



Building a Lean Six Sigma–Based Background of the Problem and Problem Statement: A White Paper

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Abstract

This white paper presents a framework for developing a defensible Background of the Problem and Problem Statement for a doctoral dissertation. It is intended for beginning researchers and experienced researchers who are new to practitioner research in business. Quality improvement and research design literature supports using structured problem definition, authoritative evidence, methodological alignment, and restraint in making causal claims (American Society for Quality, 2026; Appelbaum et al., 2018; Edmondson & McManus, 2007; International Organization for Standardization, 2011; Levitt et al., 2018; Rohrer, 2018). This white paper proposes an author-developed evidence-chain framework that adapts the Define and Measure logic of Lean Six Sigma to doctoral practitioner research. The framework distinguishes five elements: the observed condition, authoritative normative condition, issue, associated effect, and practitioner research problem. The difference between the observed and normative conditions constitutes an issue, which becomes a practitioner research problem when credible evidence associates the issue with a meaningful negative or positive effect. Evidence of the observed condition should come from authoritative primary sources released within the preceding five years. Evidence of the normative condition should also be authoritative and may establish a temporal, spatial, comparative, or standards-based benchmark. The framework further distinguishes the practitioner research problem from the academic knowledge gap and aligns both with the study purpose, research questions, methodology, and design. By emphasizing evidence quality, comparability, design alignment, and causal restraint, the framework helps researchers develop measurable and researchable problem backgrounds without relying on opinion, unsupported causal claims, or premature solutions.

Keywords: Lean Six Sigma, Background of the Problem, observed condition, normative condition, performance gap, primary sources

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Introduction

The goal of this white paper is to provide beginning researchers and experienced researchers who are new to business research with an evidence-based framework for constructing the Background of the Problem in Chapter 1. Research-design scholarship emphasizes selecting an approach that fits the research question, while Lean Six Sigma and ISO guidance frame process improvement as a structured, measurement-based progression through DMAIC (American Society for Quality, 2026; Edmondson & McManus, 2007; International Organization for Standardization, 2011). Together, these sources indicate that practitioner research problem framing can provide a disciplined foundation for research when it remains aligned with academic standards for methodology, design, evidence, and inference. This paper translates practitioner research problem identification into a defensible approach to dissertation development while emphasizing source quality, methodological alignment, and appropriate inference. The framework connects an observed condition, an authoritative normative condition, the difference between them, and evidence of a meaningful associated effect. These elements are formally defined in the evidence chain presented later in the paper. The principal conceptual contribution of this paper is an author-developed evidence chain that operationalizes these elements and establishes a decision rule for distinguishing a documented issue from a consequential practitioner research problem.

The paper is organized into five parts. The first explains the Lean Six Sigma framework for identifying a research issue and its associated effect using the framework's Define, Measure, Analyze, Improve, and Control (DMAIC) process. The second connects DMAIC with major quality-management standards and capability models used in business. The third connects the practitioner research problem to academic methodology, design choice, inference, and methodological integrity. The fourth defines the evidence chain among the observed condition, normative condition, issue, effect, and practitioner research problem. The final part provides evidence-screening criteria, a recommended development process, a model formulation, and an illustrative application that researchers can use to construct their own problem backgrounds.

Lean Six Sigma Framework for Research Problem Identification

This paper recommends defining the background of a practitioner research problem in language and conceptual terms familiar to the professional field in which the problem occurs. For professionals in business, Lean Six Sigma offers a relevant vocabulary because DMAIC links problem definition to observable performance, measurement, analysis, improvement, and control (American Society for Quality, 2026; International Organization for Standardization, 2011). This disciplinary grounding can help practitioners recognize the practical condition being examined while the researcher translates a workplace concern into an evidence-based, researchable problem.

The framework proposed in this paper adapts DMAIC gap logic to academic problem framing. Quality improvement and problem framing literature supports defining problems through observable conditions, authoritative comparison points, and documented consequences (American Society for Quality, 2026; International Organization for Standardization, 2011; Magistretti et al., 2025). Within

this application, Define establishes the population, setting, stakeholders, boundaries, and focal condition, while Measure provides the evidence needed to compare current performance with an authoritative benchmark. The formal relationship among the observed condition, normative condition, issue, effect, and practitioner research problem is presented later in the paper as the evidence chain.

