

The Management Diagnosis Framework: A Sensemaking Method for Teaching Causal Thinking, Solutions Development, and Empirical Validation

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Abstract

The development and description of the Management Diagnosis Framework (MDF) is presented here. The MDF is a teaching tool that helps students make sense of organizational situations. The MDF is a process model because it helps students learn to think like managers. This is done by combining organizational goals, an overall evidence-based framework, diagnosing symptoms and causes, and developing solutions to fix causes of symptom variation to achieve organizational goals. The MDF is also a content model because it helps students know what managers think about. To accomplish this the specifics of organizational goals, clear understanding of symptoms, accurate identification of causes, development of good solutions that are effectively implemented, and a research design methodology are combined.

Key Words: Undergraduates, Diagnosis, Cognitive Processing, Evidence-Based Management, Sensemaking

1. Introduction

The genesis of this idea was born out of frustration. My students were consistently unable to "connect the dots" between symptoms, causes, and potential solutions. Whether they were A or C students, they did not *think like managers* as I believed they needed to. As a reaction to my frustration, I developed the Management Diagnosis Framework (MDF) with the goal of fixing this problem. The approach was pragmatic, in that the goal was to see students' abilities improve. I *implicitly* included various theories within the framework. The MDF was developed and continually revised over the course of several years as part of a course on leadership (2009-2012). As it was developed, sections were adjusted as needed. This paper is an initial attempt to describe the framework by *explicating* its theoretical foundations, so the approach here represents a *post-hoc* analysis linking a pragmatic method to its theoretical roots. In preparing this manuscript, I re-discovered the concept of "sensemaking" (Weick, Sutcliffe, and Obstfeld, 2005) and believe it provides an appropriate theory applicable to understand what I want for students using the MDF as well as for myself as I articulate its development.

The first purpose of this paper is to describe and explain the MDF. The MDF is a method intended to teach two types of thinking to students: *how* to think and *what* to think about. Therefore, it is both a *process model* and a *content model*. The second purpose of this paper is to place the MDF within the context of management education.

1.1 MDF as a Process Model

Several components of the MDF collectively combine to help students think like managers. First, students must understand what goals they should strive to achieve (**FIGURE 1**). In order to know if you succeed or fail, you must first know what you're aiming for. These goals direct which symptoms students should look for. Second, the overall framework is empirically driven. My assumption is that if what you're doing works, then you should be able to demonstrate it empirically.

I believe a stronger argument is made when *clear* empirical evidence supports your claim (Prove It in **FIGURE 2**). Therefore, you must know how to demonstrate effectiveness as a basic management approach. Third, the *most critical* skill students must learn is the ability to distinguish symptoms from causes. This is the "diagnosis" of the MDF title. Symptoms are indicators/outcomes that demonstrate *what* is going on. But symptoms merely show the state of the organization (succeeding or failing). Symptoms do not explain *why*, causes do. Causes are explanations that may be based on theory, empirical data such as Evidence-Based Management (EBM - Pfeffer and Sutton, 2006), or practical on-the-job experience. Regardless of the source of the causal explanation, causes are the drivers of symptom variation. So, causes must be addressed in order to change symptoms (not the other way around). Fourth, solutions must be developed in order to address the causes of symptom variation. In order to fix problems or seize opportunities, a plan must be developed that addresses the cause(s) (What You Will Do in **FIGURE 2**). Additionally, an effective method for implementing the plan to elicit/change the intended behavior must also be developed (How You Implement X in **FIGURE 2**).

