

ECONOMY OF FORCE: CONTINUOUS PROCESS IMPROVEMENT
AND THE AIR SERVICE

BY

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APPROVAL

The undersigned certify that this thesis meets master's-level standards of research, argumentation, and expression.

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DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.



DEDICATION

I would like to dedicate this effort to the Airmen, known and unknown, who have tirelessly worked to improve AF processes in many forms and fashions throughout history. Airmen, in many ways, have labored to improve AF utility in support and defense of the nation, and this study of the process of process improvement is a small effort to understand how formal models of process improvement have impacted their contributions. Those contributions have come in many forms, and the overwhelming majority have been well outside of formal process-improvement efforts, but for all of those affected by official models, hopefully this study will assist in making the next iterations of process improvement value-added to the Airmen who execute the processes themselves. At any level, this study has certainly enriched my appreciation for the countless Airmen who serve in so many capacities to make our Air Force better, bit by bit, over time. Thank you.



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ABOUT THE AUTHOR

My selection of this topic is a product of a short career that has had the fortune of a relatively diverse array of experience. I have led and followed in small and large teams around the world as a C-17 evaluator pilot and also in Air Mobility Command's Contingency Response Wing (CRW) where I have had the benefit of working with some of the most incredible Airmen in the world's greatest Air Force from over 30 different career fields. I have seen operations from the planning-and-execution side through five contingency deployments in addition to steady-state operations, and I have also had the privilege of being part of a leadership team deployed to Uganda with 90 Airmen in support of peacekeeping operations in the Central African Republic during the 2013-2014 refugee crisis in South Sudan. My experience is just an infinitesimal sliver of the broad cross-section of the Air Force, but I am not shy to suggest that I have seen many processes that have had the best of intent meet extraordinary resistance—some justly so.

The only known and significant exposure I have had with AFSO21 prior to this study was a few brief discussions with our wing representative after a Unit Compliance Inspection. Our wing was required we use the 8-step problem-solving model to address two significant discrepancies after the inspection. I was the liaison between higher headquarters (HHQ) and wing representatives, and I coordinated the quarterly requirements from HHQ to our personnel. I disseminated the taskings to our wing representatives who returned populated charts and sheets to upchannel back to HHQ as progress reports. I reviewed these reports for 9 months until I changed jobs. While the duration and potential completion of the project is immaterial to the following thesis, the fact that the project took at least 9 months to complete and that I did not know how or if the wing was using Continuous Process Improvement prior to this event piqued my interest.

Upon reflection, the interesting puzzle that presented itself is that throughout 13 years of experience, I have never considered using formal CPI tools to benefit my teams. Under the guidance of a great friend, I used the Air Force Tuition Assistance program to achieve certificates in LEAN and Six Sigma from Villanova University, but the explicit and intentional linkage of those programs to Air Force programs achieved latent application at best. I have never been through a Black Belt or Green Belt course, and if I was asked if I had participated in any formal training at the US Air Force Academy, Squadron Officer School, or Air Command and Staff College I could not have told you when it happened. For a program that offers so much seeming promise, why was it that I never thought to leverage the AFSO21 resources to solve my problems, and why is it that I did not engage my subordinates and leaders to do the same? My reason for selecting this topic for my thesis was to assist in recognizing the merits and demerits of the program, and to see if CPI has promise for me as I progress in my career to positions of greater responsibility. My hope was that I could broaden my horizons to see how I can selectively utilize the tools and concepts of CPI to serve the AF and our Airmen in the best manner possible.

I do not profess to understand the many nuances of CPI after completing this study, but I can clearly confess that the principles and lessons I have taken away from hundreds of discussions and many extended interviews have broadened and enhanced my vision. At no point in the research did I try to become a Green Belt or a savvy practitioner of the many tools that are available (fishbone diagrams, pareto analyses, TAKT time charting, A3 problem solving intricacies, etc). I did try to gain an understanding of how these tools are used to benefit the CPI program as a whole and how they are used to ask the *right questions* and solve the *right problems* to achieve *value-added solutions*.



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I would like to acknowledge several people without whose support and help I would never have gotten off the ground with this study. First, I would like to thank my thesis advisor, Col Michele Johnson, for her unwavering patience and support throughout this journey. Her help has been invaluable to assist in overcoming the many hurdles along the way. I would also like to thank Dr. Stephen Chiabotti for sharing his candid and well-informed perspective to enrich this thesis and make it more accessible to the reader. Furthermore, I extend my thanks to so many gracious individuals for generously donating their time to speak with me about this topic. For a topic that tends to live under a gray cloud for many in the AF, I found almost all of those whom I asked to interview were extremely willing to offer their forthright opinions about CPI and AF culture in general. Without their help, I would have had little to offer in this study.

I would also like to acknowledge the work of three authors whose work allowed me to cut through the first breaking waves and reach calmer waters of study: David Garon with his research report, “Not-So-Continuous Process Improvement: How the Air Force has Failed to Prep its Efficiency Battlefield,” Mark Degenhart with his thesis, Metric Development for Continuous Process Improvement,” and Harold Linnean III with his thesis, “Air Force Smart Operations for the Twenty-first Century: Identifying Potential Failure Points in Sustaining Continuous Process Improvement across the Air Force.” These provided me with an outstanding foundation as someone who knew very little about the process of AF process improvement.

Finally, I want to express my sincere appreciation to my friends and family for their overwhelming support throughout this study. Their continued encouragement and routine pontification as to the merits and demerits of this study was instrumental to complete this work.

ABSTRACT

Air Force senior leaders attempted to implement an array of process-improvement models throughout AF existence—Management By Objectives, Total Quality Management, Quality Air Force, Air Force Smart Operations for the 21st Century, and Continuous Process Improvement—to harmonize efficiency and effectiveness in support of mission accomplishment. Much like a metaphorical dippy bird that overcomes inertia through spirited leadership, it tips, secures a drink, and the vigor that generated initial action wanes; thereafter, the dippy bird regresses toward its initial position. TQM was molded into QAF. After the QAF failure, AFISO21 was released. After AFISO21 stalled it was rebranded into CPI in 2016. CPI, much like the processes it seeks to influence, is a process itself, and therefore, will evolve over time to meet the needs of the AF. While the names have changed, the fundamental principles of process improvement have been relatively constant over the iterations. The voice of the customer, identification of value-added activities, and elimination of waste are at the core of process improvement ideologies, and when employed properly, enable data-driven decisions that enhance mission accomplishment and deliver effects at reduced risk and cost.

This thesis evaluates empirical research questions that generated from this sinusoidal phenomenon; if AF leaders desire a symbiotic relationship between efficiency and effectiveness to maintain relevance as a military force, why has it been so difficult to facilitate cultural transformation to adopt AF process improvement ideologies? In what areas can the AF improve to extract the benefits of this relationship with the contemporary version of AF process improvement—CPI?

Multiple formal interviews were conducted by the researcher, in addition to hundreds of informal conversations, and when blended with a literature review, several themes emerged that assist in answering the research question. Five commonly held AF process improvement perceptions are documented in addition to five lessons learned that provide senior leaders with identified areas that should be considered when attempting to utilize CPI in the AF. When considered and employed in conjunction, these items provide the best opportunity to leverage CPI ideologies and processes successfully for the benefit of Airmen to accomplish AF missions.

INTRODUCTION

Colonel J. F. C. Fuller elevated one principle of war above all others: the law of economy of force.¹ Specifically, he codifies this principle with the following proposition, “Throughout the history of war we discover that, in spite of man’s ignorance of the science of war, the law of economy of force has been in ceaseless operation. The side which could best economize its force, and which, in consequence, could expend its force more remuneratively, has been the side which has always won.”² Despite Fuller’s histrionic phrasing, the concept of utilizing available resources at maximum profit has been a core competency of military leadership and is represented as a modern, AF principle of war. Fuller understood that harmonizing and applying all components of an army to a tangible objective maximized the opportunity for success. In other words, in the process of a conflict, the facets of an army that successfully had an effect on the adversary were value-added, and the ones that were not were wasted.

This fundamental ideology applies to continuous process improvement (CPI) as well. The components of a process that deliver a value-added effect to a consumer of the goods or services generated by the process are useful. Additional elements of a process that do not fit this definition are wasted. In terms of consideration of resources, it is the responsibility of leaders to understand what elements of processes are value added, and which ones are waste.

Method and Structure

My intent in this thesis is to explore the phenomenon of CPI as it relates to the Air Force. There are many aspects of this topic that lend itself to quantitative research (number of trained personnel, dollars saved, manpower positions reduced, etc.), but the significant lessons to be learned from this study lie in the qualitative assessments that hide behind the quantitative data. The Air Force has published countless examples of cost and manpower savings from CPI events, but advertised numerical savings by AF corporate entities do not mean that CPI has been successful in practice. Unlike a

¹ Col J. F. C. Fuller, *The Foundations of the Science of War*. Southampton, Great Britain: The Camelot Press Limited, 1993, 201.

² Fuller, 204.

chemistry experiment that can extract clear causal factors through stoichiometry with clear limiting factors, independent and dependent variables, and finite conclusions, the study of process improvement in a bureaucracy like the Air Force is much more subjective, nuanced, and messy. Many of the processes utilized in the Air Force are service-based versus production-based. Because of this, analyzing the human element and affect is paramount to understanding CPI's utility. As a whole, the methodology used in this study is one of heuristic inquiry. I have embraced Clark Moustakas' methodology and intent on this subject, and I have attempted to do my best to embody the principles he outlined throughout my research.

Moustakas defines heuristic inquiry in the following manner, "A process that begins with a question or problem which the researcher seeks to illuminate or answer. The question is one that has been a personal challenge and puzzlement in the search to understand one's self and the world in which one lives."³ As a disclaimer, pure objectivity and impartiality was impossible throughout this study since I have been a member of the Air Force since the year 2000. Keeping this perspective and potential bias in mind, the subjective connections that resulted along the way would not have been possible without that experience. At all phases of the research while conducting interviews, interpreting the literature, and condensing the information collected into useful concepts, I have attempted to remain neutral and proceed without preconceived ideas of how CPI is being utilized and whether it has been successful. This experience does not dictate a flaw in methodology, and Moustakas highlights the ability for a researcher's background to enhance creative synthesis when stitching interviews, analyses, and perspectives together from seemingly disparate areas.⁴

I have approached this puzzle in a phased manner in accordance with Moustakas' design: "initial engagement, immersion into the topic and question, incubation, illumination, explication, and culmination of the research in a creative synthesis."⁵ Initial engagement consisted of many informal conversations about the topic of CPI and

³ Clark Moustakas, *Phenomenological Research Methods*. Thousand Oaks, CA: Sage Publications, 2010, 17.

⁴ Moustakas, 19.

⁵ Moustakas, 18.

development of contacts that could enrich my understanding. I then built my understanding of the topic through independent research with the available literature and studies that have been completed on the topic of CPI. Once I felt I had a sufficient basis of knowledge to engage in interviews, I started with a wing representative at Maxwell AFB who connected me to many more personnel. These connections snowballed, and I quickly found myself connected to many people in key positions. After a score of interviews or so, I was able to start making connections to the key linkages among the interviewees, the literature, and my personal experience. This fusion resulted in the creative synthesis presented in the pages that follow.

I specifically targeted my interviews to capture a breadth of experience and backgrounds in an attempt to compose the most complete representation possible. This includes newly enlisted and commissioned Airmen, mid-level officers and noncommissioned officers, senior leaders to include general officers, employed civilians, and retired AF members. I interviewed personnel with direct experience in all of the CPI programs since 1980 to include Quality Air Force, AFSO21, and the current CPI model. Additionally, I interviewed qualified Black Belt and Green Belt members who have direct experience working with CPI in 2017 since the rebranding of AFSO21 into the current state. For framing purposes, each person was a unique product of his or her experience, exposure, and understanding, and therefore was able to contribute meaningfully to the study even if the only thing they presented were subjective opinions. My role as the researcher was to acquire knowledge through deliberate questioning based upon my historiographic understanding of the topic, relate the interviewee's unique perspective to his or her context, and then extract those context-specific observations and relate them to personnel with dissimilar context. My conclusions are a product of the blended inputs in an attempt to provide an Air Force-level perspective, not just one from upper or lower echelons or stove-piped niches that may be insulated from broader context.

Limitations

The conclusions and results provided surely have limitations to their applicability. The first area that needs to be considered is the scope and scale of the research. There are many more personnel I could have interviewed to make this a more extensive study. I

have been fortunate to sample personnel from the lowest levels of the Air Force to those working in the office of the Master Process Owner. With that in mind, however, additional interviews from additional locations and with different pools of experience would certainly have enhanced the resolution on my topic. I do not claim to have hit the point of saturation with respect to the information I obtained, but I feel my subject pool was sufficient to achieve the study's objectives. My sincere hope is that if there are gaps in this analysis; then my study will assist in spring boarding further study to fill them.

The goal of this thesis was to evaluate the inculcation of CPI into AF culture, not to troubleshoot and analyze the specific tools of the current model. The current model of CPI is a process itself, and like any process, it should be analyzed and improved on a regular basis. Accomplishing that feat was beyond the scope of this study.

Additionally, the interviewees were advised of my intent to publish a thesis through the Air University prior to commencement of discussion. Even with this public disclaimer, all personnel interviewed were exceptionally candid in their responses. While some personnel had their viewpoints colored by their context, no one appeared to push a specific agenda or to pacify my hunger by feeding me information they thought I wanted or what could be construed as the "party line." Because of this honesty, I have attributed items only with the express permission of the speakers. If there are opportunities for improvement in CPI that resulted from the interviews and anonymity was preferred by the speakers, those thoughts were highlighted in a general nature, by expressing them in a way that was connected among many participants, or by connecting them to concepts in additional literature.

Finally, I think it is essential for me to emphasize in the beginning of this thesis that much of my advocacy does not necessarily reflect support for the status quo but for the overall principles of CPI. There are obvious hurdles and flaws in historic AF paradigms and the current one harbors admitted flaws as well. It is imperative that the reader understands through the narrative that follows that if I support CPI with respect to an idea, then my supported position reflects CPI utilization in an ideal and achievable state and perhaps not in the status quo ante. At the risk of identifying a truism, AF CPI is an iterative model that looks for incremental changes, and several iterations are still required to achieve that ideal state.

Scope

The scope of this study was intended to be generalizable to the broader Air Force community, however some readers may cite the diversity of my pool of interviewees to be insufficient and unrepresentative of their duties. I have kept this in mind throughout my study, and I have attempted to maintain a level analysis that is applicable to the broad AF organization, not just specific MAJCOMs or functional areas. A manpower-personnel squadron in Charleston will assuredly see some context-specific, unique opportunities for CPI that those in a wing commander's action group in Kadena may not. Some readers will resonate with certain principles more than others.

