3-2008

Balanced Scoredcard: Evaluation of Air Force Material Command's Implementation and Use

Aaron J. Hepler

BALANCED SCORECARD: EVALUATION OF AIR FORCE MATERIEL COMMAND'S IMPLEMENTATION AND USE

THESIS

Aaron J. Hepler, Captain, USAF

AFIT/GLM/ENS/08-03

DEPARTMENT OF THE AIR FORCE
AIR UNIVERSITY
AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

The views expressed in this thesis are those of the author and do not reflect the official policy or position of the United States Air Force, Department of Defense, or the U.S. Government.

AFIT/GLM/ENS/08-03

BALANCED SCORECARD: EVALUATION OF AIR FORCE MATERIEL COMMAND'S IMPLEMENTATION AND USE

THESIS

Presented to the Faculty

Department of Operational Sciences

Graduate School of Engineering and Management

Air Force Institute of Technology

Air University

Air Education and Training Command

In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Logistics Management

Aaron J. Hepler, BS

Captain, USAF

March 2008

AFIT/GLM/ENS/08-03

BALANCED SCORECARD: EVALUATION OF AIR FORCE MATERIEL COMMAND'S IMPLEMENTATION AND USE

Aaron J. Hepler, BS

Captain, USAF

Approved:

_____	_____
Bradley Anderson, Lt Col, USAF (Chairman)	Date
_____	_____
Martha Cooper, Dr (Member)	Date
_____	_____
Jeffrey Ogden, Dr (Member)	Date

Abstract

Managing in a contemporary world has become increasingly more complex. It has evolved from a manufacturing setting with little to steer managers but a single, financial indicator to managing a greater percentage of intangible assets through numerous leading and lagging indicators. The industry has also evolved from centrally located and managed to decentralized, multi-national companies. In response to these changes, a new strategic management tool was developed called the Balanced Scorecard (BSC). This management tool has proved successful throughout the last decade.

The purpose of this research was to evaluate the implementation and use of Air Force Materiel Command's (AFMC's) BSC, which started as a program in 2001. To guide this effort, a meta-synthesis approach was used to synthesize qualitative BSC data that resulted in eleven keys to successful BSC implementation and use. Secondly, an historical methodology was employed to review AFMC's BSC history within each of these eleven key areas. Finally, perceived gaps between AFMC's BSC and the literature were identified and recommendations to improve AFMC's BSC were provided. Two important recommendations are: 1) to conduct analyses to confirm hypothesized cause-and-effect objective relationships and 2) to ensure new BSC software can continue to meet AFMC's BSC needs. As Paul R. Niven stated (2003), a properly constructed BSC can "inspire and motivate all employees, set direction for the organization, and encourage alignment from top to bottom."

Dedication

I would like to dedicate this to my wife, my son and unborn daughter. This project could not have completed without their support.

Acknowledgments

I would like to express my sincere appreciation to my faculty advisor and readers for their guidance and support throughout the course of this thesis effort. Their insight and experience proved critical throughout the research. I would also like to thank my sponsors for both the support and advice provided to me in this endeavor.

Aaron J. Hepler

Table of Contents

Page

List of Figures

Page

List of Tables

Page

BALANCED SCORECARD:
AIR FORCE MATERIEL COMMAND'S IMPLEMENTATION

I. Introduction

Background

"If you're not keeping score, you're only practicing" (Schneiderman, 1999).

The strategic management method known as Balance Scorecard (BSC) was developed by Professor Robert Kaplan, an accounting professor at Harvard University, and Doctor David Norton, a consultant from the Boston area (P. R. Niven, 2003). These researchers led a study of a dozen companies to explore new methods of performance measurement with the hypothesis that traditional financial measures of performance were ineffective for successful management. From this study, the BSC was born with a scorecard balanced through careful selection and implementation of four perspectives: financial, customer, internal-business-process, and learning and growth.

Over the last 15 years, the Balanced Scorecard methodology has matured. It has been sharpened by its developers through such books as *The Strategy Focused Organization* (2000), *Strategy Maps* (2004), and *Alignment* (2006). Operational experience has also been accumulated through a number of BSC implementations. Together, organizations now have a plethora of information available to implement and/or analyze BSCs.

Problem Statement

Air Force Materiel Command (AFMC) implemented the use of a BSC in August, 2001 in response to the tasker to "Develop [a] Plan for Executive Management System"

(HQ AFMC/XP Deputy, 2001). The command's goal, explained in the briefing *AFMC Strategy Process and BSC* (2006), was to integrate individual initiatives, such as Capabilities Review and Risk Assessment (CRRA), Expeditionary Logistics for the 21st Century (eLog21), Purchasing and Supply Chain Management (PSCM), Depot Maintenance Transformation (DMT), and Agile Acquisition, through the focusing lens of BSC to deliver "Seamless War Winning Customer Solutions--products and services on time, on cost" (2006).