1.2 MDF as a Content Model

Several components of the MDF also collectively combine to help guide students to know what managers think about. Just like the process model perspective, students must first understand what goals they should strive to achieve (**FIGURE 1**). From this perspective, students should understand the specific goals of the organization. **FIGURE 1** depicts two types of goals: vision/mission/strategy and specific. The use of vision/mission/strategy is used to illustrate the hierarchical nature of goals organizations frequently strive to achieve. These goals provide specific indications of outcomes striven for by the organization (i.e., content) that guide perceptions of important measures of organizational performance (Symptoms in **FIGURE 2**). Second, symptoms are indicators organizational insiders (e.g., managers) and outsiders (e.g., investors) could look at to determine the extent to which the organization is doing well or poorly. The specific *management* symptoms *management* professors teach to *management* students may be insufficient to address the complexity of symptoms relevant to achieving the overall goals of the organization. That symptoms may vary depending on the focus of the goals is implied with the different symptoms noted in **FIGURE 2** and **FIGURE 3**. Third, the *most challenging* task for students is the ability to identify the most likely causes of symptom variation.

This is where sensemaking applies to the MDF (Weick et. al., 2005) because students have to try to identify the most likely causal explanations (not readily identifiable) for the identifiable symptoms. Part of the college experience is for students to learn the various theories of management, marketing, etc. So, being able to identify the most relevant theory to explain an observable symptom is difficult. Whether or not students can apply EBM or statistical results to the identification of likely causes is unclear, but the typical phobia towards math and statistics experienced by many students makes it unlikely. For traditional college students, it is unlikely they have much on-the-job experience from which to draw many likely causal explanations. Finally, combining multiple disciplines (e.g., finance, management, and marketing) into an overall organizational framework such as **FIGURE 3** for strategy is an example of "business acumen" in business school accreditation and is challenging to accomplish. Fourth, developing solutions combines an accurate diagnosis of the situation (causes for symptom variation) coupled with creativity to address the likely cause(s). The two parts of solutions are (1) development of a plan to address the cause(s), and (2) development of an approach to effectively implement the plan (What You Will Do and How You Implement X in **FIGURE 2**). Fifth, students must consider the specific methods and measures needed to demonstrate the effectiveness of their solution (Prove It in **FIGURE 2**). The methods should include pre-test measures of symptoms matching post-test measures of the same symptoms to assess change. In addition, they should consider ways to minimize bias (especially selection bias) which might be addressed with the inclusion of a control group.

Figure 1: Management Diagnosis Framework Side 1 - Goals**Management is Goal-Oriented**

- Vision
 - Who are we and/or who do we aspire to be?
 - "World's most competitive enterprise." (GE under Jack Welch)
 - *Your vision* _____
 - Mission
 - How do we intend to win in this industry?
 - "#1or #2 in every market we compete: fix, sell, or close." (GE)
 - *Your mission* _____
 - Strategy
 - What will we do to achieve our mission and vision?
 - Drivers of success for cost leadership (lower costs X maximize volume).
 - *Your strategy* _____
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- Single Specific Issue
 - What specific goal do you seek to achieve?
 - "Win state championship – so we can't choke against really good teams." (Coach)
 - *Your specific goal* _____

Figure 2: Management Diagnosis Framework Side 2 - OB/Leadership**Management Diagnosis Framework**

Symptoms (O_1) What's going on? Attitude Issues Behavioral Issues Show Up Learn Perform	Likely Causes – Theory/Evidence(EBM)/Experience-Based Why do symptoms vary?
What You Will Do – Theory/Evidence(EBM)/Experience-Based Solutions (X)	
How You Implement X Approach Win/Lose or Win/Win? Power or Persuasion? SUCCEsS or NUDGE?	Prove It – Show that it Works (O_2) Research Design & Measures Pre-Test (O_1) / Post-Test (O_2) Symptoms