Lean Six Sigma provides a disciplined way to frame a research problem as a documented performance gap rather than as an author's dissatisfaction with current practice. Six Sigma emphasizes measurement and the define, measure, analyze, improve, and control sequence, while ISO 13053-1 describes DMAIC as a best-practice process-improvement methodology applicable to manufacturing, service, and transactional processes (American Society for Quality, 2026; International Organization for Standardization, 2011). Applied to dissertation writing, the Define and Measure logic requires the researcher to establish what is occurring, what an authoritative benchmark indicates should be occurring, and the magnitude or practical meaning of the discrepancy. The result is a problem statement that aligns with the research objectives of a business professional.

This approach is also consistent with contemporary scholarship on problem framing. Magistretti et al. (2025) described a problem as a gap between a current state and a desired state and emphasized that framing determines the criteria used in subsequent problem-solving. However, in a dissertation, that desired state cannot rest on preference alone; it must constitute an empirically or institutionally defensible normative condition.

Management-System Standards as Complements to DMAIC

Lean Six Sigma and management-system standards perform complementary functions. ISO 9001 and its sector-specific extensions establish requirements for process control, performance evaluation, risk, corrective action, and continual improvement, while DMAIC provides a structured methodology for examining a verified performance gap (International Organization for Standardization, 2015). The applicable standard can therefore help define what is required or normally expected, but DMAIC does not replace conformity, certification, regulatory, or customer-specific obligations.

ISO 13485 addresses medical-device quality and regulatory controls; IATF 16949 addresses automotive quality, variation, waste, suppliers, and customer-specific requirements; and AS9100 adds aviation, space, and defense controls to the ISO 9001 foundation (International Aerospace Quality Group, 2016; International Automotive Task Force, 2016; International Organization for Standardization, 2016). TL 9000 combines telecommunications quality-system requirements with common performance measures, while ISO 22000 addresses food-safety management and hazard controls (International Organization for Standardization, 2018; TIA QuEST Forum, 2020). CMMI differs from the certifiable standards because it benchmarks organizational capability and maturity, yet it can still provide an authoritative reference point for identifying a capability gap (CMMI Institute, 2024).

Define and Measure are the DMAIC phases most relevant to framing and substantiating the research problem. DMAIC guidance describes Define as establishing the problem, scope,

stakeholders, and objectives, and Measure as documenting baseline performance through reliable evidence (American Society for Quality, 2026; International Organization for Standardization, 2011). In this application, Define specifies the population, setting, process, indicator, stakeholders, and boundaries. Measure documents the observed condition and authoritative normative condition using comparable evidence. Standards, regulations, customer requirements, specification limits, maturity levels, and validated benchmarks may provide evidence of the normative condition. Operational records, audits, defect rates, service measures, safety events, and capability assessments may provide evidence of the observed condition. Together, Define and Measure provide the evidence required to compare current performance with an authoritative benchmark.

Analyze, Improve, and Control should not be applied prematurely when developing the problem foundation. Research-design and causal-inference literature indicates that conclusions must remain within the capabilities of the selected research design (Edmondson & McManus, 2007; Rohrer, 2018). Accordingly, the framework proposed in this paper uses Define and Measure to establish and document the practitioner research problem but does not treat Analyze, Improve, and Control as substitutes for scholarly analysis, intervention, or evaluation. Those activities require subsequent inquiry and a research design capable of supporting the resulting claims.

Connecting the Practitioner Research Problem to Academic Methodology

The academic application proposed here requires alignment between the practitioner research problem and the academic knowledge gap. Research-design literature distinguishes a consequential practitioner research problem from an unresolved scholarly knowledge gap and emphasizes alignment among the problem, literature, purpose, research questions, and methodological approach (Alvesson & Sandberg, 2011; Edmondson & McManus, 2007). It further indicates that the methodological approach should fit the research question rather than reflect a preferred methodology selected in advance (Edmondson & McManus, 2007). Accordingly, a well-formed study connects the two gaps without treating them as interchangeable. The Background of the Problem and Problem Statement establish the practical discrepancy and associated effect, while the literature review demonstrates the unresolved scholarly question. The purpose statement and research questions then specify the knowledge the study will produce. This alignment enables the study to address a consequential practitioner research problem while making a clearly defined academic contribution.