AFMC has now orchestrated their BSC from 2001 to present, approximately six years, and the question remains as to how well they have progressed towards meeting their goal of "Seamless War Winning Customer Solutions--products and services on time, on cost"(HQ AFMC/XP Deputy, 2001).

Research Objectives

This objective of this research was to explore AFMC's BSC implementation and evaluate its implementation and current use. To accomplish this, AFMC's BSC implementation and use needed compared and contrasted against the BSC literature. Specifically, this thesis identified key factors for BSC success and then compared them with that of AFMC's journey, identified perceived differences, provided analyses and made recommendations.

Research Focus

Research Question

Does AFMC's BSC implementation and use align with what the literature indicates is required to obtain optimal results?

Investigative Questions

Investigative Question One

What are the key areas of a BSC an organization must address and succeed in to optimize its use?

Investigative Question Two

How does AFMC's implementation and use of the BSC align with what the literature indicates is needed to obtain optimal results?

Assumptions/Limitations

This research was based on one main assumption and that was that all of the data collected was reasonably accurate and valid, since it was not observed but rather reported.

The two major limitations in this research were conclusions which were based solely on historical documentation and an inability to review and utilize AFMC's BSC software. First, an historical methodology was utilized to review AFMC's BSC. This methodology lacks some of the insights and alignment which could have been added through interviews. Secondly, the command's software was unable to be utilized during the research due to its decommissioning. Availability of the software may have increased

the scope of this research to include a quantitative analysis, further validated this research's findings, or possibly provided deeper AFMC BSC understanding.

Implications

This research assessed whether AFMC had maximized their opportunity to optimize their BSC. The results will provide guidance for other organizations in critical key processes within their implementation and use of a BSC. Additionally, perceived misalignments between AFMC's BSC and civilian BSC literature were identified and recommendations provided in areas which could be addressed and improved. The most important implication of this research is to ensure the BSC methodology is understood and properly implemented to "inspire and motivate all employees, set direction for the organization, and encourage alignment from top to bottom" (P. R. Niven, 2003).

II. Literature Review

Introduction

In 1992, Kaplan and Norton published the strategic, management method called the Balanced Scorecard (BSC) in the article "The Balanced Scorecard--Measures That Drive Performance," based on performance measurement. *Harvard Weekly Review* hailed it as one of the 75 most influential ideas of the twentieth century (P. R. Niven, 2003). Shortly after its introduction, companies around the world started implementing their own BSC's and proving its success, such as Mobil, Best Buy, BMW Financial Services, Canon USA, Wells Fargo and many, many more.

One example of the BSC's success can be seen from Mobil's BSC experience, which started in 1994. In 1992, Mobil needed a $500 million infusion from their parent company to sustain operations. By 1994, it was the least profitable company in its sector. Executives knew things needed to change and decided to roll out the BSC. Within a year, Mobil had the top profitability rating with profits 56 percent higher than the industry average. Mobil's success continued to reach new heights, reflecting the number one ranking in profits in 1997--for a third consecutive year. (R. S. Kaplan and Norton, 2002)

Since its inception, the BSC has continued to blossom. Over half of the Fortune 1000 organizations have adopted the BSC (Marr and Schiuma, 2003). It has matured through numerous publications and has left a trail of lessons learned and critical focus areas which should be addressed to optimize results.

This literature review provides the reader with an understanding of the BSC and its structure. Then, it identifies and expands on the key areas that should be addressed in order to optimize companies' BSC success.

The Balanced Scorecard

Kaplan and Norton introduced the importance of a Balanced Scorecard (BSC) by providing the following example of traditional management systems (where managers focus and make decisions based solely on evaluation of financial factors) through a conversation with a pilot.