Figure 3: Management Diagnosis Framework Side 2 - Strategy

Management Diagnosis Framework	
Symptoms (O₁) What's going on? Balanced Scorecard Stakeholder Perspectives Functional Measures Finance Management Marketing	Likely Causes – Theory/Evidence(EBM)/Experience-Based Why do symptoms vary? Management is goal-oriented → The goal is to WIN! Vision – Who are we and/or who do we aspire to be? (Pygmalion Effect) GE – World's most competitive enterprise. Mission – How will we win in this industry? (How will we know?) GE – #1 or #2 in all markets; fix, sell, or close otherwise. Competitors What are our competitors doing that affect us (good for us and bad for us)?
What You Will Do – Theory/Evidence(EBM)/Experience-Based Solutions (X) Strategy – What approach or approaches will we use to win? Cost Leadership Differentiation Cost Leader-Differentiation Corporate-level portfolio approach Other strategies – Make-or-Buy innovation or sourcing?	
How You Implement X Strategy Implementation – Tactics Cost Leadership How will we lower costs & increase volume? Differentiation How will we increase quality & manage perceptions? Corporate-level Do the various businesses in portfolio serve optimally?	Prove It – Show that it Works (O₂) Balanced Scorecard & Functional Measures Proximal (near-term) Results Are we making progress in critical areas towards long-term success? Distal (long-term) Results Are our results indicators we are achieving our mission and vision?

1.3 MDF Within the Context of Management Education

Numerous theories, research methods, and practical observations were integrated into the design of the MDF. One of the drivers of the framework is my aversion to "organizational insanity," which is when organizations continue to do the *same things* they've always done while expecting *different results*. In order to improve performance, behaviors must change. But this is not merely change for change sake. Rather, the framework is intended as a systematic approach to clearly understanding the situation and its causes, development of actionable solutions, all within a research design allowing the empirical testing of these proposed solutions. An assumption of the framework is that it can be used continuously as part of an iterative process, which is envisioned and patterned after the TQM "Deming Cycle" (Deming, 1986 - labeled by Deming as the "Shewhart Cycle."). The *process model* aspect of the MDF means it is a "tool" in the student's management toolbox that can be used continuously on the same issue, or applied across multiple issues (e.g., leadership and/or strategy). Further, the use of "diagnosis" in the title and its central role in the framework seemed vindicated when a giant in the strategy field, Richard Rumelt (2011), identified diagnosis as the first component of the "kernel of a strategy" integral to a "Good Strategy." That Rumelt's book was published *after* my development of the MDF made me believe I was onto something worthwhile.

The design of the MDF was intended to help students be more effective, knowing full well their minds operate within the constraints of bounded rationality (Simon, 1957). Research in cognitive and social psychology have clearly demonstrated the dual nature of the mind (see Daniel Kahneman's wonderful best-seller, *Thinking, Fast and Slow* [2011] for a summary description of these systems and related research). Petty and Cacioppo's (1986) "Elaboration Likelihood Model" (ELM) of persuasion was an early dual-process cognitive model. The relevance of this research (including the references noted) to the development of the MDF was a clear understanding of the mind's limitations and processes. The ELM clearly shows the "peripheral route" is the default cognitive process (i.e., the automatic process Kahneman [2011] refers to as System 1). The problem is that in the peripheral route the audience does not process the message presented, the audience merely goes along with what the messenger says to do. One reason the audience goes into the peripheral route is "information overload." In order to have the intended effects on performance, behaviors must change. In order for behaviors to change in the intended direction, the message must be presented in a way the student can remember it to act on it.

Structuring the MDF in a way students can remember and act on it was based on the wonderfully practical and empirically supported book by Chip and Dan Heath, *Made to Stick* (2007). The acronym the Heath brothers use to develop "sticky ideas" is SUCCEsS, where the first S stands for "Simple."