A documented problem is not automatically a research-worthy problem. Volkema (1986) observed that problem statements frequently serve purposes beyond description, and that the way a problem is stated determines the quantity and quality of the solutions later produced. Volkema classified the targeting of a desired solution as a self-serving purpose, since a statement written to secure a preferred solution or remedy limits the solution set to that class of solutions. Similarly, Ellis and Levy (2008) argued that a research-worthy problem must be documented as a gap in what is known and not as an instance of an organization failing to apply a remedy already established in the literature. A practitioner research problem can therefore satisfy every element of the evidence chain and still fail the research-worthiness test if the scholarly literature has already established the

knowledge needed to address it. Establishing that a consequential practitioner problem exists and establishing that new research is warranted are therefore related but distinct requirements.

The distinction between the practitioner research problem and the academic knowledge gap limits overextension of the DMAIC analogy. Quality-improvement guidance supports using Define and Measure to identify the unit of analysis, stakeholders, indicators, observed condition, benchmark, and magnitude of the issue (American Society for Quality, 2026; International Organization for Standardization, 2011). Research-design literature further indicates that a study should not promise outcomes its methodology and design cannot establish (Edmondson & McManus, 2007; Rohrer, 2018). Analyze, Improve, and Control remain organizational-improvement phases rather than automatic substitutes for scholarly data analysis, intervention testing, or dissemination. Therefore, unless the approved research design includes an intervention, implementation study, action-research cycle, or formal program evaluation, a dissertation may investigate the problem without claiming to implement or control a workplace solution.

Alignment of Problem, Purpose, Questions, and Design

The academic alignment chain should explicitly connect the practical problem, scholarly knowledge gap, study purpose, research questions or hypotheses, methodology and design, population and sample, data sources and measures, analysis, and warranted conclusions. Research design literature supports matching the methodology to the research questions and intentionally integrating qualitative and quantitative components when a mixed methodology design is used (Edmondson & McManus, 2007; Feters et al., 2013). Accordingly, questions about prevalence, magnitude, differences, associations, predictions, or intervention effects may support a quantitative methodology, while questions about meaning, experience, context, processes, or participant interpretations may support qualitative inquiry. Questions requiring both numerical estimation and contextual explanation may justify a mixed methodology design, provided that the two components are integrated rather than merely presented side by side. This alignment ensures that each element appropriately constrains the next and that the conclusions remain consistent with the study's purpose, evidence, and design.

A practical issue does not determine a single academic research design. Research design literature demonstrates that design selection should reflect the research question, the state of prior knowledge, ethical and operational constraints, and the strength of inference required (Edmondson & McManus, 2007; Rohrer, 2018). Accordingly, the same gap between observed and expected performance could support a descriptive quantitative study, a correlational study, a qualitative study, a case study, a quasi-experimental study, or a mixed methodology study. The appropriate design ultimately depends on the specific knowledge the study seeks to produce.

Inference, Validity, and Methodological Integrity

Claims in the Background of the Problem should remain within the limits of the supporting evidence. Causal inference requires a design capable of addressing alternative explanations, temporal order, selection, measurement, and confounding. Experimental and well-designed quasi-

experimental approaches provide stronger foundations for causal claims than descriptive or correlational evidence (Rohrer, 2018). Mixed methodology literature also emphasizes that broader inferences require intentional integration of quantitative and qualitative components throughout the design, data collection, analysis, interpretation, or reporting stages (Fetters et al., 2013). Therefore, a documented association should not be interpreted as causation. Qualitative explanations of meaning, context, and process should not be presented as numerical tests of impact. Mixed methodology findings should not be described as integrated when the components remain separate. Maintaining these distinctions ensures that the conclusions are appropriately supported by the study's evidence and design.