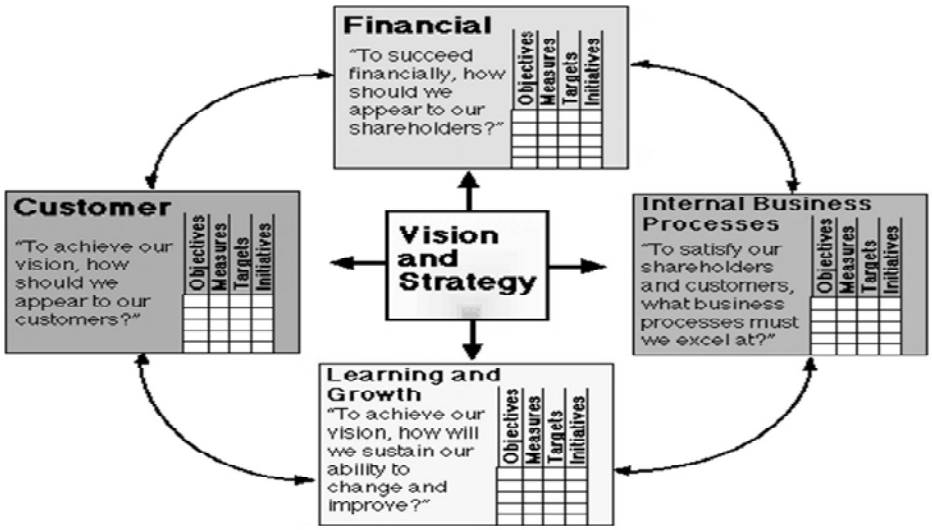
> *Q: I'm surprised to see you operating the plane with only a single instrument. What does it measure?*
> *A: Airspeed. I'm really working on airspeed this flight.*
> *Q: That's good. Airspeed certainly seems important. But what about altitude? Wouldn't an altimeter be helpful?*
> *A: I worked on altitude my last few flights and I've gotten pretty good on it. Now I have to concentrate on proper air speed.*
> *Q: But I notice you don't even have a fuel gauge. Wouldn't that be helpful?*
> *A: You're right; fuel is significant, but I can't concentrate on doing too many things well at the same time. So on this flight I'm focusing on air speed. Once I get to be excellent at air speed, as well as altitude, I intend to concentrate on fuel consumption on the next set of flights.* (R. S. Kaplan and Norton, 1992)

This example illustrated that as a qualified pilot would not fly without the appropriate number and type of indicators in an aircraft, nor should an executive operate a company without anything less than an appropriate number and consistency of guiding indicators. (R. S. Kaplan and Norton, 1992)

The BSC was developed as a management system through performance measurement to assist decision makers in understanding and obtaining strategic goals (R. S. Kaplan and Norton, 1996). It does this by building and balancing causal linked objectives into a "balanced scorecard," through which an organization provides a framework that tells the story of the organization's strategy (P. R. Niven, 2003). As illustrated through the above conversation, the BSC methodology recognizes the fallacy of relying on just financial measures; therefore, it also integrates those financial measures

with critical operational measures. It accomplishes this by providing a default structure or "balanced scorecard" in the form of four perspectives: financial, customers, internal business processes, and learning and growth (R. S. Kaplan and Norton, 1996). Companies can use this balanced scorecard framework to select a balanced set of objectives and measures to effectively manage their organizations.

The four perspectives that Kaplan and Norton commonly found during their case studies are displayed in Figure 1. The development of a company's financial perspectives' objectives and measures allows that company to "define the financial performance expected from the strategy and ... set targets for the other measures and objectives of all the other scorecard perspectives" (R. S. Kaplan and Norton, 1992).



(R. S. Kaplan and Norton, 1992)

Figure 1: Four Perspectives of BSC

In the customer perspective, organizations identify the "customer and market segments in which they have chosen to compete," or in the case of the military, it identifies the customer which the organization serves. Additionally, it also permits companies to

"align their core customer outcome measures and identify and measure, explicitly, the value propositions they will deliver" (R. S. Kaplan and Norton, 1992). In the internal business process perspective, "processes at which the organization must excel in order to continue adding value to the customers" are identified; organizations may have to re-engineer internal processes rather than focusing on continuous improvements of existing activities (P. R. Niven, 2003). Finally, in the learning and growth perspective (the enabler of the other three perspectives) measures are designed to close gaps between current organizational infrastructure of employee skills, information systems, and organizational climate which are discovered during the process of modeling the other three perspectives. However, these perspectives are only suggestive when using the BSC model. Organizations are able to tailor these perspectives to best meet their individual needs and strategy.

The BSC retains financial measures and introduces drivers of future performance. Financial measures are measures of past performance which identified where one has gone and not necessarily where one is going; therefore, they are termed lagging indicators. They may have been adequate for industrial-age companies for which investments, long-term capabilities and customer relationships were not as critical for success, but financial measures alone are inadequate in today's age of future value through investment in customers, supplies, employees, processes, technology, and innovation. (R. S. Kaplan and Norton, 1996) By combining financial and performance measures, the BSC provides real insight into organizations' operations and assists in implementing strategy (P. R. Niven, 2003).