Simple ideas are both "CORE" and "compact." A core idea has had any unnecessary tangential or superfluous information stripped away. The five-phase core of the MDF is managers should (1) know what the organization wants you to do [Goals in **FIGURE 2**]; (2) accurately diagnose the situation [Symptoms and Causes in **FIGURE 2**]; (3) develop and effectively implement plans to change behavior and achieve organizational goals [What You Will Do and How You Implement X in **FIGURE 2**]; (4) complete phases 1-3 within a research approach capable of empirically assessing the effectiveness and efficiency of the plans on achieving organizational goals [Prove It in **FIGURE 2**]; and (5) repeat phases 1-4 as necessary. A compact idea is presented in a way that is easy to understand and remember, thereby not exceeding bounded rationality limits (Simon, 1957) so the message can be cognitively processed via the "central route" of the ELM (Petty and Cacioppo, 1986). The MDF is compact because it (1) focuses on a limited number of core ideas [5] which are expanded into 6 elements [Goals in **FIGURE 1**, Symptoms, Causes, What You Will Do, How You Implement X, and Prove It in **FIGURE 2**]; (2) the 6 elements are presented in the form of a table which acts as a frame for students to work through; and (3) the full MDF idea is presented as a single, double-sided page rather than a cognitively taxing long list of bullet points or extensively detailed paragraphs. My hope is for the MDF to become as practical and applicable a management teaching tool as the "Value Chain" (Porter, 1985).

The *post-hoc* nature of explicating the development of the MDF forced me to search for a theory or theories to explain what I was doing. Again, development of the MDF was a reaction to my frustration with students' inability to "connect the dots." Working in an AACSB accredited university, I was also familiar with the need to teach and assess students' "business acumen." I was guided to the literature on "sensemaking" because the term seemed to fit both what I wanted students to do (i.e., make sense of goals and symptoms leading to diagnosis...) and what I needed to do to explain the MDF to the community of management educators. The updated description of sensemaking describes it as occurring "when a flow of organizational circumstances is turned into words and salient categories" and "organizing itself is embodied in written and spoken texts" (Weick et. al., 2005, p. 409). A key part of sensemaking's development has been retrospective analysis of bad events such as the Mann Gulch disaster (Weick, 1993). Though clearly not on the order of Mann Gulch, my "Oh shoot!" moment was when I realized my A management students just "didn't get" the causal thinking I believed they needed to have. I came to the realization the students could regurgitate the terms and implications of theories on exams, but they could not connect multiple theories together in order to identify the causes of problems worth a darn. I came back across Weick's sensemaking (1995) during the preparation of this manuscript. David Schwandt's analysis of sensemaking and learning in the *Academy of Management Learning & Education* (2005) argued the two constructs are complimentary. This showed me linking sensemaking to teaching is not too far of a stretch.

2. The Management Diagnosis Framework

This section describes each element of the MDF. These descriptions include the various theories and observations used to within each element, as well as examples of practices used to illustrate the types of student responses that might be anticipated. The goal of this section is to provide sufficient guidance to the reader who chooses to use the MDF.

2.1 Goals (FIGURE 1)

Although goals were the last MDF element developed, they are the first to be described to students. They are used to (1) emphasize what the organization is trying to accomplish and what they need to strive to achieve, (2) guide students' diagnosis of the most relevant symptoms and causes, and (3) also guide students' solutions for their diagnosis towards achieving organizational goals. The goal types are organizational goals and single specific issue goals. Organizational goals use a funnel method whereby the (1) broadest goals (Vision) describe what the organization is and/or aspires to be, (2) Mission answers the Jack Welch-inspired question, "How do we intend to win in this industry?" (2005), and (3) Strategy specifically addresses how to achieve the Vision and Mission. Vision, mission, and strategy are included as many organizations have these (or variants of these using different terminology such as "Objectives" or "Tactics"), so students should become familiar with these. Single specific issue goals are also included because sometimes managers want to achieve a single, straightforward goal. The example provided ("Win state") comes from my personal experience as a volunteer coach of my sons' youth baseball teams (which were achieved multiple times).