Research rigor depends on the quality of operational definitions and supporting evidence. Quantitative reporting standards require transparent documentation of hypotheses, participant characteristics, measures, sampling procedures, research design, analyses, and distinctions among primary, secondary, and exploratory conclusions (Appelbaum et al., 2018). Qualitative and mixed methodology reporting standards similarly emphasize methodological integrity, researcher perspective, study context, data collection, analytic processes, and the relationship between claims and evidence (Levitt et al., 2018). Accordingly, researchers should define focal constructs, justify measures and data sources, describe sampling and inclusion criteria, address bias and uncertainty, and document analytic decisions. These practices ensure that the observed condition, normative benchmark, and associated effect remain traceable to evidence that readers can evaluate.

Confirmation Bias and Researcher Bias in Problem Framing

Practitioner researchers usually begin with a workplace condition they already believe they understand. While common, this process can bring in confirmation bias. Nickerson (1998) defined confirmation bias as the seeking or interpreting of evidence in ways that are partial to existing beliefs, expectations, or a hypothesis in hand, and noted that the tendency frequently operates without deliberate intent. Volkema (1986) documented the same pattern in organizational problem statements, observing that some are offered specifically to ensure a desired solution is considered, and his proposed remedy was detection rather than exhortation, since he identified variables through which a team could recognize and label such statements. A researcher who has worked inside a process for years is therefore among the most exposed, because the belief about what is wrong precedes the evidence gathered to describe it.

Similar to confirmation bias, researcher bias refers to the influence of the researcher's position, expectations, and discretionary choices on a study's design, evidence, and interpretation. Levitt et al. (2018) posited that researcher bias, correctly identified and disclosed, can be properly examined rather than eliminated in certain qualitative and mixed methodology studies, but it requires specific attention to researcher perspective and the study context, and must be justified. Control of whether to knowingly enter researcher bias into a study, therefore, is paramount, as the distinction matters for this framework. No procedure changes what a researcher believes; however, a procedure to control the inclusion or exclusion of researcher bias should be used to clarify if or when a researcher's belief is permitted to enter the research.

DMAIC is useful at this point because its procedural structure helps constrain where both forms of bias would otherwise enter the research and operate. The Define step requires the researcher to specify the population, setting, indicator, stakeholders, and boundaries such as assumptions, limitations, and delimitations before any evidence is assembled, which helps constrain the possibility of drawing the study scope around a conclusion already held. The Measure step requires that the observed and normative conditions be documented using appropriately cited authoritative primary sources, thereby reducing reliance on the researcher's own judgment as the benchmark. Requiring an external, authoritative comparison point can constrain one pathway through which confirmation bias may influence problem formulation; however, it does not eliminate confirmation bias, which may continue to influence source selection, operational definitions, comparison groups, and interpretation. Using Define and Measure as procedural constraints on researcher judgment is an author-developed application rather than a finding established in the DMAIC literature.

Design Decision Questions

Before advancing from the Background of the Problem to the purpose and methodology, the researcher should evaluate the alignment of the proposed study. The following questions test whether the practical problem, scholarly gap, purpose, questions, and design form a coherent chain. They also help prevent claims that exceed the evidence or the inferential capacity of the selected design.

- Does authoritative evidence establish a consequential practitioner research problem using the evidence chain?
- Does the scholarly literature establish a distinct unresolved knowledge gap?
- Does the proposed study connect the practitioner research problem to the scholarly knowledge gap without treating them as interchangeable?
- Does the purpose state exactly what new knowledge the study will generate rather than promise an organizational solution?
- Do the research questions fully encompass the purpose and avoid causal language that the proposed design cannot support?
- Does the selected quantitative, qualitative, or mixed methodology approach fit the form of each question?
- Are the population, setting, sample, data sources, measures, and unit of analysis consistent across the problem, purpose, and methodology?
- Can the proposed analysis answer the stated questions with an appropriate level of inference?
- Are validity, reliability, trustworthiness, reflexivity, uncertainty, ethics, and limitations addressed in a manner appropriate to the design?