Keys to Successful Balanced Scorecard Implementation and Use

Since the conception of the Balanced Scorecard (BSC), companies have succeeded and failed at its implementation. Along the way, numerous researchers have analyzed and published these results. Review of these results has provided 11 keys to successfully implement and use a BSC, which when followed will improve the probability of a company's BSC success (Table 1).

While this research does not focus on implementation order (Table 1), they are discussed in that way within this section to provide structure. However, the presented implementation order is a common and logical progression for BSC development and use. First, the BSC has only proven successful in studies where it was deployed from the top of the organization. Some BSC consulting agencies even have a standard operating instruction to decline consultation service to companies that do not have this top-level involvement. Secondly, a BSC framework is necessary to develop, implement and monitor the BSC use. Thirdly, prior to developing a BSC, standards should be established. In addition to identifying areas to standardize, this key also identifies what not to standardize when cascading the BSC. Keys four, five, six and seven should be implemented together. They are separated into four different keys because there is specific information provided about each key; however, they should be implemented in concert with each other. Implementing them together ensures that objectives and performance measures are quantified and present causal relationships--derived through the implementation of a strategy map. Next, BSC software should be carefully selected because it is critical in meeting organizational requirements. The sixth step, which could

arguably be the fifth, is to establish goals for measures and timelines for their completion. Without goals and timelines, a company may not be moving towards improvements but merely maintaining. The seventh step--simplify management systems--is important in managing precious resources and obtaining employee buy-in. The eighth and final step listed here is to cascade the BSC. Without this step, the executives would know where the company is trying to go and what it is trying to achieve, but the workers would be left in the dark and therefore unable to direct their efforts accordingly.

Table 1: Keys to Successful BSC Implementation and Use

Implementation Order	Key to Successful BSC Implementation and Use	
1	1	Deploy BSC from the Top Down
2	2	Establish BSC Framework
3	3	Standardize Within the BSC--but Do Not Standardize Content
4	4	Select the Right Objectives and Performance Measures
	5	Quantify Objectives or Their Performance Measures
	6	Ensure Objectives Present a Causal Pattern
	7	Implement Strategy Maps
5	8	Select Software to Help--Not Hinder
6	9	Select BSC Goals and Timelines for Their Completion
7	10	Simplify Management Systems--Do Not Just Add To Existing Framework
8	11	Cascade the BSC

1. Deploy BSC from the Top Down

The BSC, by its very design as a strategic management tool, requires top-level development, support and involvement. While the BSC could be used without top-level involvement, the company will not be fully utilizing the BSC's potential. First, top-level involvement provides benefits by building consensus on the direction in which the company should focus, strengthens commitment towards selected objectives and goals,

and simultaneously facilitates team building. Secondly, by having top-level involvement, the execution of the company's initiatives will be supported and financial backing provided. Numerous case studies have shown that top-level involvement and deployment does indeed provide positive results (*Building and implementing a balanced scorecard case study: UNUM corporation.*1999; Active Strategy, 2007b; Antarkar, Cobbold, and 2GC Active Management, 2001; Cuganesan, Ford, and Khan, 2006; Schneiderman, 1999).

A case study completed by 2GC Active Management on a company disguised as "Arran Ltd.," a multi-divisional retail financial service firm based in the UK, reflected the negative results when there is an absence in top-level deployment. Their first BSC was developed by the General Manager and used in the Retail Division. The appeal of the Retail Division's successful implementation and use of the BSC prompted its design and approach to be applied at the corporate level and throughout other divisions. Since the BSC was not developed from the top in a corporate scorecard, imposition of numerous non-regionalized standards and objectives, which were right for the Retail Division but not for the company as a whole, were pushed onto the remaining divisions. Consequently, 2GC concluded these imposed standards and objectives marginalized Arran's BSC. Additionally, they reported that by the time the case study was prepared, only financial perspectives of various scorecards were still being used. (Cobbold and 2GC Active Management, 2001)

Ultimately, BSCs should be deployed from the top-down for two main reasons. The first reason is to ensure management has come to a consensus of their strategic goal,

objectives and measures. The second reason the BSC is deployed from the top-down is so it will be formulated to best fit the corporation as a whole and carry with it support and financial backing.

2. Establish BSC Framework

The implementation of a BSC is not an overnight process change; therefore, an implementation framework needs to be in place to maintain drive and initiative. Additionally, the nature of the BSC as a continuous improvement system requires vehicles which will aid in monitoring and continually improving its performance.