2.2 Overall Framework

As noted in the previous section, the overall framework (i.e., the structure imposed with the use of a table) is intended to force a research design that is depicted as a simple message (i.e., core and compact). One goal of the MDF is to help students think like managers (*process model*). But thinking is insufficient unless this thinking leads to better results. Whether or not this thinking leads to "better results" is an empirical question, which the overall framework of the MDF is designed to test. Within the MDF are research design abbreviations based on Cook and Campbell (1979) where O_1 represents "observations at time₁," X represents the "intervention," and O_2 represents "observations at time₂." Therefore, the design of the MDF is pre-test (Symptoms in **FIGURE 1**) / post-test (Prove It in **FIGURE 1**) with the intervention being both the *what* and *how* of the Solutions (**FIGURE 1**). The pre-test/post-test is the basic research design of the MDF, but assuming multiple iterations means possible inclusion of multiple interventions (i.e., $X_2...X_k$) and observations ($O_3...O_k$).

2.3 Symptoms Versus Causes - Diagnosis

Diagnosis is really the "heart" of the MDF, literally and figuratively. Diagnosis is literally the heart because a poor diagnosis is likely to achieve poor results, causing harm to the "patient" company. Diagnosis is figuratively the heart of the MDF because a "heart attack metaphor" can be used to illustrate this distinction concretely (Heath and Heath, 2007). If a patient presents to a physician experiencing a heart attack, the heart attack is a symptom of an underlying cause. Obviously the physician must address the heart attack symptom to immediately save the patient. However, if the cause of the heart attack (e.g., high blood pressure) is not fixed properly then another heart attack in the future is highly likely. It is imperative for students to be able to identify symptoms, but failing to properly identify and treat causes can be fatal.

2.4 Symptoms

From the *content model* perspective (i.e., *what* managers think about), students need to know what managers identify to be most relevant. First, it would be useful for students to have a template of the most relevant symptoms from the perspectives of different disciplines (Symptoms in **FIGURE 3**). These symptoms could be used by an organizational outsider to gauge performance, which would help students search through the vast array of information often reported by organizations. Examples of these symptoms could include the following:

Finance - Return on equity (ROE), including the components of ROE that comprise the Du Pont chain. The elements of the Du Pont chain are leverage, return on assets (ROA), profit margin, asset turnover, sales, net income, total assets, current assets, cash, accounts receivable, inventory, total costs, cost of goods sold, depreciation, selling general and administrative expenses, interest, and taxes.

Management - presence or absence of legal lawsuits brought against the organization, the presence or absence of employee unions, employee turnover, labor costs, measures of productivity.

Marketing - increase or decrease of marketshare, level of inventory, amount of customer complaints, unprofitable or unacceptable return on investment (ROI).

Second, students must consider the organization's goals (**FIGURE 1**) which should serve as a guide towards identifying the most relevant symptoms. For example, an organization implementing a cost leadership strategy would pay particular attention to all measures involving costs and sales volumes.

2.5 Causes

While separating symptoms from causes is the *most critical* tasks for students to do well, the *most challenging* task is for them to accurately identify the most likely causes of symptom variation. The operative question in **FIGURE 2** and **FIGURE 3** is "Why do symptoms vary?" In order to answer this question students may consider theories, empirical evidence (e.g., EBM), and practical experience (e.g., advice from best-selling business books from celebrity CEO's such as Jack Welch [2005]). Pfeffer and Sutton's *Hard Facts* (2006) frames the distinction between EBM and "conventional wisdom-based" experience as two rival groups of *experts* vying for supremacy. This rivalry has recently been on display in the movies (e.g., *Moneyball* with Brad Pitt [EBM] versus *Trouble with the Curve* with Clint Eastwood [experience]) and during the 2012 Presidential election campaign (e.g., Nate Silver [EBM] versus Joe Scarborough [experience]). The inclusion of both, and theories which students should learn in their classes, strives towards what Pfeffer and Sutton (2006) refer to as "wisdom." The basic assumption is pragmatic, namely, that the origin of the idea matters much less than whether or not the implications of the idea can be used to develop effective solutions. If the idea works, use it. If not, move on and find something that does.