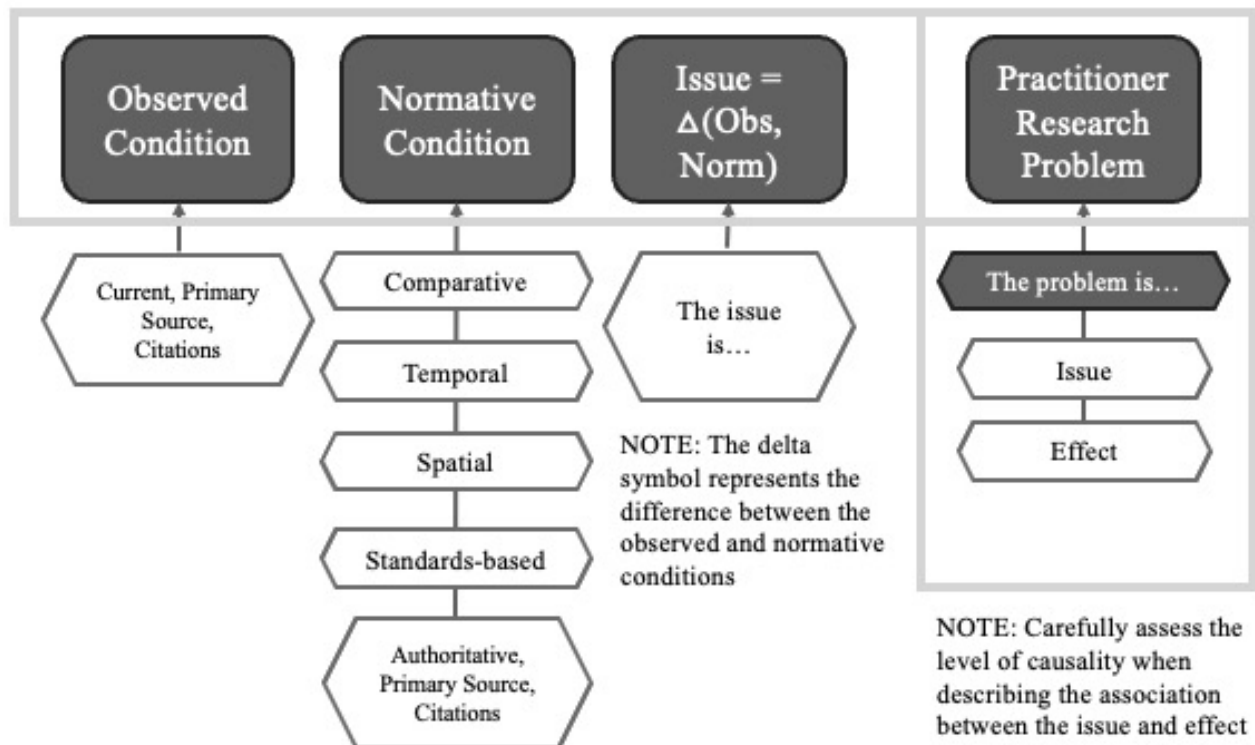
- Will the reporting provide enough methodological transparency for readers to evaluate, reproduce when applicable, or meaningfully transfer the findings?

The Evidence Chain: Condition, Issue, Effect, and Problem

The framework proposed in this paper organizes the Background of the Problem as a five-element evidence chain. Quality improvement and problem framing literature supports defining problems through documented conditions, benchmarks, gaps, and consequences (American Society for Quality, 2026; International Organization for Standardization, 2011; Magistretti et al., 2025). Research design literature also supports investigating positive effects when unresolved questions remain about their mechanisms, distribution, sustainability, or boundary conditions (Edmondson & McManus, 2007). The observed condition documents what is occurring in the relevant population, organization, sector, or location. The normative condition establishes an objective and authoritative comparison point. A comparable difference between the observed and normative conditions constitutes the issue. The issue becomes a practitioner research problem when credible evidence associates it with a meaningful negative or positive effect. This evidence chain provides a consistent basis for determining whether an observed difference warrants academic investigation, as illustrated in Figure 1.

Figure 1

Observed Condition, Normative Condition, Issue, Effect, and Problem Relationships



Note: Author-developed synthesis adapted from DMAIC gap logic and problem-framing scholarship (American Society for Quality, 2026; International Organization for Standardization, 2011; Magistretti et al., 2025). In the proposed framework, the normative condition may be temporal, spatial, comparative, or based on standards. The difference between the observed and normative conditions is the issue, and authoritative evidence of an associated positive or negative effect establishes the practitioner research problem.