This thesis *is* intended to be an objective analysis of how process improvement programs—with a heavy emphasis on the current model (AF CPI in 2017)—have been fielded and inculcated into the Air Force way of life. The aim is to enrich the current literature with respect to the newest developments in AF CPI and to analyze how the program is meeting its objectives. Does AF CPI increase value and utility for users of Air Force products (mission accomplishment, increased capability, improving Airmen's quality of life, and saving money along the way)?

This thesis *is not* a summary documentation of gripes, complaints, and angst for efficiency models in the Air Force. At a fundamental level, efficiency and effectiveness operate in a symbiotic manner in all things immutably. There is certainly a sliding scale and a continuum of where the appropriate target for efficiency and effectiveness lies, and that is ultimately why we pay our senior leaders handsome sums of money to make judgment calls about how to appropriately manage risk and conduct cost-benefit analyses. There are certainly circumstances where effectiveness will weigh heavier than efficiency and vice versa in a not-for-profit corporation like the AF, but I believe it is easy for Air Force members to forget that we still operate only if the tax-paying citizens of our country to continue finance our profession. After all, one of the chief customers of the Air Force is the American public.

Chapter Outline

The chapter structure of this thesis is intended to take the reader through the journey of process improvement in the AF and answer an empirical puzzle. The pursuit of efficiency and effectiveness in the AF has been through several iterations throughout

the past 30 years. If AF leaders desire efficiency and effectiveness and process improvement has been a continual theme to link the two, why has it been so difficult to facilitate a cultural transformation to adopt process improvement ideologies? What are the hurdles with the AF's current CPI model to achieve this effect?

Chapter 1 exposes senior leaders' intent and purpose with respect to effectiveness, efficiency, and the call to use CPI as a tool to facilitate that linkage. In addition to the testimonies of senior leaders from the Secretary of the Air Force and multiple Chiefs of Staff, hard evidence is presented that codifies that narrative in formal Air Force Instructions (AFI). The AFIs are primarily used to display AF senior-leader buy-in to CPI as opposed to providing irrefutable evidence of value. Chapter 1 includes a brief discussion of what CPI is and highlights the universal applicability of CPI to all organizations regardless of whether they are service or production focused.

Chapter 2 charts the history of process improvement and exposes the tools of CPI—LEAN, Six Sigma, Theory of Constraints, and Business Process Reengineering—with a brief analysis of their contents and applicability. Developing a conceptual understanding of the history of CPI is imperative to understand the evolution of the present AF model and to accurately address some critical concerns with respect to perceptions and utilization of the model. The intent is to provide a basal understanding of the history, not to chart the specifics and intricacies of the evolution.

Chapter 3 highlights commonly held perceptions of AF process improvement from the Airmen's perspective. After hundreds of conversations by the researcher, several threads emerged that merited special exposure. These threads are not necessarily common to all Airmen, but tend to be representative of common frustrations held by Airmen with respect to AF process-improvement models. At a basic level, these perceptions represent items for consideration when attempting to implement and utilize process-improvement ideologies.

Chapter 4 highlights lessons learned from extended interviews and the literature review. This chapter exposes the top five areas of investment, in the opinion of the researcher, to employ CPI effectively. The principles presented in this chapter advocate concepts that will generate return on investment. These concepts were gleaned from interviews of CPI team members, an array of Airmen, and senior AF representatives.

When considered holistically, these concepts of CPI effectively integrate its core, philosophical concepts to produce value-added solutions.

The conclusion highlights areas for future study, provides a holistic summary of the thesis, and evaluates the research question. Areas of future study illuminate the utility and limitations of the CPI model. Specifically, there are many areas that must be analyzed moving forward with respect to the rebranding of AFSO21 into CPI and also to evaluate the myriad of effects from placing CPI formally under the Under Secretary of the Air Force Manpower section. There is a large amount of utility that can be gained from this decision, but there are also many potential drawbacks. I project the call for effectiveness and efficiency as a harmonic pair will continue in the AF of the future; however, how this is accomplished will continue to be a topic of debate. Process improvement models in some form or fashion will be part of that solution to facilitate the linkage between effectiveness and efficiency. Airmen, at all levels, will make judgment calls with respect to which process-improvement methods are used and the corresponding levels in which the derivative tools of those models are employed. If CPI is to become Airmen's method of choice, the model must place improving and easing *mission accomplishment* first, with cost and manpower savings as potential second or third-order effects of employment—not the other way around.

Chapter 1

Codifying the AF Call for Efficiency and Continuous Process Improvement

Where we sit today as an Air Force is, we're too big for the resources available, but far too small for what the nation demands of it and what the Joint Force requires.

—General David Goldfein
Address, American Enterprise Institute,
January 18, 2017

AF senior leaders have demonstrated a desire for efficiency and effectiveness in one manner or another since the AF's creation, but to establish a foundation for the requirement to inculcate efficiency and CPI in the modern AF, this chapter will highlight several clear requests as a proof of principle. This chapter exposes some existing literature on the topic of CPI; branches into key leaders' calls for efficiency to yield effectiveness; and displays formal, contemporary guidance charging all Airmen to improve processes.

The AF translates taxpayer dollars, equipment, manpower, and national strategic intent into effects that consist of “Global Vigilance, Global Reach, and Global Power for America.”⁶ The document bearing the aforementioned title, published in January 2013, highlights USAF capabilities to include five core missions: Air and Space Superiority; Intelligence, Surveillance and Reconnaissance; Rapid Global Mobility; Global Strike; and Command and Control.⁷ Furthermore, these missions are empowered by the USAF vision: “The World’s Greatest Air Force — Powered by Airmen, Fueled by Innovation.”⁸ Where do efficiency and Continuous Process Improvement (CPI) apply to execute that vision? Is there a common linkage between those core missions? With a small amount of creative license, every one of those missions is a result of the processes that generate them. Broken into two broad categories, processes include things that are valued by a customer (value added or something a customer would be willing to pay for) and waste.

⁶ “Global Vigilance, Global Reach, Global Power for America.” January, 2013.

⁷ “Global Vigilance,” 1.

⁸ “Vision.” US Air Force, 21 May 2017, <https://www.airforce.com/mission/vision>.

At a fundamental level, optimizing value generation and solving problems that create waste form the basis of CPI.⁹

The intent of this thesis is to answer a research question based upon an empirical observation. The pursuit of efficiency and effectiveness in the AF has been through several iterations throughout the past 30 years. If AF leaders desire efficiency and effectiveness, and process improvement has been a continual theme to link the two, why has it been so difficult to facilitate a cultural transformation to adopt process improvement ideologies? What are the hurdles with the AF's current CPI model to achieve this effect? Answering these questions has not been easy although several studies have attempted to do so.

Several scholars have attempted to decrypt the puzzle of effectiveness and efficiency in the AF, and while some consistent themes emerge, variance remains in specific solutions. In a May 2008 Wright Flyer Paper, Major Harold Linnean identified five potential failure points for AFSO21: focusing only on culture; the inflexibility of AF structure; weakness in human resource management systems; carryover from midlevel officers who experienced the pitfalls of Total Quality Management (TQM); and failure to craft an effective vision for AFSO21.¹⁰ Captain Mark Degenhart constructed a salient argument in his thesis, "Metric Development for Continuous Process Improvement," that highlights a requirement for organizational leaders to target the most important tasks, translate them to Key Performance Indicators (KPI), and then focus CPI to improve the most important areas and, therefore, increase the AF's "bottom line."¹¹ Major David Garon's research report, "Not-So-Continuous Process Improvement: How the Air Force has failed to prep its efficiency battlefield," highlights several areas for improvement. Specifically, he cites a discrete need for AF efficiency, but he also references a lack of senior-leader commitment, insufficient training, ineffective resourcing for AFSO21, and the requirement to facilitate a cultural shift to a point where the AF "stops thinking of [itself] as a non-profit organization."¹² These works all highlight critical areas for the AF

⁹ "Air Force Smart Operations for the 21st Century: Playbook," May 2008, A-2.

¹⁰ Maj Harold W. Linnean. "Air Force Smart Operations for the Twenty-first Century," v.

¹¹ Capt Mark Degenhart. "Metric Development for Continuous Process Improvement."

¹² Maj David K. Garon. "Not-So-Continuous Process Improvement."

to focus their efforts, and this thesis will build upon this literature to provide an additional reference point in the present.

This thesis builds upon legacy research in several ways and fills some gaps in existing literature. First, this work analyzes CPI after the rebranding from AFSSO21 in 2016. Second, the dynamic of CPI falling underneath the manpower section is substantial and deserves consideration. Third, my research was not limited to senior leaders, and it included a full-spectrum analysis of low-level Airmen, Black Belt and Green Belt members, civilians, mid-level officers, retired Airmen, in addition to senior leaders. This has allowed me to capture insights unreferenced in the previous literature. At a minimum, this thesis was conducted in 2017, and CPI has aged accordingly since the aforementioned studies. Many key arguments for and against PI exist in the narrative that follows, and a brief exposition of those positions will assist in crafting the argument around the research question.

Senior Leader Mindset

Calls for efficiency, innovation, and prioritization of critical tasks have been a common theme of the USAF since its creation, but senior leaders have been especially vocal with respect to this demand throughout the last decade. In 2006, Secretary Wynne announced the rollout of AFSSO21 with his “Letter to Airmen” that boldly stated, “With AFSSO21, we will march unnecessary work out the door—forever.”¹³ General Mark Welsh, the 20th Chief of Staff of the Air Force, routinely remarked in his briefings that we needed to figure out what to stop doing so we could focus on the right things to get the mission done. In 2015, General Welsh stated this succinctly at an Atlantic Council meeting in Washington D.C., “We’re at 82 to 85 percent manning levels in virtually every mission area . . . We can’t reach in someplace and grab more manpower to fix a problem anymore. And so we have got to figure out different ways of using our people in a more efficient way or we will wear them out. And if we lose them, we lose everything.”¹⁴

¹³ Secretary Michael W. Wynne. “Letter to Airmen: Air Force Smart Operations 21.” March 8, 2006.

¹⁴ Stephen Losey, “Gen. Mark Welsh Sounds Alarm on Undermanned Air Force.” AirForceTimes.com, 1 December 2015. <https://www.airforcetimes.com/story/military/2015/12/01/welsh-sounds-alarm-on-undermanned-air-force/76617202/>.

Carrying the torch in 2017, General Goldfein, CSAF 21, highlighted several similar points in his address to the American Enterprise Institute.

When you take a look at our Air Force and look at the state of it today the challenge we face is that most of those missions have grown over time, and if you look at our 70-year history, as missions have expanded the Air Force has grown. And while we've gone through ups and downs, the reality is until about the last 25 years we've had commensurate growth in the service as missions have expanded. But then we've hit a turning point and much of America thinks that they still have the Air Force of 1990. The reality is, if I would have been the Chief in 1990, I'd be speaking to an Air Force of over a million, just shy of a million Active, Guard, Reserves, and civilian Airmen. Today, I've got about 660,000. If I would have been speaking to an Air Force in 1990, I would have had 134 fighter squadrons from which I would deploy 34 forward to fight in Desert Storm. I've got 55 total today across the Active, Guard, and Reserve. If I would have been talking earlier, I would have looked at 11 wings and 36 squadrons to provide deterrent value supporting the NATO Alliance in Europe. Today, three wings, 9 squadrons total. We are just not the same Air Force.¹⁵

The narrative of needing to use resources more efficiently in terms of manpower, material, and money has been consistently clear throughout the last decade. To support this effort, the AF released Air Force Instruction (AFI) 1-2, *Commander's Responsibilities*, in 2014 and overhauled AFI 90-2, the *Air Force Inspection System*, in 2015. A brief description of the relationship between a commander, his or her resources, the inspection system, and CPI assists in conveying the formal position of the Air Force—there is a bona fide desire for AF efficiency to maintain a relevant force in support of national objectives with CPI as a linkage to effectiveness.

What is CPI?

A brief conceptual summary of CPI is pertinent to define key terms that will assist in linking the concepts of this chapter to the research question. More detail is presented in Chapter 2 with respect to specific processes and methods, but a baseline understanding of what CPI represents is required to qualify the remaining items of analysis in this

¹⁵ Gen David Goldfein. Address. American Enterprise Institute, Washington D.C., 18 January 2017. http://www.af.mil/Portals/1/documents/csaf/GoldfeinOpeningRemarks_TheFutureofAmericanAirpower_AEI%2018Jan17.pdf.

chapter. Holistically speaking, CPI examines processes that generate effects to serve a customer. In this respect, the foundation of CPI is built upon a philosophical ideology.¹⁶

AFI 38-401, *Continuous Process Improvement*, provides a description of CPI's purpose and intent, explains the AF's vision for CPI, and itemizes CPI's intended effects.

Continuous Process Improvement (CPI) increases operational capabilities while reducing associated costs by applying proven techniques to all processes associated with fulfilling the Air Force (AF) mission. The goal of Air Force CPI is to eliminate waste while maximizing customer value. Air Force CPI uses several widely accepted process improvement methodologies, including LEAN, six sigma, theory of constraints, and business process reengineering. Key principles contained in these methodologies include improving flow and reducing waste within a process, focusing on factors that degrade product quality, identifying and overcoming process constraints, and redesigning processes. The application of these principles enables Airmen to integrate continuous improvement into day-to-day operations across the full spectrum of AF operations.¹⁷

Further understanding of CPI requires explanation of three key terms: customer, value, and waste. The AFSO21 Playbook defines "customer, value, and waste" in a manner that provides utility to the model, not necessarily for the average leader using the tools. A customer is "someone for whom a product is made or a service is performed."¹⁸

Organizations use processes to generate that product or service, and the critical components of that process generate value. The AFSO21 Playbook defines "value" as "a need the customer is willing to pay for, expressed in terms of a specific required product or service."¹⁹ In Dr. Robert Hamm's book, *Continuous Process Improvement in Organizations Large and Small*, he identifies three key characteristics that define a "value-added" step; "First, the step must be something the customer is willing to pay for. Second, the step must directly change the form, fit, or function of something to produce a product or service. The final characteristic of a value-added step is that it is so important

¹⁶ Jeffrey K. Liker and James K. Franz, *The Toyota Way to Continuous Improvement: Linking Strategy and Operational Excellence to Achieve Superior Performance*. New York, NY: McGraw-Hill, 2011, 9.

¹⁷ Air Force Instruction (AFI) 38-401, *Continuous Process Improvement*, 15 April 2016, 3.

¹⁸ AFSO21 Playbook, N-5.