The UNUM Corporation utilized innovative vehicles to motivate employees and monitor the company's performance and direction. One way UNUM ensured their BSC was meeting the needs of the customers was through a benchmark survey. This survey measured employee's perception on how the company is doing at meeting their vision of "... having the mind of a customer and the pride of an owner" by having them evaluate 11 different key areas, such as "live by our word" and "strive together towards goals." Ultimately, the company's goal was to increase the number of employees who believed these behaviors were being practiced and decrease the number of those who did not. Secondly, UNUM created trust workshops and a 360 degree appraisal system to help further ensure that managers are aligned to the corporate BSC. A third motivator, which UNUM agreed was one of their biggest successes, was the 1998 Goals Stock Option Plan. This plan provided employees with a stock option grant and was believed to motivate employees to "have a mind of a customer and the pride of an owner" because their actions now affected themselves fiscally. UNUM also incorporated an annual bonus

for meeting company goals. The combination of the stock option plan and the bonus for meeting the annual goals provided the motivation for the employees to reach both short and long-term goals. Another key part of UNUM's BSC development was continuous improvement processes. These processes included development of best practices, regular reviews to evaluate the company's BSC, obtaining feedback from their managers, and publishing questions for all employees to focus. Evidence of the improvement in the company through these innovative vehicles was presented in UNUM's 1997 Annual Report which stated that the company was "closer than ever to its vision...of world leadership in disability and special risk insurance." (*Building and implementing a balanced scorecard case study: UNUM corporation.*1999)

Implementing a BSC can be a slow, labored process and require a strong implementation framework, as well as vehicles to aid in monitoring and continually improving the BSC's performance. Without these, implementation efforts may flop, or if a BSC is successfully implemented and not continuously improved, it could become stagnant.

3. Standardize Within the BSC—but Do Not Standardize Content

Standardizing within a BSC can be accomplished in different areas such as standardizing vocabulary to define BSC components to increase communication as well as understanding (i.e. what exactly do the terms vision, objectives, measures, initiatives, etc. mean?) and standardizing design process and review cycles to promote continuous improvement. However, standardizing BSC content in cascaded scorecards, in the form of mandatory objectives and measures, risks diminishing employee buy-in and potentially

reduces the ability to further optimize the cascaded scorecard through its individualization.

Paul R. Niven, author, management consultant and noted speaker on the BSC, felt so strongly on the topic of standard vocabulary that he wrote an entire article titled "The Importance of Terminology to Your Balanced Scorecard." In his introduction, he quoted Karl von Clausewitz, a German General:

> *The first task of any theory is to clarify terms and concepts that are confused…Only after agreement has been reached regarding terms and concepts can we hope to consider the issues easily and clearly, and expect others to share the same viewpoint….* (P. Niven, 2006a).

Niven transitioned into the importance of language selection by also quoting Organizational Learning Expert Peter Senge:

> *Words do matter. Language is messy by nature, which is why we must be careful in how we use it. As leaders, after all, we have little else to work with. We typically don't use hammers and saws, heavy equipment, or even computers to do our real work. The essence of leadership -- what we do with 98 percent of our time -- is communication. To master any management practice, we must start by bringing discipline to the domain in which we spend most of our time, the domain of words.* (P. Niven, 2006a)

The importance of a standard vocabulary extends into determining a set of BSC standards. Niven explained that "what passes for measures in your shop, may be a key performance in another," and by having differences such as these "can have a profound impact on the success of your BSC." He concluded by stating that an organizational team should invest in a terminology exercise, so they can

> *agree on specifically [what the common terms] mean..., construct a solid foundation from which to launch both their Scorecard building efforts and educational initiatives..., and finally and possibly most importantly, give team members insight into unique perspectives held by their colleagues...leading to a stronger team.* (P. Niven, 2006a)

Two case studies completed by 2GC Active Management on companies disguised as “Crosshouse” and “TRURO” evaluated the area of standardization. (Crosshouse is a multi-national fast moving consumer goods company and TRURO is a multi-divisional oil firm based in the Middle East.) Through their study of Crosshouse, 2GC concluded that a standardized approach “facilitated auditing of BSC design work, and also built a common vocabulary within the organization.... This helped promote internal discussions concerning strategy, and also made it easier for units to learn about their new unit’s strategy and performance.” (Lawrie, Cobbold, and 2GC Active Management, 2001) Conversely, the case study on TRURO identified that a default design approach was set in place for cascading the BSC to ensure consistency throughout the project. They found that using a designated design approach helped with “communication and performance issues both during and after the design project.” However, with this benefit, the company also incorporated a standardized “objective based BSC architecture,” which bordered on the negative aspect of standardized content. Because of this, 2GC Active Management concluded TRURO “reduced the availability of the developers of the...BSC...to ensure alignment with the overall goals of the business.” (Antarkar et al., 2001)