This paper's decision rule is intended to prevent two reasoning errors. Within the proposed framework, a disparity without a documented effect may be noteworthy but has not yet been established as a consequential problem. Conversely, an undesirable effect without a demonstrated condition gap does not identify the performance discrepancy addressed by the study. The framework therefore requires the background to connect condition, benchmark, discrepancy, and effect with evidence. Although a discrepancy may be expressed quantitatively when appropriate measures are available, the framework does not require the issue to be numerical; a difference may also be established through appropriately operationalized categorical, standards-based, or qualitative evidence.

Observed Condition: Current Authoritative Primary Evidence

For purposes of this paper's evidence-screening standard, current evidence for the observed condition is operationally defined as evidence published or released within the preceding five years. The five-year threshold is an author-proposed screening criterion rather than a universal methodological standard and should yield to governing institutional, disciplinary, regulatory, or data-cycle requirements when those requirements establish a different standard of currency. Under the evidence-screening standard proposed in this paper, evidence of the observed condition should come from authoritative primary sources, defined here as the entity that generated, collected, regulated, audited, or originally analyzed the data. Appropriate evidence may include current government datasets, regulatory surveillance or enforcement data, organizational records, audited reports, original professional-association datasets, and peer-reviewed empirical studies reporting original data. A literature review, news article, consultancy summary, textbook, or advocacy statement may provide context, but this framework does not treat it as the principal proof of the observed condition. This source hierarchy reflects the paper's proposed evidentiary standard and should be reconciled with any governing institutional dissertation requirements.

Currentness alone does not establish the quality of evidence. Federal statistical guidance requires accurate, reliable, and unbiased reporting; identification of the data source and date; documentation of methods; appropriate measures of uncertainty; and disclosure of relevant limitations (U.S. Census Bureau, 2021a, 2021b). Researchers should therefore examine definitions, sampling procedures, data collection techniques, denominators, uncertainty, and limitations before using a source. Applying these screening criteria helps ensure that evidence used to establish the current condition is credible and appropriate.

Normative Condition: Objective and Authoritative

Under this paper's proposed evidence standard, the normative condition is supported by authoritative primary-source data. It is not established through an uncited assertion about what leaders, employees, organizations, or communities ought to do. The paper classifies acceptable benchmarks into four forms, which are described in the following list.

- Temporal norm: current performance compared with the same or a sufficiently comparable population's documented earlier performance.

- Spatial norm: performance in one location, unit, or region compared with another sufficiently comparable location.
- Comparative norm: performance compared with peer organizations, populations, or empirically identified high performers.
- Standards-based norm: performance compared with a current law, regulation, accreditation criterion, professional standard, contractual requirement, or formally adopted organizational threshold.

A normative source is not automatically excluded because it is more than five years old. ISO 13053-1, for example, was published in 2011 but remains a confirmed international standard (International Organization for Standardization, 2011). This continued recognition demonstrates that an older standard may remain an applicable benchmark when its issuing body confirms its current status, while a temporal baseline must necessarily originate in an earlier period. Therefore, this framework permits older sources for normative benchmarks but retains the preceding five-year rule for evidence of the observed condition.

Comparability Is Required

A numerical difference does not automatically constitute a valid gap. Federal statistical quality guidance calls for appropriate data, explicit assumptions, sound analytical techniques, accuracy checks, and replicable documentation (U.S. Census Bureau, 2021a). Accordingly, the observed and normative conditions should measure the same or a conceptually equivalent construct, use compatible units, denominators, and periods, and address comparable populations and settings. When a comparison requires adjustment, the researcher should explain both the adjustment and its limitations. These practices ensure that the identified difference represents a defensible gap rather than an artifact of incompatible evidence.