¹⁹ AFSO21 Playbook, A-1.

that it must be done right every time to successfully produce the intended product or service.”²⁰ Everything else in a process is “waste.” Waste is defined as “anything that adds cost or time without adding value.”²¹ Ultimately, “the goal is to stop performing those activities and processes that do not add to a product or service’s value... [and] many experts estimate that before LEAN is applied, processes are 90% – 99% waste.”²² In harmony, the customer, value, and waste form the foundation of CPI.

Does the AF Really Care if Airmen Use CPI?

References in contemporary AF guidance provide an objective method to display a genuine desire to use CPI across the entirety of the organization. Specifically, the core principles in AFI 1-2, *Commander’s Responsibilities*, and AFI 90-201, *Air Force Inspection System*, reflect direction to tell commanders what to do and subsequently evaluate how they do it.

On 8 May 2014, the AF released AFI 1-2, *Commander’s Responsibilities*, and codified key guidance for AF leaders.²³ Interestingly, many of the core principles from *Continuous Process Improvement* dovetail with the principles outlined for commanders. AFI 1-2 is a direct derivative of Air Force Policy Directive 1, *Air Force Culture*, and AFI 1-2 provides an easy, 6-page reference for AF leaders to prioritize their efforts in support of their units. The opening of AFI 1-2 cites “Commander Conduct” and references Title 10 of US Code to provide a foundation:

All commanding officers and others in authority in the Air Force are required:

- (1) to show in themselves a good example of virtue, honor, patriotism, and subordination;
- (2) to be vigilant in inspecting the conduct of all persons who are placed under their command;

²⁰ Dr. Robert E. Hamm, Jr. *Continuous Process Improvement in Organizations Large and Small: A Guide for Leaders*. New York, NY: Momentum Press, 2016, 9.

²¹ AFSO21 Playbook, A-1.

²² AFSO21 Playbook, A-5.

²³ Air Force Instruction 1-2. *Commander’s Responsibilities*. 8 May 2014.

(3) to guard against and suppress all dissolute and immoral practices, and to correct, according to the laws and regulations of the Air force, all persons who are guilty of them; and

(4) to take all necessary and proper measures, under the laws, regulations, and customs of the Air Force, to promote and safeguard the morale, the physical well-being, and the general welfare of the persons under their command or charge.

-Title 10 USC § 8583²⁴

The narrative of AFI 1-2 branches beyond generalities and provides clear qualitative descriptions of how effective commanders conduct themselves. Under “Commander’s Duties and Responsibilities” item 3.1. is “Execute the Mission” and it states, “Commanders must apply good risk management, accept risk and manage resources to adjust the timing, quality, and quantity of their support to meet the requirements of the supported commander.”²⁵ Paragraph 3.1.3. states, “commanders must, at all times, maintain the ability to command and control their units against all relevant threats and hazards to assure mission success.”²⁶ Fundamentally, AFI 1-2 charges commanders to establish a culture that promotes the ability to generate the proper effects through successful processes. AFI 1-2 continues to explain how to do this in the next section, “Manage Resources.”

AFI 1-2 explicitly tasks commanders to manage the resources entrusted to them effectively, and the instruction parses this task into six key focus areas: manpower, funds, equipment, facilities and environment, guidance, and Airmen’s time.²⁷ A section that specifically applies to process improvement outlines, “*while Airmen are always subject to duty, leaders cannot treat their subordinates’ time as an unlimited resource...Any significant long-term change in mission requirements requiring more man-hours than those authorized by manpower standards should prompt commanders to initiate a request for additional manpower or other mitigating measure (emphasis added).*”²⁸ Because

²⁴ Quoted in AFI 1-2, 2.

²⁵ AFI 1-2, 2.

²⁶ AFI 1-2, 2.

²⁷ AFI 1-2, 2.

²⁸ AFI 1-2, 4.

manpower is a finite resource, the next paragraph of AFI 1-2 references making the unit better through process improvement.

AFI 1-2 expands its scope beyond mere management of the status quo to illuminate the requirement for leaders to generate improvement in their units to maximize utility. Paragraph 3.4, “Improve the Unit,” directly mentions process improvement as a requirement for commanders to be effective. It starts by stating,

Continuous process improvement is a hallmark of highly successful organizations. Wasteful, ineffective or unsafe ways of doing business cannot be tolerated. Commanders must foster a culture of innovation and challenge inefficiencies. A process for identifying and fixing deficiencies should be established and followed. Commanders must make data-driven decisions and manage risk while ensuring their unit’s authorities, missions, plans and goals stay strategically aligned... Commanders are also expected to inspect their units and subordinates to ensure maximum effectiveness, efficiency, economy and discipline of the force are maintained.²⁹

While much more of AFI 1-2 is relevant to process-improvement operations, this exposition will conclude with paragraph 3.4.2. “Process Operations.” AFI 1-2 directly references CPI again by stating, “Leaders must be aware of critical processes, and constantly seek to improve and standardize those processes to produce more reliable results. Remove any bottle-necks or limiting factors and ensure risk management principles are applied during daily operations. All risks, including safety and risks to personnel, should be considered when analyzing and improving processes.”³⁰ This collection of the highest levels of leadership’s direction to all the lower echelons of AF leadership highlights the unique nature of the commander of a unit, and the special trust that is placed in those leaders to make key decisions about how to utilize the resources under their charge.

The important lesson to learn from AFI 1-2 is that commanders are uniquely positioned to make the hard judgment calls to manage resources under their control, lead Airmen, and accomplish the mission. As evidenced by the key AF leaders’ quotes to start this chapter, those resources will rarely be in abundance, and will often be

²⁹ AFI 1-2, 4.

³⁰ AFI 1-2, 4.

insufficient to fulfill all of the supported commander's needs. Airmen often facilitate the connection between resources and effect, and this includes executing processes instilled by leaders. For this reason, commanders are responsible for promoting a culture of process improvement to provide Airmen with relevant, contemporary methods that enable mission accomplishment. There is more to an AF than simple mission accomplishment, however. *How* that mission is accomplished matters greatly. *Efficient* mission accomplishment reduces risk, saves money, optimizes utilization of manpower, and ultimately translates to increased effectiveness. For example, if a process is optimized to be able to deliver cargo to a user with one aircraft instead of two in the same amount of time, this will enable utilization of the second aircraft to deliver more effect to another supported agency. This ideology is a core component of why AF advocates of CPI have labored so furiously to implement process-improvement models to utilize finite resources as efficiently as practical.

There is a well-aged adage that states, “what gets measured, gets done,” and perhaps the following statement to that clause should be “and *how* it gets measured will determine if it gets done right.” In 2014, the AF overhauled its evaluation system in an attempt to make the “how” better by shifting from compliance-oriented inspections to Unit Effectiveness Inspections (UEI). This change was a cultural shift from Inspector General (IG)-directed evaluations that units often prepared for a few months prior to the inspection. UEIs shift to an evaluation system that focuses on judging how commanders assess and lead their units. For example, less emphasis was placed on whether individual Airmen could don chemical defensive equipment in a fixed time, while there was greater emphasis on whether Airmen could effectively manage their programs, identify strengths and weaknesses of those programs, and then take the required actions to sustain or improve those programs.

AFI 90-201, *The AF Inspection System* (AFIS), documents evaluative metrics and focus areas that qualitatively and quantitatively judge the performance of commanders and their units. To encourage commanders to adopt process improvement and enhance efficiencies, the Secretary of the Air Force substantially revised the AFIS and created major graded areas (MGA) that formally require commanders to display efforts to inculcate CPI in their organizations. The following graphic depicts various levels of

Airmen's responsibility and highlights that the AFIS expects all Airmen to be engaged in unit and process improvement:



Figure 1: The Air Force Inspection System (AFIS)

Source: Air Force Instruction (AFI) 90-201, Air Force Inspection System, 23.

The AFIS builds on this concept by breaking out unit responsibilities into 7 MGAs; the pertinent MGAs that relate to CPI are highlighted in Appendix 1. Broadly speaking, these 7 MGAs highlight multiple levels of processes that all Airmen must embrace and manage to sustain efficient and effective organizations. Processes are critical to that effort, and making data-driven decisions to eliminate redundancy enhances a unit's ability to properly accomplish that objective.

Reflecting a maturation of the AFIS, on 27 September 2016, The Inspector General published a guidance memorandum that greatly added rigor to a unit's evaluation with respect to CPI. To determine overall grades for the unit, specific verbiage was inserted that highlighted a requirement for units to have CPI programs; under "INEFFECTIVE," the following items were added as graded areas:

- Resources and programs are not well managed.
- Little to no evidence exists of continuous process improvement efforts.
- Management systems are not evident or are ineffective.

- Most of the units/programs across the Wing have not embraced a culture of critical self-assessment. Problems are not identified, commanders are not aware of issues and solid corrective action plans are not in place.³¹

The takeaway from the verbiage in the guidance memorandum and the AFIS instructions is that leaders are expected to display a concerted, contemporary effort to develop a culture of process improvement in all AF units. The clear identification of units that do not use CPI as being “INEFFECTIVE” demonstrates that linkage clearly.

Interestingly, for areas determined to be deficient, AFI 90-201 encourages units to use CPI to fix the delinquent areas. Paragraph 1.5.11.3 states that “Functional Managers will . . . Take appropriate actions to correct identified issues or assist affected units in correcting identified issues.”³² Furthermore, those entities “should employ Continuous Process Improvement methods.”³³ In summary, the AF expects units to use CPI principles to troubleshoot their problems prior to inspection, and if deficiencies exist after inspection, CPI should be used to correct the delta between the deficient and desired states.

Summary

Air Force leaders have demonstrated a bona fide request for effectiveness and efficiency, and CPI is a linkage with the potential to facilitate that request. The leadership standards outlined in AFI 1-2, *Commander's Responsibilities*, and AFI 90-201, *The Air Force Inspection System*, effectively codify senior leaders' desire to implement process improvement and resource management. The intent is to implement sustainable processes that survive beyond individual leaders and team members by making data-driven decisions that have sustainable effect. Facilitating customer-focused organizations greatly assists in achieving this effect.

CPI is largely about the “voice of the customer” and all organizations, service or production based, have customers and processes. There are value-added steps in each

³¹ Secretary of the Air Force/Inspector General, “Air Force Guidance Memorandum - AFI 90-201, *The Air Force Inspection System*.” September 27, 2016.

³² Air Force Instruction (AFI) 90-201. *The Air Force Inspection System*. Change 1, 11 February 2016, 18-19.

³³ AFI 90-201, 19.

process, and the customers of the process define what is valuable. Everything else is classified as waste. Organizations may exercise judgment to retain this waste for several reasons to include checks and balances, mandates by United States Code, or to satisfy additional customers of the organization; however, recognition of waste in a process is imperative to understand where and how a process could be improved. Multiple senior leaders have asked Airmen to innovate and develop methods to be more efficient while delivering effect because of finite resources, reduction in manpower, and diverse mission sets in support of US national policy objectives. Conceptually and in practice, continuous process improvement is a tool with large amounts of potential to assist in successfully answering that call.



Chapter 2

What is CPI and Where did It Come From?

It is not enough to do your best; you must know what to do, and then do your best.

-W. Edwards Deming

The concept of process improvement is certainly not novel, and a brief exposition of CPI's journey assists in understanding the present state. The AF has been through several iterations of formally introduced process-improvement models, and somewhat like a metaphorical "dippy bird," the AF has dipped its head into the water glass for a drink just to regress thereafter. Time and time again the formal models introduced failed to achieve a "tipping point" when "an epidemic or innovation 'takes off' and needs no further stimulation from outside forces or influences."³⁴

This chapter highlights significant moments in the history of process improvement inside and outside of the AF, and it concludes by briefly explaining the four key tools of the current AF process-improvement model. This chapter begins by examining one vignette of a significant process-oriented evolution with Henry Ford's development of the moving assembly line. Specifically, the important takeaway is that Ford recognized that the process of sequential, complete assembly was insufficient to meet his goals of mass production. Phrased another way, his process was not efficient enough to achieve the effects he was looking for in his organization. This chapter then progresses to highlight influential architects of process improvement, Shewhart and Deming, and their core beliefs that establish the foundation of CPI. A brief analysis of Total Quality Management (TQM) and Quality Air Force (QAF) is presented with some of the core ideologies of Bill Creech. Next, an introduction of AFSO21 is shown to conclude with the rebranding of AFSO21 into the current state of AF process improvement, CPI. As a concluding element of chapter 2, there is a brief explanation of the four components of CPI: LEAN, Six Sigma, Theory of Constraints, and Business Process Reengineering.

Where did process improvement come from?

³⁴ Charles Kadushin, *Understanding Social Networks: Theories, Concepts, and Findings*, New York, NY: Oxford University Press, 2012, 136.

In 1907, Henry Ford was an entrepreneur with enormous vision; he wanted to make an affordable “motor car for the great multitude,” and evolution of legacy assembly systems was required to achieve this task.³⁵ A PBS article explains his conundrum succinctly; “Ford realized he'd need a more efficient way to produce the car in order to lower the price. He and his team looked at other industries and found four principles that would further their goal: interchangeable parts, continuous flow, division of labor, and reducing wasted effort.”³⁶ Ford commissioned the expertise of Frederick Taylor to conduct time-and-motion studies of the legacy process, and after five years of refinement, a fundamental shift in the traditional paradigm was born—creation of the moving assembly line.³⁷

On 1 December 1913, Henry Ford revolutionized the automobile manufacturing industry by implementing a radical, reengineering of his process with the moving assembly line. Prior to Ford’s innovation, a team of workers would lay out the pieces for a car and put them together in a step-by-step manner that generated a fully completed automobile in 12 hours. Ford’s teams “broke the assembly of a Model T into 84 discrete steps, and trained each of his workers to do just one step.”³⁸ After the introduction of the assembly line, this new process reduced the time of automobile assembly to just 2 hours and 30 minutes per vehicle.³⁹ Ford achieved an economy of scale that supported his vision, and he used a concept that would be characterized in today’s terms as “Business Process Reengineering” to accomplish that task. In the early 1900s, Ford utilized many of the same principles that are still used today in CPI.

In 1931, Walter Shewhart published his book, *Economic Control of Quality of Manufactured Product*, and it outlined several core competencies of process improvement that inspired generations that followed.⁴⁰ Shewhart developed many

³⁵ “Ford’s Assembly Line Starts Rolling.” *History.com*. <http://www.history.com/this-day-in-history/fords-assembly-line-starts-rolling>.

³⁶ “Ford Installs First Moving Assembly Line 1913.” PBS.org.

³⁷ “Ford Installs First Moving Assembly Line 1913.” PBS.org.

³⁸ “Ford’s Assembly Line Starts Rolling.” *History.com*. <http://www.history.com/this-day-in-history/fords-assembly-line-starts-rolling>.

³⁹ “Ford’s Assembly Line Starts Rolling.” History.com.