UNUM Corporation, a disability and special risk insurer who has been recognized as the “100 best companies to work for in America” by *Fortune* magazine (1997) and “100 best companies for working mothers” by *Working Mother* magazine (1997), also disagrees with implementing standardized BSC content throughout their organization. Eileen Farrar, vice president of human resources, instructed their companies managers “...to decide on [their own] the most effective way to move that company towards

strategic goals. At the unit level, it is the responsibility of the manager to roll the unit's goals back to company and corporate goals. However, annual business goals will not be accepted unless they represent progress towards our corporate goals." (*Building and implementing a balanced scorecard case study: UNUM corporation.*1999)

In this section, standardization within the BSC was discussed within three main areas: standardized vocabulary, standardized approach and standardized content. Standardized vocabulary and approach are beneficial to an organization's BSC. Standardized vocabulary provides a clear understanding of the terminology. Standardized approaches provide users with direction. Conversely, requiring standardized content throughout an organization's cascaded BSCs can degrade a company's success. This happens by preventing the different business units from customizing their scorecards to best meet their needs while still aligning with the corporate scorecard.

4. Select the Right Objectives and Performance Measures

The selection of the "right" objectives is crucial to a company's BSC success (Schneiderman, 1999). Commonly, executives, who have historical knowledge and know what areas their company must succeed in to be profitable, meet to discuss and select their BSC's objectives and performance measures. But there are scientific methods available to also make these selections. One such way is through the use of a quality function deployment (QFD) (Schneiderman, 1999). QFD was introduced in 1972 by Yoji Akao to aid in physical design. Since then, it has also been shown to be valuable in non-physical designs. Literature revealed a small study where QFD was used on the

systematic selection of textbooks, as well as a more applicable, larger study where QFD was used in developing a BSC for an air cargo terminal (Chen and Chou). By applying a scientific method selection, such as the QFD, users could "concurrently engineer towards the goal of ensuring the satisfaction of shareholders, employees and external customers" (Chen and Chou).

Selecting the right objectives and performance measures is critical to BSC success. If organizations fail to select the right objectives and performance measures, they could be steering their company in the wrong direction, and ultimately, decrease—or fail to optimize—the value added to the end users.

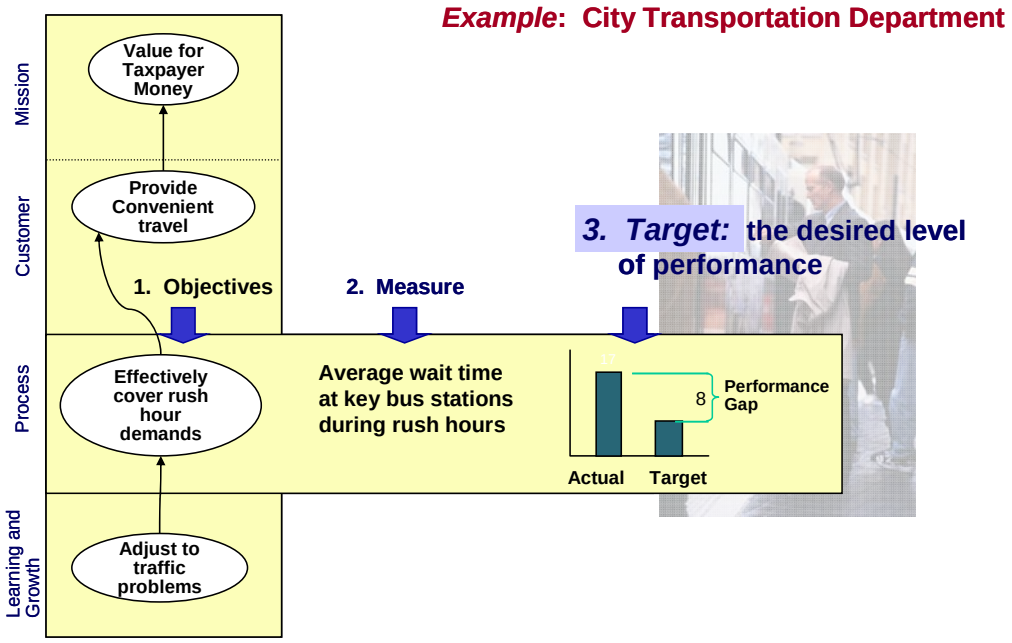
5. Quantify Objectives or Their Performance Measures

