiar task and that the average investing knowledge and experience was comparable to a nonprofessional investor.

Non-parametric Mann-Whitney and Kolmogorov-Smirnov tests were supports that the two independent samples are comparable in value and in observation distribution. ANCOVA results supports hypotheses 1 that there is more adaptation in beliefs in a consistent positive/negative sequential short

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series than a comparable simultaneous version. The belief-adjustment model predicts that after a subject is given a stream of positive (or negative) cues, and then given a stream of negative (or positive) cues that there will be an over adaption of the subject's beliefs. Pinsker (2007) finds support for this occurrence, which Hogarth and Einhorn (1992) refer to as the contrast effect. Further, results suggest that subject sensitivity to cues is a contributing factor to the change in belief. Study limitations are noted in the article, some of which are addressed in Pinsker's latest study on a possible force toward primacy in a long series.

Pinsker's 2011 study extends his 2007 study to 40 cues and includes a supplemental section to support the use of undergraduate students as proxies for nonprofessional investors. Although he was not able to support the force to primacy prediction, he contributes to the literature by providing a context-specific application of the model and support that order effects do worsen in consistent direction, long series studies. Hogarth and Einhorn is only one of many models used in JDM.

Other models used in JDM but were not mentioned include Keeney and Raiffa's (1993) version of Multiattribute Preference Model (MAPM) used to examine the weights or attributes applied in decisions; Tversky and Koehler's (1994) support theory model used to create more than one hypotheses to test an event (varying hypotheses to one event); and Hogarth and Karelaia's (2006) "Take The Best" (TTB) strategies using binary cues.

Future Research

There appears to be an overwhelming amount of research already completed in this area. Future research possibilities could be based on Pinsker's evidence of a "new form of SbS not previously tested in the belief revision literature" (2007, 198); comparative belief revision amounts; or the effects of the levels of risk (or aversion to risk) and influencing environmental factors in audit decisions. Pinsker states that "evidence suggests that accounting studies using the belief-adjusting model as its framework may have varying results even across different accounting contexts" (2007; 2009).

Current JDM research is in financial accounting, managerial accounting, auditing, and a combination of financial accounting and auditing. Perhaps the future research will move toward accounting and auditing in government.

As a side note, I found a website that lists Psychology Theories (<http://tip.psychology.org/>). Maybe, JDM in auditing (or other accounting areas) can be expanded by applying previously unused psychological theories.