⁴⁰ Gen Bill Creech. *The Five Pillars of TQM: How to Make Total Quality Management Work for You*. New York, NY: Truman Talley Books/Plume, 1994, 201.

techniques that harnessed the power of data-driven decisions to include Statistical Quality Control (SQL), Acceptable Quality Level (AQL), and the Plan-Do-Check-Act (PDCA) cycle that “provides rigor to the examination, and the control of both the product and the process.”⁴¹ These tools were enormously influential in inspiring one of Shewhart’s seminal protégés, Dr. W. Edwards Deming.

Deming’s name and the concept of process improvement go hand-in-hand, and according to several scholars, his influence was instrumental in rebuilding a devastated Japanese economy after WWII. Deming learned many of the ideas of statistical analysis and process improvement from Shewhart while working at Bell Telephone Laboratories, and Deming put his mark on the world when he left for Japan as a statistician to improve the census.⁴² In *The Toyota Way*, Liker and Franz attribute Deming’s instruction, with his PDCA, data-driven methodology, for the dramatic turnaround of the Japanese manufacturing industry from “rank amateurs to the best quality in the world.”⁴³ Liker and Franz also state that the “best Japanese companies resonated with PDCA as a way of thinking.”

- Deeply question every process; bring problems to the surface and carefully define them.
- Understand the root cause
- Develop countermeasures that are viewed as provisional until proven
- Plan implementation in great detail (all *plan* at this point).
- Run the experiment (*do*)
- Closely monitor and analyze what is going on in the experiment (*check*).
- Learn from what happens and turn that into further action (*adjust*).⁴⁴

⁴¹ Creech, 201.

⁴² Liker and Franz, *The Toyota Way to Continuous Process Improvement: Linking Strategy and Operational Excellence to Achieve Superior Performance*. New York, NY: McGraw-Hill, 2011, 19.

⁴³ Liker and Franz, 19.

⁴⁴ Liker and Franz, 19.

In fact, Deming's instruction was so influential to the revolutionary transformation of Japanese industry that the Union of Japanese Scientists and Engineers (JUSE) created the "Deming Prize" in 1951 that is awarded for superior statistical application of quality efforts in industry.⁴⁵ This award is still bestowed upon leading process-improvement innovators around the world today (the 2015 grand prize was awarded to an Indian company, National Engineering Industries Limited).⁴⁶

In 1954, Peter Drucker published a book, *The Practice of Management*, and outlined a familiar phrase of the McNamara era—leaders must "manage by objectives (MBO)."⁴⁷ Secretary of Defense McNamara latched on to this idea and proceeded to use a similar ideology to guide his management of the Vietnam conflict. A vital lesson learned from Vietnam is that data-driven decisions are effective only if you are using data in the proper manner. A 2009 article from *The Economist* captured one of Drucker's reflections after publication of the book, "MBO is just another tool. It is not the great cure for management inefficiency . . . Management by objectives works if you know the objectives: 90% of the time you don't."⁴⁸ In an attempt to rectify the problem of focusing on the wrong things, US Executive leadership continued the journey to establish a solution that bridged effectiveness and efficiency shortly thereafter.

On 25 February 1986, President Reagan issued executive order 12552 that charged all executive departments and agencies to create formal programs to improve the productivity, and the DoD and AF established variations of TQM to answer the president's call. Specifically, the president's executive order 12552 stipulated, "There is hereby established a government-wide program to improve the quality, timeliness, and efficiency of services provided by the Federal government. The goal of the program shall be to improve the quality and timeliness of service to the public, and to achieve a 20

⁴⁵ Anthony Coppola, "Total Quality Management (TQM), an Overview." September 1991. Rome Laboratory: Air Force Systems Command, 2.

⁴⁶ "2015 Deming Prize Winners." *The W. Edwards Deming Institute*. 13 October 2015. <https://blog.deming.org/2015/10/2015-deming-prize-winners/>.

⁴⁷ "Management by Objectives." *Economist.com*. 21 October 2009. <http://www.economist.com/node/14299761>.

⁴⁸ "Management by Objectives."

percent productivity increase in appropriate functions by 1992.”⁴⁹ The Department of Defense released the “Total Quality Management Master Plan” in August 1988, and established long-term goals (between 3-7 years) as follows:

- Establish TQM as a way of life
- All DoD personnel directly doing continuous process improvement
- Widespread Defense industry implementation of continuous process improvement
- Congressional understanding of and support for TQM⁵⁰

The AF implemented various forms of TQM that embraced the call for data-driven decisions to improve effectiveness and efficiency. Anthony Coppola (1991) highlighted several AF, TQM definitions in a study of the program’s implementation:

- The Air Force Systems Command put out a TQM pamphlet in 1990, which defined it as:

"A leadership philosophy, organizational structure, and working environment that fosters and nourishes a personal accountability and responsibility for quality and a quest for continuous improvement in products, services, and processes.
- The Air Force Electronic Systems Division's pamphlet defined TQM as:

"....The adoption of a customer-oriented operating philosophy committed to excellence in our products, services, and relationships through the total participation of all our employees in the constant improvement of all processes."
- The Army Material Command uses this concise definition:

"A philosophy of pursuing continuous improvement in every process through the integrated efforts of all members of the organization."⁵¹

⁴⁹ “Executive Order 12552 -- Productivity Improvement Program for the Federal Government.” ReaganLibrary.archives.gov. 25 February 1986.
<https://www.reaganlibrary.archives.gov/archives/speeches/1986/22586d.htm>.

⁵⁰ “Total Quality Management Master Plan.” *Department of Defense*. August 1988.
<http://oai.dtic.mil/oai/oai?verb=getRecord&metadataPrefix=html&identifier=ADA355612>, 3-4.

⁵¹ Coppola, 10.

As evidenced by the differences across the services as they attempted to implement the efficiency model, there was a lack of standardization across the Department of Defense. Additionally, the AF attempted to implement TQM policies, but it found varied levels of success along the way.

A 1993, Government Accountability Office (GAO) memorandum highlighted the meager acceptance of TQM after its introduction. The report stated that 98 percent of AF installations were in the status of “starting or already implemented” TQM with a maturing status, but there were significant barriers to cultural inculcation.⁵² See Figure 2 for a graphical representation of the maturity of TQM efforts as reported by AF and federal agencies to the GAO.



⁵² “TQM Implementation in the Air Force,” Government Accounting Office, 30 March 1993. <http://www.gao.gov/products/GGD-93-18R>, 3.

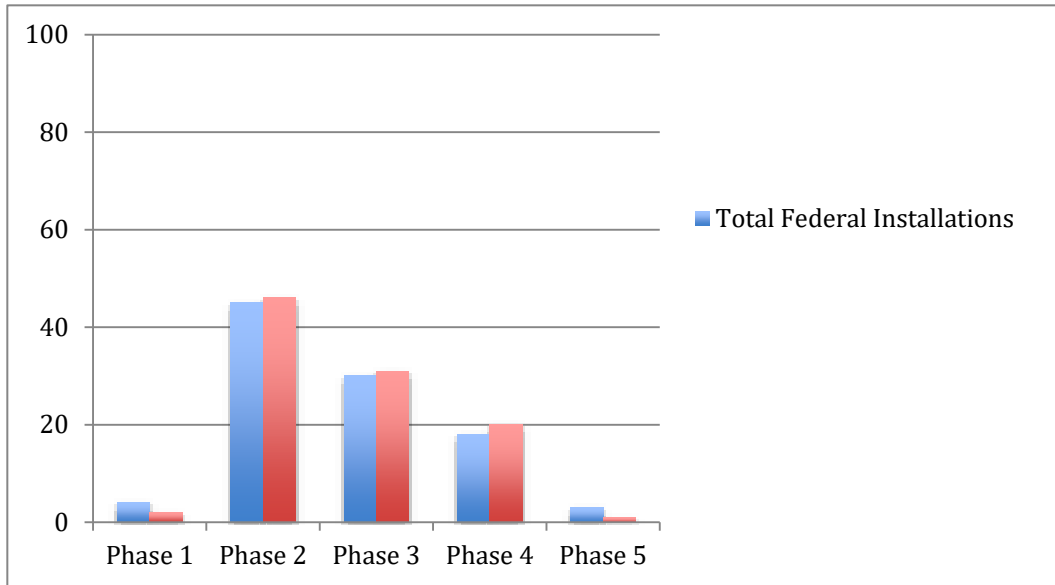


Figure 2. Percent of Organizations with TQM Efforts Listed by “Maturity Level”

Source: Author’s Reproduction of Chart in “TQM Implementation,” 4. (1993)

Note: Values are approximations extracted from original

Additionally, the GAO report highlighted survey results that identified the following “barriers to implementation” as shown in Figure 3.

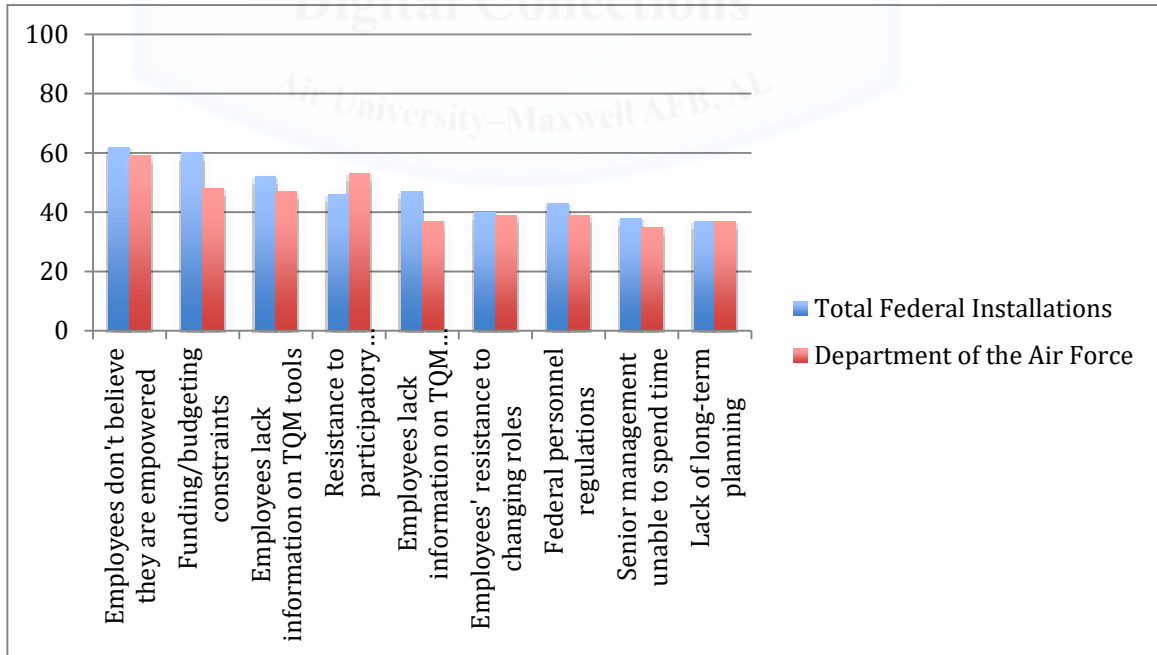


Figure 3. List of Installation’s Major Barriers to Implementation

Source: Author’s Reproduction of Chart in “TQM Implementation,” 10. (1993)

Note: Values are approximations extracted from original

Leaders and experienced practitioners in the AF exercised words of caution while implementing these policies. General Bill Creech (retired) did this in a 500-page book.

Creech, a regarded change agent for the AF, published a book in 1994, *The Five Pillars of TQM: How to Get Total Quality Management to Work for You* that downplayed some of the finer components of TQM in lieu of examining how effectiveness and efficiency apply to AF organizations holistically. In Creech's introduction he states, "I'm not suggesting there are truly bad forms of TQM. If there are, I haven't seen them. But I've seen many incomplete forms that fall well short of producing substantial improvements. Those results are particularly anemic when compared to the quality and productivity improvements, which the most savvy practitioners prove are possible. However, those forms of incomplete change are so widespread, and are yielding such minimal results, that we're in danger this particular management crusade could become another of America's many short-lived crusades of the past."⁵³ Throughout the early 1990s, the AF repackaged TQM into the Quality Air Force (QAF) program, which had limited success for a host of reasons.

QAF had limited success in the 1990s, and after the culminating tragedy of 9/11, calls for efficiency faded into memory. Lt Col Graham Rinehart astutely points out in his article, "How the Air Force Embraced 'Partial Quality' (and Avoiding Similar Mistakes in New Endeavors)," that although private industry was attempting to remain relevant amongst competition in the civilian sector, the Air Force was quite content touting their substantial victory in Operation Desert Storm.⁵⁴ Rinehart also notes that there was a discrete lack of mission focus in the majority of TQM/QAF initiatives. Rinehart states, "Could ideas from the quality movement apply to mission areas? Certainly—but how many people tried? Instead of applying Ishikawa charts (better known as "fishbone" diagrams) and force-field analyses to problems in our tactics, techniques, and procedures

⁵³ Creech, 4-5.

⁵⁴ Lt Col Graham Rinehart, "How the Air Force Embraced 'Partial Quality,'" *Air and Space Power Journal*. Winter 2006. Retrieved from Maxwell AFB Archives. <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj06/win06/rinehart.html>.

(TTP), we studied where to put the copy machine or how to fill out forms better.”⁵⁵ In many ways collection of the data and the process of process improvement were equally important, if not more so, than the effects. QAF gradually faded away throughout the remainder of the 1990s, and after 9/11 it all but disappeared. The demand for efficiency to produce effects, however, did not.

Throughout the early oughts, the AF embraced new challenges as it tried to remain relevant and capable as a fighting force. The F-22 program was woefully over budget, plans to build the F-35 were in place with large projected costs, and Secretary of the Air Force, James Roche, and Chief of Staff of the Air Force, General John Jumper, once again rejuvenated the call to overhaul the core principles of the Air Force to resource an AF of tomorrow. This resulted in a document called the “U.S. Air Force Transformation Flight Plan” that called for a re-balancing of America’s armed forces and adapting to a new era beyond the Cold War paradigm.⁵⁶ AF leaders planned to dramatically reduce the end strength to finance the recapitalization effort, and this resulted in another call for efficiency—AFSO21 was born.

In late 2006, Secretary of the Air Force, Michael Wynne and Chief of Staff of the Air Force, General T. Michael Moseley’s released a letter to Airmen calling for the embrace of a new process-improvement model, AFSO21, that took the best parts of previous efficiency models and tailored them to the unique requirements of the AF. The vision of AFSO21 states, “Improvements must be centered around the core missions we, as Airmen, are responsible for conducting—specifically to maintain the asymmetric advantages and capabilities the Air Force delivers in air, space and cyberspace. We need to ensure we are also driving efficiencies and improvements across-the-board.”⁵⁷

Specifically, AFSO21 was intended to have five desired effects (emphasis in original):

- Increase *productivity* of our most valued asset—Our Airmen
- Significantly increase critical *asset availability*
- Improve response time and decision making *agility*

⁵⁵ Rinehart. “How the Air Force Embraced ‘Partial Quality.’”