Objectives, or their performance measures, must be quantifiable. A company should also take care to measure what they want to manage and to not manage what they measure (Excitant, 2005b; R. S. Kaplan and Norton, 2004). Niven quotes the Irish mathematician and physicist Lord Kelvin's viewpoint on measures: "When you can measure what you are speaking about, and express it in numbers, you know something about it; but when you cannot measure it, when you cannot express it in numbers, your knowledge is of a meager and unsatisfactory kind..." (P. R. Niven, 2003). Others have simply stated, "You can't manage what you can't measure." Regardless of who said what, measurements provide managers the opportunity to know where they are and establish goals as to where they want to go.

Under the BSC framework, there are two reasons why objectives or performance measures require quantification. First, managers sometimes choose "vague and nebulous

terms" to identify an objective (P. R. Niven, 2003). Selecting quantifiable objectives (or performance measures when a vague objective is named) provides employees at all levels with the ability to clearly understand the objective. This permits "all employees [to] focus their energies and day-to-day activities on the [now] crystal clear goal" (P. R. Niven, 2003). Secondly, quantified objectives (or performance measures) permit management to question and test their hypothesized cause and affect relationships.

The example in Figure 2 illustrates selection of a quantified performance measure for an objective (AFMC, 2007b). In this example, the department hypothesized that by reducing "average wait time at key bus stations during rush hours" the linked objective "provide convenient travel" would improve. Anyone who views this scorecard could understand that one way to improve the objective "effectively cover rush hour demands" is to reduce average wait times. Associating an objective with a quantified measure permits employees to understand which part of their day-to-day operations to focus on improving--to help meet the company's strategic goal. If a quantified performance measure was provided for "providing convenient travel", statistical computations could be made after adequate data was collected in each area. This analysis could either fail to reject or reject the hypothesis that "by effectively managing rush hour demands" they will be "providing convenient travel" and in-turn maintain or adjust their scorecard accordingly.



(AFMC, 2007b)

Figure 2: Quantified Measure and Target

There were two important areas noted in this section when selecting BSC objectives or their performance measures. First, they need to be quantified to clearly relay the priorities of the company to their employees and permit statistical analyses to a BSC's success to stay the course, change directions or simply convince sponsors of the BSC's success. Secondly, when numerous measures are identified to represent a single objective, those measures should be weighted to reflect each measure's importance on the objective. This permits organizations to prioritize their efforts and resources as well as properly analyze hypothesized relationships.

6. Ensure Objectives Present a Causal Pattern

As previously mentioned in development of the strategy map, the perspectives' objectives should be selected in such a fashion that they are all linked through cause-and-

effect (R. S. Kaplan and Norton, 1996). The rationale behind the cause-and-effect relationship is that a properly constructed scorecard should tell the story of the business unit's strategy through a sequence of relationships. Peter Drucker was quoted as saying "The most common source of mistakes in management decisions is the emphasis on finding the right answer rather than the right question" and BSC is no exception (Schneiderman, 1999). It is not enough to simply select objectives that meet the criteria within each of the BSC's perspectives. Emphasis should be placed on selecting objectives which "...identify and make explicit the sequence of hypotheses about the cause-and-effect relationships so that they can be managed and validated" (R. S. Kaplan and Norton, 1996).

An example of this cause and effect pattern is reflected in the Department of Transportation example in Figure 2, above. Here the hypothesis is that improvement in the learning and growth perspective's objective of "adjust to traffic patterns" will lead to an improvement in the internal and business processes perspective's objective of "effectively cover rush hour demands." This philosophy of the obligatory cause and effect relationship throughout the BSC should link all objectives, from the bottom of the strategy map to the top.

> *The failure to develop a causal model of the strategy will cause organizations to develop performance measures that are not tied to how the organization intends to compete. The outcome is a collection of measures that is fragmented and adds little value add to the organization. The BSC ends up becoming an exercise in developing more paper work and information collection that does not have a strategic impact.* (Othman, 2006)