To know if the application of an idea works requires empirical evidence (implied with the Overall Framework of the MDF), but this is difficult because actions must be taken based on the assumption these *should* work in the intended direction *without* direct supporting evidence. In other words, these are "best guesses" or "acts of faith." "So how will students know what *should* work?" is the vexing question. The MDF approach to answering this question is based on the field of "Strategic Human Resource Management" (Strategic HR). Strategic HR explicitly recognizes the "best" HR is when HR "fits" the organization's strategy, hence the use of the "strategic" term. One early sports-related empirical example demonstrated the better an NCAA basketball team's HR fit the coach's preferred strategy, the more games the team won (Wright, Smart, and McMahan, 1995). This means students' careful understanding of the organization's goals (**FIGURE 1**) should be used to guide their analysis of the "fit" of potential ideas. For example, Pfeffer (2010) begins his book by criticizing the popular leadership literature (e.g., Welch, 2005). From a Strategic HR perspective, Welch's (2005) hiring criteria ("4E's and 1P") and forced-normal performance evaluation system ("Differentiation") was a perfect fit with GE's goal to be "The World's Most Competitive Enterprise" (Vision and Mission examples in **FIGURE 1**). However, Carly Fiorina's implementation of GE-style performance evaluations was a "misfit" with the culture at Hewlett-Packard (Pfeffer and Sutton, 2006). Therefore, to evaluate the pragmatic validity of various sources of ideas, students should consider (1) how well these ideas fit the organization's goals, and (2) how well they explain symptom variation. This is no easy task, but I believe it simulates the complexity managers face.

Part of the impetus for the development of the MDF is my aversion to the fundamental attribution error (Ross, 1977), which is when individuals are blamed for problems that are caused by the situation. When individuals are incorrectly blamed for problems, managers take inappropriate actions directed at fixing the individual. These inappropriate actions do not solve the problem and have negative effects on the individual incorrectly blamed (e.g., dissatisfaction, turnover, etc.), which was a point made long ago by Deming (1986) and directly addressed in the newer Heath Brother's best-seller, *Switch* (2010). The MDF, especially the distinction of symptoms from causes and the deliberate causal analysis, is envisioned as an example of a "cognitive repair" (Heath, Larrick, and Klayman, 1998) because it is an organizational method that forces individuals to carefully search for causes rather than simply jumping to the conclusion the person is to blame. (e.g., Motorola's 5 Why technique, TQM-based control charts).

2.6 Solutions

Solutions are divided into two elements - What You Will Do and How You Implement X - based on the lessons of *Made to Stick* (Heath and Heath, 2007). Hence, students' tasks are to formulate a plan most likely to have the intended effects then develop a method to effectively implement the plan.

2.6.1 What You Will Do - This step requires students to combine their causal analysis (Causes in **FIGURE 2**) with the organization's goals (**FIGURE 1**) to develop (1) a solution to the most important cause(s) that (2) is most likely to lead to achievement of organizational goals. This is an application of a Strategic HR "fit" approach (e.g., Wright et. al., 1995) and also mirrors Rumelt's other two "kernels of strategy" - "Guiding Policy" and "Coherent Actions" - that are keys to "Good Strategy" (2011). The focus is on developing the plan that is most likely to work as anticipated. This plan may be complex, so it may present challenges conveying it.

2.6.2 How You Implement X - The separation of this element from the plan element (a revision to the MDF that occurred over time) explicitly distinguishes *the plan* from the *plan's presentation*. Since the plan combines causal analysis with organizational goals, it can be very complex. The complexity is necessary for connecting causes, goals, and for planning how to assess the effects of the plan (e.g., Overall Framework, Symptoms, and Prove It in **FIGURE 2**). But this complexity is a huge hurdle because it likely represents "information overload" that exceeds bounded rationality limits (Simon, 1957). **How** explicitly addresses this problem.