⁵⁶ “The U.S. Air Force Transformation Flight Plan: 2004,” HQ USAF, Foreword.

⁵⁷ “Air Force Smart Operations for the 21st Century: Playbook.” May 2008. Version 2.1. A-1.

- Sustain *safe and reliable* operations
- Improve energy efficiency⁵⁸

These focus areas were intended to deliver cumulative and multiplicative effects to generate significant financial savings, reduce risk, minimize cost, and eliminate redundant processes. There were highly published success stories from units around the AF, but AFSO21 still did not receive enough buy-in from the majority of Airmen to reach a tipping point and become a standardized part of AF culture. In 2016, another rebranding took place that shifted focus of CPI in the AF and formally placed the program under the Under Secretary of the Air Force Manpower Directorate.

The rebranding of AFSO21 did little to change its founding principles, but it removed the “AFSO21” name from AF CPI and structurally shifted the program under the manpower office. On 15 April 2016, AFI 38-401 was released and provided official AF guidance and rigor to the CPI process and allocated responsibilities to AF agencies for the monitoring and development of the program. The goals of CPI are similar to predecessors, as illustrated by an excerpt from AFI 38-401,

The goal of Air Force CPI is to eliminate waste while maximizing customer value. Air Force CPI uses several widely accepted process improvement methodologies, including LEAN, six sigma, theory of constraints, and business process reengineering. Key principles contained in these methodologies include improving flow and reducing waste within a process, focusing on factors that degrade product quality, identifying and overcoming process constraints, and redesigning processes. The application of these principles enables Airmen to integrate continuous improvement into day-to-day operations across the full spectrum of AF operations.⁵⁹

The core tool of AFSO21, the 8-step problem solving process, remained unchanged with the exception of renaming it as the AF Practical Problem Solving Model (PPSM).

What are the tools?

⁵⁸ “AFSO21 Playbook,” A-2.

⁵⁹ Air Force Instruction (AFI) 38-401. *Continuous Process Improvement*, 15 April 2016, 3.

In addition to understanding the lineage of CPI, a brief conceptualization of the four components of CPI assists in understanding how it can be used in the AF. This section highlights the definitions of LEAN, Six Sigma, Business Process Reengineering, and the Theory of Constraints. For the purposes of illustration, the concept of performance-report completion is used to delineate how the various tools can be employed.

LEAN is a tool used to increase the amount of *efficiency* in an established process. As defined by AFI 38-401, “[LEAN is] a CPI methodology focused on work flow, customer value, and eliminating process waste; unique from traditional process improvement strategies in that its primary focus is on eliminating non-value added activities.”⁶⁰ An example of this would be shrinking the time it takes to process performance reports from 18 days to 8 days.

Six Sigma is a tool used to reduce the amount of defects in a process and increase the *effectiveness* of a process. As defined by AFI 38-401, “[Six Sigma is] a disciplined, data-driven methodology for process improvement that focuses on satisfying customer requirements while minimizing defects by reducing waste and controlling process variation.”⁶¹ An example of this would be to reduce or eliminate the number of errors on a performance report from the first time it was submitted until final completion.

Business Process Reengineering is a holistic analysis of what a process is used for with the potential of restructuring, replacing, or eliminating a process. As defined by AFI 38-401, “[Business Process Reengineering is] a comprehensive process requiring a change in the fundamental way business processes are performed. Business Process Reengineering/Process Reengineering identifies unnecessary activities and eliminates them and wherever possible, automates manual procedures.”⁶² An example of this with reference to performance reports would be to transition the method of completion from a paper format to electronic completion.

Theory of Constraints is a tool used to identify the limiting factors or bottlenecks in a process that inhibit efficient and effective completion of the process. As defined by

⁶⁰ AFI 38-401, “Continuous Process Improvement,” 18.

⁶¹ AFI 38-401, “Continuous Process Improvement,” 18.

⁶² AFI 38-401, “Continuous Process Improvement,” 18.

AFI 38-401, “[Theory of Constraints is] a systematic approach to optimize resource utilization by identifying, exploiting, subordinating, elevating, and reassessing constraints in the process. Scientific principles are applied as a set of logical-thinking processes to develop transformational, breakthrough business solutions. A constraint is any resource with capacity less than the demand placed upon it. Theory of constraints attacks barriers to output.”⁶³ An example of this concept with respect to performance report completion would be to identify the limiting agency that is holding up a process—for example, senior rater signature—and develop methods to increase the ability for the limiting agency to increase the throughput.

Summary

The call for effectiveness and efficiency has been common throughout the history of the AF, and the AF has drawn upon the principles generated by civilian agents such as Shewhart and Deming to produce models for the AF. The method and the brand name of process-improvement efforts has shifted over time, but the overwhelming majority of the concepts that are contained within CPI methodologies are relatively consistent. The hurdles have remained somewhat consistent as well. A general theme that links all efficiency efforts together is that there was a concerted attempt to implement efficiency models in representative agencies, but adoption was sluggish because of lack of buy-in and a general belief that the efforts were not mission-focused. The current tools of CPI—LEAN, Six Sigma, Business Process Reengineering, and Theory of Constraints—have utility for process owners to analyze existing processes and modify them accordingly to become better, but they will be successful only if Airmen understand the utility of the tools provided, are resourced to use the tools, and are able to use the tools to generate mission-oriented effects that directly translate to positive results with respect to mission accomplishment.

⁶³ AFI 38-401, “Continuous Process Improvement,” 17-18.

Chapter 3

Perceptions of AF Process Improvement

The purpose of this chapter is to highlight core themes of CPI as exposed by this thesis's research. Throughout the research process, to include hallway conversations, the literature review, and eventually, in depth interviews with subject-matter experts, a few common themes emerged. Some threads seemed to be almost universally accepted, others displayed tentative concurrence, and other areas displayed divergence in intent and opinion with respect to CPI's application. As a researcher, my purpose was to consolidate that data and distill it into meaningful information that is value-added in the eyes of the thesis's customer, the reader. This chapter exposes commonly held perceptions of AF process improvement as gleaned by the researcher. All AF members do not harbor these perceptions, but the recurring nature of these themes throughout the researcher's formal and informal discussions merits discrete exposition prior to highlighting the core lessons learned from research. Understanding Airmen's common perceptions establishes a foundation for implementing the lessons learned that are presented in Chapter 4. This chapter begins with a brief exposition of specific items related to the methodology—number of interviews, levels of analysis, and scope. The chapter then progresses to identify five common perceptions of CPI as it relates to the AF and AF members' respective organizations. These perceptions are representative of the most common areas identified by the researcher as to why Airmen express reservation to buy-in to CPI principles in their organizations.

Brief exposition of methodology

This study began in an attempt to answer an empirical set of research questions. There have been many calls for effectiveness and efficiency in the history of the AF, and if AF leaders desire this symbiotic relationship to maintain relevance as a military force, why has it been so difficult to facilitate a cultural transformation to adopt process improvement ideologies? In what areas can the AF improve to extract the benefits from this relationship?

After hundreds of informal conversations with fellow Airmen across the rank spectrum, noncommissioned officers to general officers and civilian equivalents, common themes emerged to focus the research. The original intent of this thesis was to

analyze the cultural split between the stated goals of AFSO21—1) results oriented, 2) total Air Force involvement, and 3) sustained and deliberate application—against the actual usage and employment.⁶⁴ Almost universally, most Airmen could not identify the AF’s efficiency paradigm and problem-solving model—to include myself since the AFSO21 program was rebranded to CPI in 2016. When asked about how members saw CPI fitting into their everyday lives, the results of those conversations varied significantly. Senior leaders resonated with a need for efficiency, but many saw CPI as a specific tool to optimize processes that had tangible outputs such as depot management. Lower-level Airmen, tended to see less value in CPI because of senior leader buy-in, resource availability, and expected marginal return on investment from the process. There was one notable aberration, however. Members who were indoctrinated into the CPI mindset and philosophy—squadron commanders, general officer equivalents, doctrine developers, the master process owner, Black Belts, and Green Belt members—tended to see tremendous value in CPI principles. These discussions led the research in a direction beyond a mere identification of a split between senior leaders and practitioners to an attempt to develop understanding of a bigger issue—“why” that divergence of opinion exists and if there are ways CPI could be used more effectively.

The literature review and extended interviews with AF members assisted greatly in answering the question of why divergence exists, and they also helped identify potential areas for improvement. To assist the reader in understanding the scope of interviews, the following table displays a list of the interviews conducted.

⁶⁴ “Air Force Smart Operations for the 21st Century: Playbook.” May 2008. Version 2.1. A-1.

Table 1. List of Interviewed Members

Level	Number of Interviews
Headquarters or above	2
General Officer	3
Wing/Group Representative	4
Black Belt	5
Green Belt/Team Member	3
Other	4
Enlisted	2
Officer	4
Civilian	11

Source: Author's original work

Additional interviews would certainly have led to greater resolution with respect to analysis; however, while 100 percent saturation was not achieved in this study, these interviews, when used in conjunction with the literature, led to sufficient representation to establish the results presented. The remainder of this chapter condenses those interviews and research into a manageable set of observations and recommendations for Airmen who intend to generate value-added solutions with CPI. Additionally, this chapter highlights suggestions to promote the culture of process improvement to a point where it provides true utility across the AF, not only in niche circles of true believers.

PERCEPTIONS OF AF CPI

This section identifies common perceptions of AFSO21/CPI to establish a foundation for the suggestions in the next chapter. It is important to emphasize that all AF members do not perceive the following CPI elements in these ways, but research and interviews with a diverse array of AF members has led to these commonly accepted principles at a significant enough level to merit inclusion. At a minimum level, these “perceptions” are highly suggested areas for consideration by practitioners of CPI as indicated by subject-matter experts and CPI literature.

Perception: “My unit does not have customers. Therefore, ‘customers’ cannot dictate what is value-added in my process”

In many ways, it is easy to get lost in the semantics of CPI and summarily discount CPI’s foundations as a whole when looking at organizations through a business lens with “merchants” and “customers.” Several people think that if no monetary currency changes hands in their organization, the concept of the customer does not apply. In addition to this, some Airmen actually view the concept of customers in the AF as a threat to successful mission accomplishment. An interview with a senior civilian at the Air University highlighted some of the reservations Airmen have with a customer-focused mentality by stating, “I prefer to use the word ‘stakeholders’ instead of ‘customers’ because when we went through the Quality Air Force period, everyone on the base thought they were the customer. Then all those organizations thought everyone should be supporting them instead of working toward the higher-level goals of the Wing. It just didn’t work.”⁶⁵ This viewpoint has a significant amount of merit, but the failure in this example lies in application instead of the principle of customer-driven value. The customer is an end-user of the product or service provided, and in organizations that have multiple sub-organizations working in harmony to deliver a product or service, leadership is essential. Proper leadership ensures sub-organizations understand the ultimate purpose of a process is to serve the customers—the users of the process’s goods and services—not to satisfy the whims of internal agencies.

Another common perception that yields reservation from Airmen with respect to a customer-focused paradigm is that customers may not understand and appreciate the nuances in an organization’s process. This can become an extraordinary challenge when using CPI terminology that characterizes steps in a process that do not add value as waste. Dr. Hamm describes this difficulty by stating, “Try telling an employee that any steps he or she accomplished as part of a process for the past 2 or 3 years are non-value-added and thereby are considered waste. That employee has grown accustomed to a very specific way of doing things. She is comfortable. As a result of years and years of habit, she executes processes flawlessly . . . She probably doesn’t think of value but she knows

⁶⁵ Interview with Senior Civilian at AU, 7 February 2017.

that every step in the process is essential to the product or service provided.”⁶⁶ A customer-focused paradigm assists in identifying areas that are truly value-added; this makes it easier to communicate with team members and implement modifications to a process. Most processes need to evolve with time to embrace technological advances, changes in rules and regulations, or to meet customer’s needs that may have shifted since the process originated. Leaders and process owners may elect to maintain waste in a process, and examining processes through the lens of the customer allows leaders to make informed decisions as to why they are inefficiently committing resources to a process that the end user would not pay for. The customer values effect, not necessarily all of the risk-mitigation strategies that translate to effect.

All organizations in the Air Force should have a purpose and a function that is valuable in some way to serve the interests and needs of the broader organization. If we identify an organization or process that does not have a customer of some kind, then that organization or process does not have a purpose and should be eliminated. This concept applies to large units at the MAJCOM level and above and at the smallest levels to include the next staff meeting attended by the reader. I have found it quite interesting that many of those who stated, “we don’t do CPI here, and we don’t have customers since we’re in the Air Force” become extremely frustrated when they do not receive good customer service from units they are working with in the same organization.

Perception: My organization operates for effect, not efficiency

There is truth in the statement that Air Force organizations operate for effect as a not-for-profit entity in support of national policy objectives; however, some leaders and process owners have been too eager to adopt the idea that effect is the *only* objective and, therefore, efficiency is irrelevant. Efficiency can be a tremendous force multiplier to enhance effectiveness since efficient organizations have the ability to generate effects at greatly reduced risk, cost, and duration. Moreover, responsible leadership requires using resources judiciously in pursuit of results.

⁶⁶ Dr. Robert E. Hamm, *Continuous Process Improvement in Organizations Large and Small: A Guide for Leaders*. New York, NY: Momentum Press, 2016, 9.

In general, the AF has continually suffered from an overwhelming demand for capability with an insufficient capacity to fulfill all of the wishes of supported commanders. In fact, some of the greatest friction has taken place when resources were insufficient to support those requirements. Creative thinking and process optimization have the ability to make this better, though. The concept of Centralized Control and Decentralized Execution was borne directly from the requirement to generate as much capacity as possible with limited resources. This tenet enables senior leaders to prioritize allocation of limited assets in the most needed areas for supported commanders. For example, the Tanker Airlift Control Center (TACC) retains centralized control of strategic assets, such as the C-17, and distributes their effects according to the highest priority needs of the supported commanders who are requesting lift. At a higher level, however, United States Transportation Command (USTC) can generate greater efficiency by optimizing the process of multimodal delivery. Because of the limited capacity of aircraft to move cargo and personnel, utilization of efficient processes to streamline use of resources actually generates increased effects to meet the needs of the DoD's customers. (Note: in this example, TACC and USTC are not used as archetypes of efficiency, but as entities that benefit from efficiency)

For CPI, substituting efficiency for effect is not the objective, and the AFI governing CPI makes this point clearly by explaining the purpose of the Enterprise Process Improvement Council (EPIC); “[EPIC] serves as the Air Force corporate body that vets CPI projects [and] initiatives with enterprise-wide applications, *with emphasis on assuring Air Force business and management operations are as streamlined and efficient as practical, while maintaining effective mission accomplishment* (emphasis added).”⁶⁷ The important point is that *enhancing and harmonizing* efficiency and effect is the goal of CPI, not replacing effect with efficiency.