From Issue to Problem: Documenting the Effect

The researcher should provide authoritative evidence that the identified issue is associated with a meaningful effect. Methodological literature emphasizes that claims should remain aligned with the evidence and research design supporting them (Edmondson & McManus, 2007; Rohrer, 2018). Empirical research has found positive associations between Lean Six Sigma program performance and organizational performance in financial services and has reported higher organizational performance among laboratories implementing Lean or Six Sigma than among those that did not (Craveiro et al., 2023; Vashishth, 2024). The source supporting the effect may differ from those establishing the observed and normative conditions, but its population, constructs, and context must be sufficiently relevant to justify the connection. These findings demonstrate that process conditions can be associated with consequential organizational outcomes, although evidence from cross-sectional designs does not establish causation. This approach ensures that meaningful effects are demonstrated through relevant evidence rather than presumed.

The effect evidence may be negative or positive, but it must establish why the issue warrants investigation. The researcher should report the direction, magnitude when available, population, setting, and limitations of the association. If evidence only suggests a plausible effect, the writing should use appropriately tentative language.

Avoiding Language That Pre-Solves the Problem

The wording of the Background of the Problem usually reveals whether the researcher has already started to provide a solution. Phrases such as due to, driven by, or in order to reduce slip a cause or intervention into a section that is only supposed to describe the observed condition and its documented difference from the normative condition. Volkema (1986) made the same point about syntax, noting that “the object of a statement in general points to a preferred set of solutions” and offering the question “How can we regain a declining market share?” as a statement that already names marketing as the answer (p. 277). Developing this section with writing and support that remain connected to what is observable tends to keep both the presumed cause and the preferred intervention out of the section, which is what the Define and Measure phases require and why DMAIC serves as a useful model for the Background of the Problem. Nothing in this version of building the background explains why the condition exists, which is deliberate, since that explanation belongs to the Analyze work the study has not yet done. Therefore, a cause named before any measurement breaks the sequence and leaves the reader with no way to check it.

Association Is Not Causation

A Background of the Problem should distinguish association from causation. Methodological literature indicates that causal claims require evidence and a research design capable of supporting causal inference, while qualitative inquiry is generally suited to exploring experiences, meanings, contexts, and explanations rather than estimating causal impact (Levitt et al., 2018; Rohrer, 2018; Tomaszewski et al., 2020). Researchers should therefore describe an issue as being associated with an effect, occurring alongside it, predicting it when statistically warranted, or being reported by participants in relation to it when those descriptions accurately reflect the evidence. Terms indicating that an issue causes, affects, or leads to an outcome should be reserved for studies supporting such conclusions. This language preserves alignment among the evidence, stated problem, study purpose, and research design.

Recommended Dissertation Proposal Development

The following sequence converts the evidence chain into a practical process for developing a concise and defensible Background of the Problem. Quality improvement and research design literature supports structured problem definition, alignment among study elements, and restraint in making causal claims (American Society for Quality, 2026; Edmondson & McManus, 2007; International Organization for Standardization, 2011; Rohrer, 2018). Researchers should complete each step before advancing to the formal Problem Statement. Following the sequence can help preserve alignment while preventing unsupported causal claims and premature solutions.

- Establish the broad organizational, industry, or social context using authoritative evidence.
- Define the focal performance indicator or condition and the population, setting, and period to which it applies.
- Present the observed condition using authoritative primary-source evidence released within the past five years.
- Present the temporal, spatial, comparative, or standards-based normative condition using authoritative primary-source data.
- Demonstrate that the two conditions are comparable and quantify or clearly characterize the discrepancy.
- Identify the discrepancy as the issue.
- Present authoritative evidence associating the issue with a meaningful negative or positive effect.
- Explain why the issue-effect relationship constitutes the problem without assuming causation.
- Narrow to the study population and setting, summarize what is known, and identify what remains unknown.
- Transition to the formal Problem Statement, which should concisely preserve the population, setting, issue, and effect.

Evidence Screening Standard

Every source used to establish the problem should undergo an explicit evidence-screening review. The review should address authority, currentness, methodological transparency, comparability, and relevance to the claim being made. The following questions provide a practical screening standard for deciding whether a source should be retained.