Again, the MDF is pragmatic so good solutions that are not implemented effectively are unlikely to achieve intended goals (i.e., these solutions are bad). So, first students must develop a good solution. Then, they must effectively implement the solution. Effective implementation means behaviors change as intended, leading to achievement of organizational goals. The MDF includes two parts to effective implementation.

2.6.3 Approach - The MDF explicitly recognizes that management methods are manipulative (e.g., I begin my Leadership class with this statement). This raises the ethical question, "Should I manipulate my people?" My standard ethical response is "Just because you *can*, doesn't mean you *should*." The answer to this ethical question is based on the *Getting to YES* framework of Fisher and Ury (1981).

If employees are made or persuaded to do what the manager wants, who wins and who loses? Typically the most ethical solution is WIN/WIN, where employees and managers both benefit. In addition to being ethical, WIN/WIN solutions are often easiest to implement because there are no "losers." Loss aversion is a very strong bias people seek to avoid (Thaler and Sunstein, 2008; and Kahneman, 2011). So framing solutions as WIN/WIN can minimize resistance to implementation. Framing and anchoring are also biases, which a WIN/WIN approach taps to the manager's advantage (Thaler and Sunstein, 2008; and Kahneman, 2011). WIN/LOSE solutions may be less ethical but necessary when the "loser" gets what they *need* rather than what they *want*. Sometimes managers have to make this hard choice, which is what Welch (2005) refers to as "Edge." However, this evokes loss aversion that can result in resistance to implementation and long-term animosity. So, students should be advised on the benefits and consequences of the WIN/LOSE approach relative to the WIN/WIN approach.

2.6.4 Power or Persuasion? - Getting employees to do what managers want can be accomplished by (1) making them or (2) persuading them. Making employees behave requires managers to possess power. Pfeffer (2010) clearly articulates the value of power, and shows numerous ways in which it can be attained. While WIN/WIN solutions are possible, the use of power for implementation is more apt to be required for WIN/LOSE solutions. Again, sometimes these solutions are necessary. But these may have long-term negative consequences and the loss of power can seriously harm one's career (Pfeffer, 2010), so students should be advised to apply power well (i.e., use when necessary but avoid solely relying on it).

Using persuasion to implement solutions is much more complex, and is mostly limited to WIN/WIN solutions. The MDF's persuasion approach is built on the assumption of bounded rationality (Simon, 1957) and based on the ELM (Petty and Cacioppo, 1986). The key issue is whether or not employees need to *cognitively process the message* in order to change their behavior. If employees do need to understand the message (i.e., the solution), then *Made to Stick's* SUCCEs framework should be used to design *how* the solution is implemented (Heath and Heath, 2007). These solutions, since they provide motivation for employees to cognitively process the message and make the message readily understandable so employees should be able to process it, should be processed via the central route of the ELM. If employees do not need to understand the message, then *Nudge's* NUDGES framework should be used (Thaler and Sunstein, 2008). Sometimes it is less that employees *don't need* to process the message than that employees *won't* process the message. If employees are unmotivated to process the message (e.g., they don't see the relevance of it) or lack the ability to comprehend it (e.g., it is a complex message such as investment options for a retirement benefit plan), employees are likely to "tune it out." This represents the peripheral route of the ELM, which is the default. Since this is the most likely response to solution implementation, students should be made aware that (1) getting employees to cognitively process the message requires extensive effort using the SUCCEs framework, and (2) the use of NUDGES should only be used for a WIN/WIN solution approach. Because NUDGES can affect employee behavior without their knowledge or consent, this represents an ethical issue for managers. Thaler and Sunstein (2008) strongly advocate a "Libertarian Paternalism" approach that achieves WIN/WIN results, as does the MDF.