Perception: My unit is a service organization, not a production organization, so CPI does not apply

⁶⁷ Air Force Instruction (AFI) 38-401. *Continuous Process Improvement*, 15 April 2016, 13.

A common misperception of CPI is that an organization needs to produce some type of widget for CPI to apply. In reality, processes are part of all organizations since a level of effect results from the application of a service. Hamm states that service-based team members “can understand that a value-added step is one that helps accomplish the mission.”⁶⁸ An example, such as a customer working with the Traffic Management Office (TMO) to conduct a household goods move, viewed from the perspective of a customer when interacting with a service organization, assists in demonstrating this concept.

When moving, there are only a few value-added steps from the perspective of the moving member, and the rest of the steps would be characterized as waste. Securing ten copies of orders, sitting through briefings about the shipment, filing vouchers, waiting for the movers to arrive, overseeing the packing, and coordinating delivery dates are all waste in this process since they do not add value for the customer. The value-added activities are simply transferring goods from one location to another in an undamaged status. Therefore, a truly optimized process would seek to reduce or eliminate any extraneous steps.

From the perspective of the TMO, they have additional stakeholders to consider while managing the process of a household goods move, and a robust process would secure value for all customers involved. There is a bona fide desire to secure a perfect shipment, on time, for each traveler, and accomplishing that task is an extraordinary challenge when considering the large variety in moves, locations, and demands of TMO’s customers. Easing personally procured movements, expediting briefings to educate the customer, ensuring moving agencies deliver goods on time, and expeditiously settling any complaints all assist in minimizing waste in the process to serve the needs of the customers.

A customer-based mindset greatly assists in identifying the friction points throughout the process described above. In this case, a demanding task such as managing tens of thousands of movements every year will naturally have checks, balances, and inefficiencies that arise in the execution of that service. By examining the process of

⁶⁸ Hamm, *Continuous Process Improvement*, 10.

household goods shipment through the eyes of the multiple customers that are served by the process—the mover, the moving company, the Department of Defense, and even the Airmen who are working the service counter at TMO—the most efficient process will maximize effect, minimize frustration and waste, and achieve the effects at optimal cost.

Perception: My organization would fall apart without me... My personal expertise is required to make my team's processes operate successfully

In most cases, truly effective leadership results in an organization that is able to thrive beyond the leader's presence. Continuity and standardization of work ensure that processes do not cease to be effective upon the arrival or departure of an individual member. In fact, personality-dependent processes are incredibly less efficient and effective as a whole. Added steps such as: "internal accounting, supervisory controls, compensation for a poor worker, specific [steps] for an individual worker's personality, communication and record keeping" are all areas that processes can become inefficient through compensation for personal preferences.⁶⁹ Process-oriented organizations learn, iterate, and survive a specific leader's absence because of the robust processes themselves, not the leader who creates them.

Merely identifying outstanding solutions to problems or highlighting deficiencies in a process may not be enough to provide sustainable change on a long-term basis. A fundamental principle of CPI ensures controls are put in place to secure survivable change to implement lasting solutions. Making the correct modifications to a process in a structured manner ensures the results of the effort to modify a process last beyond the personalities who implement them.

Perception: We innovate all the time, and we don't need CPI for that

It is critical that Airmen identify and solve the right problems, and in some circumstances, CPI enables team members to handle problems they would not be able to solve at their levels of authority without bringing senior leaders into the decision cycle. When asked about innovation and the perception that CPI was not necessary for innovation in the AF, one interview respondent remarked, "we do innovate every day, but we have become tremendous fire fighters. Fire prevention lies in finding the root causes

⁶⁹ AFSO21 Playbook, H-1.

to the fires before they start.”⁷⁰ Identification of the root causes of problems is one of the core principles of CPI. A Green Belt team lead summarized this succinctly by recounting a conversation he had with one of his mentors, “We were brainstorming solutions to a lot of things we thought we could fix in the process, but our Black Belt mentor said, ‘we don’t solve for problems we don’t have root causes for.’ This kept us on task, avoided scope-creep, and allowed us to remain within the limits of what the project champion wanted us to fix.”⁷¹ Simply asking the question of “Would the customer pay for this as a value-added step?” may be sufficient to generate change inside an organization. However, if an organization is fighting fires that require higher-level leaders to engage—problems that span multiple organizations or those that require approval to deviate from instructions—using the tools of CPI assists in achieving a favorable outcome. Identification of a proper champion is essential, since that champion is the “individual within an organization with the authority to commit and dedicate resources, assets, and people, and to charter new initiatives.”⁷² Finding the right root causes to the problems, providing actionable information for the champion to make decisions, then following through with implementation in the correct manner are all core principles of CPI.

Summary

A broad spectrum of conversations has illuminated several perceptions of CPI that are important to understand before analyzing key focus areas for future CPI efforts. Many Airmen hold deeply rooted beliefs about process-improvement efforts, and it is imperative to appreciate potential biases toward CPI efforts to successfully employ and inculcate process-improvement ideologies. All AF entities should serve a customer of some type that receives the product of a unit’s processes and effort. In general, effective leadership ensures that processes are resilient and productive without a uniquely capable personality as a linchpin. Efficient use of resources to produce effects that are value-added from the perspective of the customer is of the utmost importance in a resource-constrained AF. Innovation comes in many forms, but successful long-term innovation strategies result in process modifications that treat root causes of problems as opposed to

⁷⁰ Dr. Robert Hamm (US Air Force), interview by author, 15 February 2017.

⁷¹ Interview with Green Belt team lead, January 2017.

⁷² AFSO21 Playbook, N-3.

consistent triage of emergent problems and treating symptoms. Holistically summarized, the philosophy that underpins CPI is something beneficial to all AF agencies regardless of function—service or production based—and a customer-focused paradigm greatly assists in generating value in the areas that matter most.



Chapter 4

Lessons Learned from Research

This section highlights five focus areas that have the potential to generate success or failure with respect to CPI's implementation. This list is not exhaustive, but it provides the most important considerations for change managers and leaders who wish to get the most out of AF CPI programs. This chapter distills a myriad of research interviews into a "lessons learned" section that highlights the most salient features of CPI and how they may be best applied in the objective and subjective perspective of the researcher. This list is not exhaustive, and the perspective chosen by the researcher to represent lessons learned is one that provides the most utility for the AF when using CPI as a methodological ideology. The five lessons learned highlighted in this study are: rebranding was not sufficient to remove the stigma associated with legacy programs, effective leadership is essential to make CPI work well, a proper champion is imperative to facilitate successful CPI efforts, marketing and resourcing CPI efforts is critical to success, and CPI efforts must incentivize participation by Airmen and generate positive effects for Airmen. Finally, the most significant takeaway from this research is that a fundamental shift in ideology must take place to transform CPI's primary focus from generating cost and manpower savings to facilitating mission accomplishment.

1) Rebranding was ineffective in removing the AFSO21 stigma, and new threats emerged (under the manpower office)

The push to rebrand AFSO21 into CPI was completed for a myriad of reasons, but this shift has many potential costs in addition to the benefits. Rebranding removed some of the artificial elements of the AFSO21 program and provided rigor in the AF CPI process through codification of AFI 38-401, *Continuous Process Improvement*. As a whole, though, the rebranding effort has largely gone unnoticed by the majority of those surveyed by the researcher, indicating a probable AF trend. For example, when discussing the research topic with AF personnel who were not directly involved with CPI, the first question almost always was, "What's CPI?" One of the reasons AFSO21 struggled to gain traction was that AF leaders attempted to artificially tailor the model to the AF.

AFSO21 was unnecessarily cumbersome and created an artificial rift in an attempt to make AFSO21 different from efficiency models in the past, but this only complicated efforts to inculcate an already complex process of process improvement.⁷³ When it was rebranded, the AF shifted away from trying to make process improvement a unique AF paradigm and transitioned toward common industry standards of what CPI represents. For example, AFSO21 piled on to the traditional LEAN principle of 5S: Sort, Shine, Set in order (or straighten), Standardize, and Sustain—with another “S” safety.^{74 75} Instead of the 7 deadly wastes from the traditional LEAN principle—Defects, Work in Process, Overproduction, Waiting, Motion, Transportation, and Overprocessing—AFSO21 added an additional item, “intellect,” and created its own acronym, “DOWNTIME,” to reflect a requirement to capitalize on the human capital of Airmen.⁷⁶ These modifications were marketed to reflect the unique qualities of the AF mission, but they artificially added complexity.⁷⁷ Additionally, placing CPI under the manpower office has risks that are concomitant with the rewards.

One of the risks the AF must mitigate after rebranding CPI under manpower is creating a culture of transparency that invites users to participate in the process versus fear it. Formally tying the CPI program—one with a stated objective of generating efficiencies in cost and manpower—to the manpower office has the potential to generate fear amongst the Airmen who utilize the program. An interviewed member validated the fear of losing manpower. When asked about managing resources and the importance of manpower in his organization, he stated, “I may be willing to shift resources, I might even be willing to compromise on budget, but I will never give up manpower. Once you lose manpower billets, you never get them back.”⁷⁸ The view from a veteran CPI practitioner was different, though. A wing CPI Black Belt (who works in the manpower

⁷³ Interview with senior civilian at SAF/MGM. 10 February 2017.

⁷⁴ David W. Mann, *Creating a LEAN Culture: Tools to Sustain LEAN Conversions*. New York, NY: Productivity Press, 2005, 193.

⁷⁵ “Air Force Smart Operations for the 21st Century: Playbook.” May 2008. Version 2.1, N-1.

⁷⁶ AFSO21 Playbook, J-17.

⁷⁷ Interview with senior civilian SAF/MGM. 10 February 2017.

⁷⁸ Interview with senior civilian Air University, February 2017.

office) stated, “It is important for commanders and middle managers to realize that the manpower office has the ability to help versus just taking billets away. If we conduct a CPI study and realize that your unit isn’t using resources effectively, we will work to ensure they are or we will redistribute them; however, if we find that a unit is conducting the process as efficiently as it can, and the process is needed to accomplish the mission, CPI can assist in making the process better or even validate the need for additional billets.”⁷⁹ One squadron commander who was well-versed in CPI saw this concept the same way. He stated, “If I am able to get the mission done with less Airmen, that’s my job to point those areas out to ensure we are using resources effectively. That’s good for the Air Force. Besides, it’s one less performance report to write, so that’s a win-win.”⁸⁰ For these reasons, appropriate senior leader engagement is imperative to generate proper optics, resource the programs, and ultimately facilitate success of CPI efforts. Ultimately, rebranding AFSO21 into CPI eliminated the taboo moniker that many Airmen dreaded, but it did not substantively change the nature of the program at a level most Airmen appreciate.

2) Leadership is an integral component to make CPI work well

Senior leaders have the ability, more than anyone else, to ensure CPI programs succeed or fail. Specifically, wing commanders have the ability allocate CPI resources largely at their discretion, and if CPI is not a priority, the program may experience considerable difficulty for large-scale projects. A common theme throughout this thesis is that a customer-focused ideology has the potential to assist any organization at any level to optimize the potential for efficient and effective processes; however, resources are scarce and large-scale projects, especially those that span multiple organizations, require team members with specialized skill sets. For example, at Maxwell AFB, I interviewed a Green Belt team lead who was working on a cross-organization project to optimize transcript processing. The team lead was a savvy practitioner, but he routinely needs guidance from the wing’s single Black Belt to assist with some of the finer aspects of the charter. In addition, that Black Belt—who is managing the process for the wing—

⁷⁹ Interview with Wing CPI representative, December 2016.

⁸⁰ Interview with Reserve Squadron Commander, February 2017.

is performing that task as an additional duty. Of note, both of these personnel were impressive, but there is only so much team members can do given their organizational constraints. Many of those resource constraints are helped or hindered by the senior leadership in an organization. Senior leaders have a tremendous amount of influence in the process of process improvement, but subordinate leaders are considerably influential as well.

Lower-level leaders in an organization have a substantial ability to influence the success or failure of CPI projects. For the purposes of this example, “lower-level leaders” range from subordinate commanders in organizations to front-line supervisors. First, unless lower-level leaders are directed to implement CPI efforts after deficiencies in an inspection, leaders who intend to use CPI in their organizations need to initiate the call to CPI experts for assistance when required. Second, if leaders are not advocates of CPI and rewarding those in their units who attempt to utilize it, there is little incentive for working-class members to use the methodology to enhance their mission. Finally, and of the utmost importance, leaders have the ability to select who will represent their units in CPI projects. A senior member of the Air University stated this succinctly when he compared CPI efforts to the USAF Weapons School. Stated simply, he said,

Who you pick for these projects matters. The modern slogan of the Weapons School is “humble, approachable, and credible.” If you send a slug to the Weapons School and he comes back to your squadron and doesn’t do anything, or worse yet, acts like he knows everything, you ruin the whole brand and everyone in the unit thinks the Weapons School is worthless. The Weapons School isn’t worthless, but the leader who picked the poor team member to go to the Weapons School could have done a better job to ensure a better product came out of it.⁸¹

The same is true for CPI events. Often times, on significant projects of extended duration, the people selected to participate in the project make recommendations to the project champion, representing the unit as a subject matter expert, and working to standardize and implement solutions in the final stages of the project. If leaders choose

⁸¹ Interview with senior civilian Air University, February 2017.

someone who is expendable, they should not be surprised to receive expendable results from the CPI event.

3) A proper champion is imperative

A project champion is essential to maximize the productivity of CPI events, and selection of a champion who understands the fundamental tools and ideologies of process improvement assists in maximizing the potential for a project's success. Additionally, a champion must be aware of political sensitivities that may ensue during a CPI event. An appropriate champion for a CPI event will have the authority to "commit and dedicate resources, assets, and people, and to charter new initiatives."⁸² Furthermore, a champion has the ability to influence subordinate leaders, to develop buy-in for the process, and to assist with the finer points of change management. CPI projects can be intrusive, and preparing the battlespace prior to the event is essential. For example, if someone just showed up to a worker's duty station with a stopwatch, briefly said, "hello I'm going to gather data with respect to how you perform your task," and started writing on a clipboard, the results would be questionable. If a champion encouraged buy-in to the CPI process from subordinate leaders who could motivate their subordinates, a shift from fear of judgment to an embrace of opportunity is possible that enables the ability for a process to demonstrate its true potential. The political nature of process improvement is especially salient with civilians who have standard work in their performance descriptions. CPI events that highlight inefficiencies in a process that involve civilians are not as easily shifted as tasks managed by officers or enlisted members. Again, proper preparation of the battlespace can send the appropriate messages that indicate team members will be taken care of upon culmination of the event. Lastly, and most importantly according to *The Six Sigma Way*, an effective champion has the ability to "help teams refine the scope of their projects."⁸³ Scope creep has potential to threaten and paralyze the best teams, and a good champion can direct the efforts of teams in

⁸² AFSO21 Playbook, N-3.