- Is this the original producer, collector, regulator, auditor, or empirical analyst of the data?
- For the observed condition, was the evidence released within the past five years?
- For the normative condition, is the benchmark authoritative, applicable, and currently operative or historically necessary?
- Are the construct, population, geography, denominator, unit of analysis, and time period sufficiently comparable?
- Does the source disclose its methodology, data-collection and analysis techniques, uncertainty, and limitations?
- Does a separate authoritative source document the associated effect?
- Does the wording accurately distinguish association from causation?
- Can another researcher retrieve and verify the source and the stated values?

Model Formulation

The following drafting template helps researchers apply the evidence chain to a specific population, setting, and research problem. Researchers should adapt the template to the study's population, setting, constructs, evidence, methodology, and design rather than reproduce it without evaluating the relevance and comparability of the supporting sources.

Current authoritative primary-source evidence indicates that [population or organization] experiences [observed condition, value, location, and period]. In contrast, authoritative primary-source data establish [temporal, spatial, comparative, or standards-based normative condition]. The difference of [amount or clearly characterized discrepancy] constitutes the issue. Authoritative evidence associates this issue with [negative or positive effect]. The issue, when considered in relation to this documented effect, constitutes the problem. Although existing research establishes [what is known], insufficient evidence explains or describes [specific knowledge gap] among [population] in [setting].

Illustrative Application

The following hypothetical example demonstrates how the model formulation can be applied while preserving comparability and distinguishing association from causation. Authoritative primary-source citations are intentionally omitted to simplify the illustration. In an actual Background of the Problem, the observed condition, normative condition, issue, and associated effect would be supported by appropriate evidence and integrated into cohesive, evidence-based narrative paragraphs rather than presented as isolated elements.

Observed Condition

Post-pandemic operational records indicate that a manufacturer's supplier approval process requires an average of 7.8 business days.

Normative Condition

Before the pandemic, the same organization completed supplier approvals in an average of 3.2 business days. This benchmark represents a temporal normative condition because current performance is compared with the same organization's documented performance during an earlier period.

Issue

The difference between the observed and normative conditions is 4.6 business days. The post-pandemic supplier approval process therefore requires 144 percent more time than the pre-pandemic process. This difference constitutes the issue under the framework proposed in this paper.

Associated Effect

In this hypothetical example, organizational records indicate that longer approval times occur alongside delayed material availability, increased administrative labor, and more frequent production

schedule adjustments. These outcomes represent reduced supply chain efficiency. When credible evidence supports these relationships, the issue and its associated effect constitute the practitioner research problem.

Strength of Inference

The effect is described as an association rather than a causal relationship. Comparing pre-pandemic and post-pandemic records does not eliminate alternative explanations, including changes in supplier availability, workforce capacity, demand volatility, product complexity, or market conditions. Thus, language indicating that the process change resulted in reduced efficiency is not supported in this example. A causal claim would require evidence from research designed to address competing explanations, such as a controlled quasi-experimental study.

Illustrative Problem Formulation

Post-pandemic operational records show that the manufacturer requires an average of 7.8 business days to approve a supplier, compared with a pre-pandemic average of 3.2 business days. The difference of 4.6 business days is the issue. Organizational evidence associates longer supplier approval times with delayed material availability, increased administrative labor, and production schedule adjustments. Accordingly, the documented approval delay and its associated effects constitute a practitioner research problem. However, insufficient evidence establishes which retained approval activities are associated with supplier approval time or the nature of those relationships.

Conclusion

The framework presented in this paper adapts Lean Six Sigma gap logic to the development of a defensible Background of the Problem. Quality improvement and research design literature supports its emphasis on authoritative evidence, comparable conditions, methodological alignment, and restraint in making causal claims (American Society for Quality, 2026; Edmondson & McManus, 2007; International Organization for Standardization, 2011; Magistretti et al., 2025; Rohrer, 2018). The framework's principal contribution is an auditable process for distinguishing a documented issue from a consequential practitioner research problem and connecting that problem to a scholarly knowledge gap. Because the framework is a proposed conceptual and drafting tool, its usefulness should be evaluated through application across different practitioner research settings and study designs. Applied carefully, the framework can help researchers produce problem backgrounds that are measurable, researchable, and resistant to unsupported assumptions and premature solutions.

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