2.7 Prove It

Prove It represents the final component of the Overall Framework described above. The research design abbreviation (O₂) is again based on the Cook and Campbell terminology (1979). Whichever Symptom measures students identified as most relevant (i.e., O₁) should be matched after implementation of the Solution. This will complete the pre-test/post-test research design with matching measures for O₁ and O₂. Analysis may be a t-test or ANOVA. Students should be made aware of design biases that may affect interpretation of results, especially selection bias. Stated for the last time, the MDF is intended as a pragmatic tool. Being able to *demonstrate* the effects of solutions on symptoms, of underlying causes affecting organizational goals, is the ultimate goal. Whether the solution works as intended or not, the evidence in this element should provide empirical justification for support or rejection. This is the scientific method/EBM in action.

2.7.1 Does the Management Diagnosis Framework Work?

Part of the preparation of this manuscript resulted in me linking sensemaking (Weick, 1995) to the process of MDF development. The problem was students not "connecting the dots," which would be Symptoms in **FIGURE 2** (i.e., O₁). My Solution, both *What* and *How*, was development of the MDF (i.e., X). So does it work? The answer at this point is "I don't know." At this point, my Prove It measures (i.e., O₂) are anecdotal. Students do seem to "connect the dots" better than in the past, but hard empirical evidence is lacking for analysis. This is a "future research direction" that is yet to be addressed.

3. Discussion

The two purposes that began this paper were (1) to describe and explain the MDF, and (2) place the MDF within the context of management education. This section summarizes these purposes with directions for future research.

3.1 Summarizing the MDF

The MDF is both a *process* and *content model* which is designed to help students learn how to think like a manager and know what managers think about. Learning how managers think involves understanding how organizational goals direct their thoughts and actions, integrating an empirical framework capable of assessing the effects of solutions, distinguishing the difference between symptoms and causes, and developing solutions to fix the causes of symptom variation. What managers think about includes clearly understanding the different types of organizational goals and how these direct symptom identification and solution development. The most challenging task is identifying causes of symptom variation, that address relevant organizational goals, and developing solutions (**What** and **How**) to fix these causes that can be empirically validated or refuted.

I believe the MDF is a useful tool forcing students to integrate an array of information (i.e., theory, empirical/EBM, and experience) with the goal of addressing organizationally-relevant goals. This is the type of "connecting the dots" activity I was so frustrated that my students were unable to do previously. The obvious limitation at this point is that this perception may be self-serving, as I developed the MDF. Future research will be needed to assess "connecting the dots" symptom measures prior to MDF implementation (i.e., O_1) compared to these same measures post-MDF implementation (i.e., O_2). As a professor who teaches strategy, a candidate for this assessment may be either group case analyses or simulation performance.

3.2 Placing the MDF within the Management Education Context

MDF development was a reactionary response to my frustration. I knew whatever was developed would have to be short enough for students to understand it, like the Value Chain or SWOT analysis. So I started putting pieces together, assuming if it worked results would be empirically demonstrated. This was "act first, worry about the details later." It's later now.

The discipline of writing this manuscript forced me to explicate how I developed the MDF, and to search the management literature to help understand why. Weick's sensemaking concept (1995) seems most applicable. Students must make sense of the situation, then take action based on their understanding. My "Oh shoot!" moment (i.e., students not "connecting the dots") led me to try to make sense of the situation. Students could not separate symptoms from causes, so I had to fix that. Students' ability to identify the most likely causes of problems was poor, so I had to fix that. Since their diagnosis skills were poor, their ability to develop good solutions was extremely unlikely. My best explanation is that I was trying to make sense of a bad situation, then developing a method (i.e., the MDF) to fix it. I was emboldened in the writing of this paper when I described my frustration at a faculty meeting to my colleagues. They too have observed students' inability to "connect the dots," and thought the MDF seemed to be an interesting tool to fix the problem. This paper was helped by the insights of my marketing and finance colleagues who suggested the measures noted in the **Symptoms** section. My hope is the MDF will prove useful for faculty teaching and student learning. Time will tell.

4. References

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