⁸³ Peter S. Pande, Robert P. Neuman, and Roland R. Cavanagh, : *How GE, Motorola, and Other Top Companies are Honing Their Performance*. New York, NY: McGraw-Hill, 2000, 119.

responsible ways. Solving the root causes of the champion's problems allows the team to focus its efforts on the most meaningful areas. Effective champions are essential for a project's success because they are uniquely qualified to influence in the most critical areas and provide timely guidance to a CPI team.

4) Marketing and resourcing CPI efforts is critical

One of the questions asked during the interviews was, "If you could have anything in the world to make CPI successful, what would it be?" A wing Black Belt at Maxwell AFB answered the question quickly and with confidence; "I would like to be able to market the program and then have resources to support CPI team members."⁸⁴ When examined from her perspective, this makes an enormous amount of sense. A walk past an average squadron bulletin board will have plenty of mandatory flyers with flashy photos and flowery narratives to explain the programs they support. There is one for the Judge Advocate, the Area Defense Council, the Sexual Assault Response Coordinator, the Safety Representative, even the Voting Representative, but no information to assist someone with CPI. If CPI representatives struggle to make a bulletin board that may or may not garner the attention of unit members, what are the odds CPI representatives will make it to other areas of importance that unit leaders are required to manage?

A marketing concept that assists in effective program development lies in "strategic selling." A flyer on a bulletin board might help someone locate a CPI member with expertise, but it is far more important to get the appropriate people in an organization on board with the concept with more meaningful interaction. Leaders must identify the "key influencers" and "decision makers" in an organization because they offer useful suggestions about how to implement the process.⁸⁵ These are the people who command influence in an organization, and are not necessarily those in formal leadership positions.

For CPI efforts to penetrate the AF culture and establish a lasting role, leaders should resource CPI efforts and employ change-management techniques that have proven success. John Kotter's book, *Leading Change*, has become a staple for agents of change

⁸⁴ Interview with wing Black Belt, December 2016.

⁸⁵ Pande, Neuman, and Cavanagh, 325.

across industry, and he makes an especial note about the proper methods of resourcing to facilitate optimal outcomes. Specifically, he highlights an eight-stage process:

- 1) Establish a sense of urgency.
- 2) Create the guiding coalition.
- 3) Develop a vision and strategy.
- 4) Communicate the change vision.
- 5) Empower broad-based action.
- 6) Generate short-term wins.
- 7) Consolidate gains and produce more change.
- 8) Anchor new approaches in culture.⁸⁶

All items in Kotter's model are appropriate targets for investment, but special attention needs to be given to the generation of wins with respect to CPI because of historical failures of TQM and AFSO21. Major David Garon built a research report ("Not-So-Continuous Process Improvement," 2013) that analyzed the pitfalls of AFSO21 with reference to Kotter's model and found many areas of AF investment were insufficient to realize the AF's desired state of implementation after 7 years.⁸⁷ The intent in this thesis is not to evaluate the implementation of CPI, but it is extremely relevant to note that change-management structures exist in many areas, and AF leaders should consult those references in lieu of starting from scratch. Of especial note, Kotter's step 6, "generate short-term wins" is especially salient for leaders to consider for AF CPI to be successful. *Specifically, short-term wins must result in positive, productive changes to Airmen's lives and enhance their ability to accomplish the mission.*

5) CPI efforts must incentivize participation and reward Airmen, not punish them.

Generation of cost savings and manpower cuts that pile additional responsibilities on Airmen and subsequently make it harder for them to accomplish their jobs will only add to the frustration that has built over the last 40 years with respect to efficiency models. If CPI is to be something better than legacy failures, proper utilization of the tools in line with CPI's core principles is imperative. A short vignette from an AFSO21 process-improvement event illustrates this point and ties many of the previous concepts together.

⁸⁶ John Kotter, *Leading Change*, Boston, MA: Harvard Business Review Press, 2012, 23.

⁸⁷ Major David Garon, "Not-So-Continuous Process Improvement: How the Air Force Failed to Prep its Efficiency Battlefield." March 2013, 14.

Charleston Air Force Base executed an AFSO21 event in 2007 called the Velocity Initiative (VI) that was intended to generate extra duty day for outbound crews from home station. The concept was that a qualified crewmember who was not assigned to the mission could accomplish many of the tasks prior to the operating crew's arrival so they could reduce the launch sequence from 3 hours and 45 minutes to just 2 hours and 15 minutes.⁸⁸ A qualified copilot who was not on the crew for the mission would pick up most of the things the crew needed prior to their arrival to include the tactics binder, Integrated Flight Management package (weather, NOTAMS, flight plan, diplomatic clearances), helmets, Night Vision Goggles, and flight information publications. The idea seemed sound, and AFSO21 representatives lauded the ability of their team to streamline a process to maximize the output. Press releases by the team used a litany of AFSO21 buzzwords to justify the effort. In January 2007, 437th Airlift Wing Public Affairs highlighted the effort in an article, and an officer from the AFSO21 office stated, "This is all about using our resources more efficiently," said Major Graze. "We are shifting the way we think about supporting the AMC mission; it's the smart thing to do."⁸⁹ The streamlined process went into action and another press release in June 2007 validated the effort with more praise. Another AFSO21 representative stated, "Greater flexibility to move the mission is effectively buying more aircraft at no taxpayer cost. By blazing a trail to AMC's #1 Break Through Objective, Team Charleston is postured to save lives better than ever before."⁹⁰ Finally, the article closed with a quote from Major General Ron Ladnier, the Tanker Airlift Control Center commander, "Think bolder, that's what we're doing ... that's a challenge the Airmen at Charleston AFB live out every day. Team Charleston is absolutely committed to increasing the effectiveness of our most

⁸⁸ Shauna Heathman, "AFSO 21 Initiative Improves Mission Efficiency," 437th Airlift Wing Public Affairs. 26 January 2007. <http://www.charleston.af.mil/News/Article-Display/Article/237387/afso-21-initiative-improves-mission-efficiency>.

⁸⁹ Shauna Heathman, "AFSO 21 Initiative Improves Mission Efficiency."

⁹⁰ Maj Robert Reimer, "Charleston's Airmen Make a Difference AMC Wide." Charleston.af.mil. 13 June 2007. <http://www.charleston.af.mil/News/Article/237210/charlestons-airmen-make-a-difference-amc-wide>.

valued asset -- our Airmen.”⁹¹ Leaders generated enormous amounts of publicity and praise, but there were significant drawbacks.

There were several problems with the Velocity Initiative (VI), and while there may have been lessons learned throughout the attempt to improve the process, there were also a host of components that violated core concepts of what AFSO21 and CPI stand for. First, CPI largely focuses on the voice of the customer, and there were many items in the process that customers would not pay for (i.e. not value-added). VI was marketed as increasing the available duty day for outbound crews, but the overwhelming majority of missions that left Charleston AFB did not utilize the extra hour and a half that was provided. An augmented flight-duty period for a C-17 crew is 24 hours, and a tiny percentage of missions leaving from Charleston used the full duty period without VI, let alone the extra 1.5 hours facilitated by the AFSO21 initiative. In terms of using resources “more efficiently at no tax-payer cost,” VI violated another tenet of effective CPI. VI made the assumption that Airmen’s time is free, and requiring a qualified copilot to enter into crew rest and subsequently accomplish the preflight actions for the crew took that officer away from other administrative, work-related duties in the squadron. This “free” resource had a tangible cost that led to reduction in the efficacy of other processes Airmen were required to complete. An additional hurdle in the new, VI process was that one person was required to accomplish the tasks of what would normally be completed by five qualified crewmembers, so when problems arose in the aircraft-generation process 80 percent of the original capacity to fix them was gone. When it worked smoothly, outbound crews appreciated the efforts, but many times the crews found themselves trying to catch up and fix problems in the air that would have normally been fixed prior to takeoff with respect to tanker coordination, flight-plan errors, and more. VI was rescinded approximately a year after implementation when new leadership arrived in Charleston AFB, and like most programs, there was tremendous fanfare on rollout, but little upon repeal—much like AFSO21.

VI is an excellent case study to highlight several ways in which a CPI event can add to an Airmen’s responsibilities without actually increasing value. How much of VI

⁹¹ Quoted in Reimer, “Charleston’s Airmen.”

would customers—the recipients of the cargo—actually pay for in that process? Performance reports gleamed with AFISO21 savings, but how many value-added effects did VI actually generate for those served by the process? Moreover, VI violated core principles of CPI. Looking at VI through the Theory of Constraints, the constraint was not the crew duty day when departing home station. It was a combination of the systemic operating paradigm of the controlling agency that was built upon a fixed, operating infrastructure.⁹² In fact, many of the operating concepts used in VI directly went against the recommendations of the CPI team, but the key leaders chose to implement those processes anyway because of political considerations.⁹³ Effective use of CPI ideologies is of seminal importance to facilitate inculcation of CPI into AF culture in a way that makes Airmen appreciate the value-added solutions to the mission-focused areas that matter most. Proper leadership is essential to ensure these efforts are conducted appropriately and to validate CPI efforts' return on investment and benefit for all involved.

Summary

The lessons learned throughout the research suggest several focus areas for consideration. Based on the interview responses, the rebranding of AFISO21 has largely been ineffective to shift Airmen's perception of efficiency models in the AF. Senior-leader commitment, at the highest levels of the AF and especially at the wing-commander level, continues to be at the core of whether CPI will receive the level of attention it needs to provide the resources and investment needed to succeed. Lower-level leaders are of vital importance to CPI efforts as well and must select the right team members to participate in process improvement. At higher levels, a proper champion with the right vision is imperative to guide CPI projects from beginning to end. This involves marketing and management of the sensitive political nuances during implementation of a CPI event's solutions. Lastly, for CPI to succeed where other efficiency efforts have failed, CPI must implement solutions that are valuable to the Airmen who execute the processes, not just higher headquarters in terms of manpower and cost. AF Airmen

⁹² Interview with senior civilian Joint Base Charleston, 18 April 2017.

⁹³ Interview with senior civilian Joint Base Charleston, 18 April 2017.

execute processes, and without their buy-in, CPI as a program will struggle with the same challenges that have plagued efficiency models of the past.



Chapter 5

Concluding Remarks

The quest to merge effectiveness and efficiency in the AF has been a consummate struggle for decades. Many of the AF methods for adopting formal efficiency models in the AF were based on the original teachings of Shewhart and Deming. These teachings, based largely on the Plan, Do, Check, Act cycle, have shown tremendous success in Japan—especially in the case of Toyota—but the AF has struggled to find a model that has been able to reach the tipping point with cultural inculcation and acceptance. Despite the struggles with the programs that preceded the current AF efficiency paradigm, senior leaders have displayed a bona fide desire to continue the calls for efficiency to facilitate an effective AF that is capable of supporting US national interests with competing financial requirements. TQM, QAF, and AFSO21 were all phased out after a period of time, and the current AF model—CPI—has opportunities and threats to embrace after the rebranding of AFSO21 in 2016. This thesis concentrated on answering a research question that resulted from this empirical puzzle. If AF leaders desire efficiency and effectiveness, and process improvement has been a continual theme to link the two, why has it been so difficult to facilitate a cultural transformation to adopt process-improvement ideologies? Multiple discussions by the researcher followed by interviews and research analysis resulted in identification of five common perceptions of AF efficiency models and five potential areas of concentration to facilitate optimal employment of CPI in the AF.

Until the AF and DoD have unlimited resources to achieve effects, calls for efficiency will continue; what those calls will look like is a question answered only by speculation and fate. Recently, this effort has taken the forms of TQM, QAF, AFSO21, and now CPI. However, much like a metaphorical dippy bird that overcomes inertia through spirited leadership, tips, and secures a drink, the vigor that generated action has tended to regress after a period of time for a number of reasons and the dippy bird returns to a position close to where it was before. A large amount of literature published shortly after the release of AFSO21 speculated on the end state of AFSO21 as a new archetype following QAF, and the result was rebranding in 2016. Will the same fate occur for the new AF efficiency model in CPI? Even if CPI stays as the AF's efficiency model for an

extended period of time, will it have a significant impact on how the AF operates and how effective the AF can be with the resources the US taxpayers provide? Or, 10 years from now as a researcher evaluates the legacy of CPI, will scholars develop another list of reasons why CPI has faded into history like the others? CPI, much like the processes it seeks to influence, is a process itself, and therefore, may evolve over time to meet the needs of the organization. The fundamental principles of CPI, however, should remain relatively constant if there is value in the model. Recognizing the voice of the customer, optimizing value-added activities, and eliminating waste should be at the core of this ideology. For this model to be successful, Airmen have to want to be part of CPI efforts, not resist them.

From 2014 to 2016, the AF attempted to solve some of the traditional hurdles of AFISO21 and previous programs by implementing formal guidance in Air Force Instructions 1-2, *Commander's Responsibilities*, 38-401, *Continuous Process Improvement*, and 90-201, *Air Force Inspection System*. These three AFIs inform commanders of their formal responsibilities to manage resources effectively and efficiently and to formally display efforts to build a culture of CPI in their units. In areas that are graded INEFFECTIVE, AFI 90-201 prescribes using CPI to correct the deficiencies. According to several interviewed members in key positions at the wing level and above, this guidance has significantly assisted in implementing CPI in an official manner, but several challenges still remain.

Airmen's Perceptions of CPI

Throughout many discussions prior to and during the research period, five perceptions emerged as common themes for Airmen who do not see benefits of CPI in their units. These perceptions were not held by all Airmen, but they were common enough to merit special mention. In order to implement successful cultural change in the AF, it is imperative to understand some of the cultural barriers to implementation. These five areas were the most salient.

- **My unit does not have customers. Therefore, 'customers' cannot dictate what is value-added in my process.**
- **My organization operates for effect, not efficiency.**

- **My unit is a service organization, not a production organization so CPI does not apply.**
- **My organization would fall apart without me... My personal expertise is required to make my team's processes operate successfully.**
- **We innovate all the time, and we don't need CPI for that.**

These perceptions are largely based on the experiences Airmen have had with previous process-improvement models; however, if employed properly, the fundamental ideologies associated with CPI offer valid counters to all of those perceptions. All organizations have processes that transform effort and resources into effect that support an end user, also known as a customer. Units are required to use those resources efficiently to achieve effects even if effects are prioritized over efficiency. In addition, almost universally, developing robust processes that generate effects without dependence on personalities to deliver those effects are advantageous to long-term sustainability. Finally, innovation does come in many forms, but identifying the root causes to problems that provide value-added solutions, especially when those problems span multiple organizations, is essential to maximize the ability to apply resources efficiently to yield the most return on investment and avoid treating the symptoms of problems.

Lessons Learned

For CPI to be successful, there are five key focus areas for AF agencies to concentrate on when using CPI. Again, this list is not exhaustive, but these five lessons learned from multiple interviews and literature reviews provide leaders with discrete items that enhance the ability for CPI to thrive and deliver results.

- **There has been ineffective rebranding to remove the AFSO21 stigma, and new threats under the manpower office have emerged.**
- **Leadership is an integral component to make CPI work well.**
- **Marketing and resourcing CPI efforts is critical.**
- **A proper champion is imperative.**
- **CPI efforts must incentivize participation and reward Airmen, not punish them.**

The name of the AF's process improvement model has changed, but many Airmen are unaware of the shift from AFSO21 to CPI. Placing CPI under the manpower office has the potential to generate fear amongst those who wish to use CPI. The rebranding effort did not change many of the fundamental constructs of AFSO21, and some Airmen fear that placing CPI under the manpower office will cost them their most precious resource, manpower billets. For AF leaders, this may subsequently threaten their ability to accomplish the array of missions they are responsible for. For this reason, leadership, especially at the wing-commander level, is essential to send the right strategic messages to subordinate units who would benefit from CPI. Wing commanders currently have the ability to determine the level of investment in the number of Black Belts in their wings, whether the experts in his or her wing perform CPI as an additional duty, and how much of the annual budget is provided for CPI practitioners. One common answer during interviews of seasoned CPI members is that they wanted a modest amount of funding to be able to market CPI capabilities. Commanders should seriously consider allocating funding toward this cause to inform members of the wing how CPI can benefit them and how to properly conduct corresponding events. Of note, a proper champion is essential to provide vision and guidance to CPI teams, to prevent scope-creep during projects, and to finesse implementation of solutions. This is especially important when there are conflicts of interest between multiple organizations that contribute to a shared process. The solutions generated by CPI events should make every effort to provide tangible benefits to Airmen and assist them in accomplishing mission-related tasks as opposed to levying additional duties that generate only cost and manpower savings. These five focus areas, used in tandem, provide the best opportunity for CPI efforts to succeed in AF organizations.

Recommendations for Future Research

There are many areas to focus future research beyond the scope and capability of this study, and a few known open-ended items are listed here. First, CPI in its rebranded state is still in its infancy, and therefore, additional studies must be completed at a later date to determine whether the rebranding effort has been successful to rejuvenate the stalled efficiency program, AFSO21. Second, a question that needs to be answered is, “will aligning with civilian industry and formation of codified guidance in Air Force

Instructions result in a cultural shift?” Third, are we appropriately incentivizing Airmen to participate in the system? Fourth, how does the rapid turnover of key leadership (approximately every two years) correlate to investment in CPI processes that are projected to extend beyond their tenure? Is there a way to increase the velocity of CPI events? Finally, is there an appropriate return on investment for CPI as a program in the AF? How can the process of process improvement be improved to increase value-added solutions for the variety of AF customers?

Conclusion

In a compelling interview, a member offered a persuasive argument to read Bill Creech’s book, *The Five Pillars of TQM*, to gain an understanding of his perspective of AF efficiency models; specifically, Creech offered that the ideology of process improvement was as important, if not more important, than the specific tools of a model or the model itself. Holistically and generally, the AF continues to see a lack of funds and manpower as the root cause of its inability to be effective in meeting the needs of the nation. Therefore, the model of CPI that is pushed to the Airmen attempts to generate cost and manpower savings, but this goes against what the true intention of CPI should be. Creech stated this clearly in his book by indicating we need a “quality mindset [that provides a] value, not cost, orientation.”⁹⁴ Summarized quickly, an organization that has quality processes will minimize cost, reduce risk, curtail waste, and make it easier for the members of that organization to perform effectively. This shift in ideology needs to take place in the AF CPI model as well. *Cost and manpower savings should be a by-product of a process improvement model that concentrates on empowering Airmen to be more effective and efficient in accomplishing their mission-related tasks.*

This thesis attempted to gain insight into the empirical puzzle of why process improvement models have faced resistance in the AF and how CPI efforts could be more effectively implemented in the future. Calls for efficiency continue to be demanded by senior AF leaders, and AFI guidance has formally codified CPI as the AF process-improvement tool to assist in delivering efficiency, minimizing defects and waste,

⁹⁴ Creech, *The Five Pillars of TQM: How to Make Total Quality Management Work for You*. New York, NY: Truman Talley Books/Plume, 1994, 51.

minimizing risk, and delivering effects in support of mission accomplishment. Overcoming Airmen's historical biases and perceptions of process-improvement models is a demanding task for leaders, but with the proper insight and investment from leadership, CPI ideologies have the potential to assist in ensuring the root causes of the right problems are addressed to implement value-added solutions.



ABBREVIATIONS

AFIS: Air Force Inspection System

AFSO21: Air Force Smart Operations for the 21st Century

BPR/PR: Business Process Reengineering/Process Reengineering

CPI: Continuous Process Improvement

KPI: Key Performance Indicators

MGA: Major Graded Area

PI: Process Improvement

QAF: Quality Air Force

TQM: Total Quality Management



Appendix 1: Secretary Wynne's "Letter to Airmen"



Wednesday, March 08, 2006

Letter to Airmen: Air Force Smart Operations 21

Our role as an Air Force is to provide an array of capabilities for the Combatant Commanders to use as directed by the President. These capabilities include the widest variety of joint operations from combat operations to humanitarian aid. Like any other organization, we must seek to constantly give value to our "customers." It's not only the right thing to do for the American taxpayer; it's the smart thing to do.

In my December "Letter to Airmen," I talked about expanding LEAN concepts beyond just depot operations. That effort has now grown into Air Force Smart Operations 21 (AFSO 21), a dedicated effort to maximize value and minimize waste in our operations. AFSO 21 is a leadership program for commanders and supervisors at all levels, looking at each process from beginning to end. It doesn't just look at *how* we can do each task better, but asks the tougher and more important question: *Why* are we doing it this way? Is each of the tasks relevant, productive, and value added? In other words is it necessary at all? With AFSO 21, we will march unnecessary work out the door – forever.

AFSO 21 signifies a shift in our thinking. It is centered on processes (groups of tasks) rather than tasks alone, which allows us to gain insights into the value, or lack of value, in each task we perform. For example, why does an EPR take 21 days at some bases to process, and only 8 at another? We must do better across the entire Air Force, and no process is immune from this critical review. AFSO 21 is built on successful principles from the corporate world, and has already yielded results in the Air Force. AFMC has used the tenets of AFSO 21 to put an extra 100 tankers back on the line each day. AFSO 21 is about working smarter to deliver warfighting capabilities.

We must continue to meet our worldwide requirements even with the continued pressure on our budget. But AFSO 21 is not about cost cutting; it enables our service to take our warfighters of today and grow them into the most effective and efficient thinkers for 2010 and beyond. The continuous process improvements of AFSO 21 will be the new culture of our Air Force. We will look at innovative ways to use our materiel and personnel more efficiently. For example, we're already planning on using the Guard and Reserve differently under the concept of Total Force Integration, capitalizing on their inherent strengths.

As AFSO 21 training comes to your base, ask yourself, "What have I improved today?" Every idea is worth taking to your supervisor. To learn more about the AFSO 21 program, visit the AFSO 21 website at <http://www.afso21.hq.af.mil/>. I have full faith that by implementing AFSO 21 together, we will make our Air Force not only more effective, but will drastically improve our combat capability.



Michael W. Wynne
Secretary of the Air Force

Source: Wynne, Michael W. "Letter to Airmen." Accessed March 5, 2017.
<http://www.airforcemag.com/SiteCollectionDocuments/Reports/2006/March/Day09/WynneLtr030806.pdf>

Appendix 2: Excerpt from AFI 90-201, *Air Force Inspection System*

MGA #1: Strategic Planning.

3.5.1.1. Communicates Commander's intent.

3.5.1.2. *Aligns the organization to common direction, focus, goals, metrics, and actions.*

3.5.1.3. *Aligns resources.*

3.5.1.4. Assigns accountability and responsibility.

3.5.1.5. Cascades throughout the levels of the organization - shows how each level's mission, priorities, metrics, and objectives support the parent organization.

3.5.1.6. *Uses a systems approach that requires alignment and integration of people, processes, and strategy.*⁹⁵

MGA #2: Organizational Management.

3.5.2.9. *Sustains a culture of CPI.*

3.5.2.10. *Maintains oversight of the CCIP or Self-Assessment Program.*

3.5.2.11. *Maintains fiscal responsibility.*

3.5.2.12. *Maintains oversight of a risk management program.*⁹⁶

MGA #3: Customers. *The value of the organization's product or service is determined by the customer who is the recipient of the output. Organizations must engage their customers for long-term success, including listening to the voice of the customer, building customer relationships, and using customer information to improve and identify opportunities for innovation.*

3.5.3.1. *Voice of the Customer (VOC). Selection of VOC strategies depends upon the organization construct. To effectively listen to and learn from customers, there must be a close link with the overall strategy of the organization.*

3.5.3.2. *Customer Engagement (CE). CE is strategic action focused on building relationships and managing complaints. Complaint aggregation, analysis, and root-cause determination should lead to effective elimination of the causes of complaints and to the setting of priorities for process and product/service improvements.*

3.5.3.3. *Adequacy. The Adequacy portion of the Customers MGA will assess MAJCOM or SAF/HAF overall functional programs addressing resource issues in subordinate units. Commanders are entrusted with resources to accomplish a stated mission. Those resources include: manpower, funds, equipment, facilities and environment, guidance, and Airmen's time. As part of managing their resources, higher echelon commanders must ensure adequate resources are provided to subordinate commanders. This includes all of the aforementioned resources, plus a commander's intent.*⁹⁷

⁹⁵ AFI 90-201, 52.

⁹⁶ AFI 90-201, 53.

⁹⁷ AFI 90-201, 53-54.

MGA #4: Process Operations. The focus of this MGA is the design, management, and improvement of Key Work Processes (KWP). KWPs are linked activities with the purpose of producing a stated output/outcome. These activities rarely operate in isolation and must be considered in relation to other processes that impact them. *The method in which a KWP's performance is measured is fundamental to a high-performing management system.*

3.5.4.1. Controls. Controls are in-process measurements of critical points that should occur as early as possible to minimize problems and costs that may result from deviations from expected performance, e.g., risk mitigation. Controls manage or mitigate meaningful, acceptable risks when functioning as intended.

3.5.4.2. Results. *Process results provide key information for analysis and review of organizational performance and should address key operational requirements.*

3.5.4.3. *The organization should have access to certified facilitators, including AFSO-21 if available, to educate and support all CPI efforts.*

3.5.4.4. *The organization should provide evidence of problem solving self-assessment findings, e.g., the AFSO-21 8-Step-Problem-Solving methodology.*⁹⁸

MGA #5: Resources. The efficient and effective deployment of an organization's resources when and where they are needed is a primary foundational management principle. Such resources include financial resources, inventory, manpower, tools and equipment, facilities, specialized human skills, production materials, and information technology (IT). *While no single process, technique or philosophy can be singled out as the best approach for allocating resources, it is crucial that detailed resource allocation planning, execution and monitoring continually take place.*

3.5.5.1. *Financial Plan. All resources should be addressed in the Financial Plan and demonstrate financial sustainability of the organization. Financial planning projects, prioritizes, and plans the expenditures for the mission area to drive informed decisions that support the mission, assess risk, and focus on cost as opposed to budget, as a primary measure of performance.*

3.5.5.2. Manpower resources are addressed in the Unit Manpower Document, Unit Personnel Management Roster, Alpha and/or Unit Rosters (one each for civilian, military, and contractor), and the organizational chart. All are inspected for any disconnects amongst the documents, such as mismatches, double billets, etc. *If there are any mismatches or variations of personnel assigned, the IG will evaluate the commander's decision-making process for making the change.*

3.5.5.3. Continuum of Learning. Comprised of education, training, and experience. The organization should be current in the levels of training required pursuant to competencies in accomplishing the mission.⁹⁹

MGA #6: Data-Driven Decisions. Central to making informed decisions is using data and information that is reliable, quality-based, and available. How the organization selects and uses data and information in decision-making is critical

⁹⁸ AFI 90-201, 54.

⁹⁹ AFI 90-201, 54-55.

to the achievement of key organizational results and strategic objectives, to anticipating and responding to rapid or unexpected organizational or external changes, and to identifying best practices to share.

3.5.6.1. *The organization will be inspected on its ability to establish metrics and decision-making; its ability to identify, evaluate, and assimilate data/information from multiple streams, and its ability to differentiate information according to its utility and its uses of information to influence actions and decisions.*¹⁰⁰

MGA #7: Organizational Performance. *Organizations must be both effective and efficient in order to be successful.*

Table 3.1. Effectiveness and Efficiency.

Effectiveness	Efficiency
Doing the right things – encourages innovation	Doing things in the right manner – demands documentation and repetition of the same steps
Constantly measures if the actual output meets the desired output	Output to input ratio – focuses on getting the maximum output with minimum resources
Focuses on achieving the “end” goal – takes into consideration any variables that may change in the future	Focuses on the process – importance given to the “means” of doing things
Keeps long-term strategy in mind & is adaptable to changing environments	Present state or the “status quo”
Looks at gaining success	Requires discipline and rigor
	Looks at avoiding mistakes or errors

3.5.7.1. The output or outcome is a direct link to the Mission Directive and Mission Statement.

Table 3.2. Output and Outcome.

Output	Outcome
What the org does and who they reach	Level of performance or achievement - impacts
What is created at the end of a process	Associated with the process or output

¹⁰⁰ AFI 90-201, 55.

Typically tangible and more easily measured objectively	Quantification of performance and assessment of the success of the process
The quality, timeliness, and quantity of outputs contributes to outcomes	Difficult to measure - typically measured subjectively by approximation
	Answers, “what difference did it make?”

3.5.7.2. *The organization is expected to function within its authority, work within its scope, and not duplicate a role of another organization or section internal to itself.* (Emphasis added)

Source: Air Force Instruction 90-201, Air Force Inspection System, 55.



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