7. Implement Strategy Maps

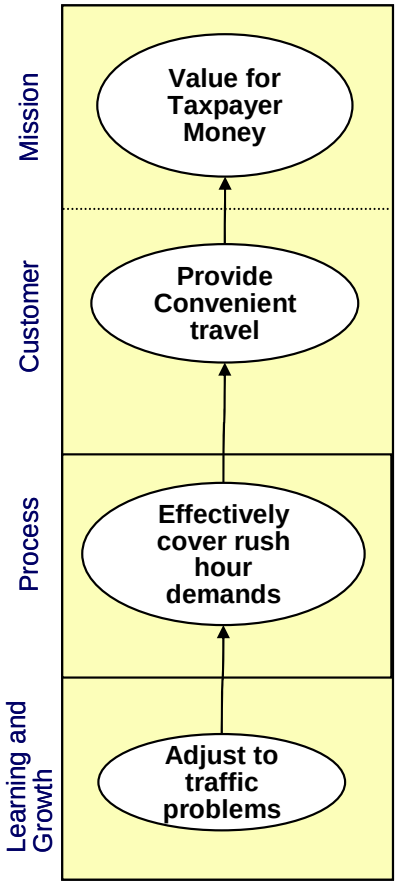
Another critical part of the BSC, a strategy map, is a necessary tool used to "align priorities of different domains and to help balance the tangible and intangible elements in the overall strategic plan" (R. S. Kaplan and Norton, 2004). In 1982, Brookings Institute showed that the majority of an organization's value was tangible--62 percent (Blair, 1995). Baruch Lev, the Philip Bardes Professor of Accounting and Finance at New York University's Leonard N. Stern School of Business, estimated that by the end of the twentieth century, tangibles would account for only 10 to 15 percent of a company's value (Webber, 2000). While the developers identified the strategy map to assist in the balance of tangibles and intangibles, it has also proven to be a globally recognized form of understanding the user's strategy and causal objective measures.

Kaplan and Norton explained how a strategy map can help organizations align their strategy and its characteristics:

> *Physically, a strategy map is a single page split into four horizontal bands or rows – one for each perspective, plus information listing areas of alignment, such as strategic change. Each band displays its area's priorities with the names circled. These priorities range from long-term shareholder value on the financial band to the customer value proposition on the customer band. Arrows link related subjects, up and down, from one band to another. The result is one page that describes the company's value proposition and growth strategy, plus the linkages that explain how those objectives will be achieved.* (R. S. Kaplan and Norton, 2004)

An example of a strategy map, courtesy of Air Force Materiel Command's (AFMC) Strategy Implementation training aid, is depicted in Figure 3. This example of the City's Department of Transportation's strategy map reveals their strategic theme and illustrates the causal relationship between one perspective to the other in order to achieve the "balance" for success when using the BSC. In this example, the department initially

decided that their mission was to increase the value for taxpayer's money. Once the mission was established, the department understood and tried to provide what the customer interprets as value for their money--convenient travel. The department then identified what processes were critical to providing the customer with convenient travel--effectively cover rush hour demands. Finally, the department answered how they were going to accomplish the objective of effectively covering rush hour demands by selecting the objective of adjusting to traffic problems within their learning and growth perspective. Upon completion of the City's Transportation Department's strategy map, everyone privy to its contents can clearly identify what objectives need to be optimized within each perspective in order to accomplish the mission (AFMC, 2007b).



(AFMC, 2007b)

Figure 3: City of Transportation Department's Strategy Map

A Manpower Australia case study reflected the results from a company's use of a strategy map. Suresh Cuganesan and Guy Ford, from Macquarie Graduate School of Management, completed a case study of the company Manpower Australia titled "Using Strategy Maps and the Balanced Scorecard Effectively: The Case of Manpower Australia." In their report, they concluded that Manpower Australia's strategy map "was used to describe the corporate strategy and elaborate how the value would be created through the execution of the strategy." It was added that a key feature of their strategy map was "the integration and alignment of all levels of [Varina Nissen's, Managing

Director of Manpower Australia] management team and the overall organization," as well as creating a "less silo-oriented county." A survey confirmed the BSC and its strategy map success with 85 percent of responses agreeing "the BSC had provided a better understanding of business, more focus on key issues and learning and development of management team." (Cuganesan et al., 2006)

Prior to using a strategy map as a part of the BSC, organizations experienced negative side effects. "Organizations went overboard with number of measures they adopted." Furthermore, "not only were there too many to measure and manage, they were often only marginally relevant or conflicted with other measures." The absence of scorecards also contributed to a lack of required linkage between the strategy and objectives. (Armitage and Scholey, 2004) These effects could still hold true for organizations that do not apply them today.

8. Select Software to Help--Not Hinder

Software should help--not hinder--the efforts to manage business processes. This concept is especially important when implementing and using a BSC, which has structural roots in a company's ability to capture and monitor measurement data with appropriate software. Should software become a roadblock to success rather than an enabler, discouragement and non-productivity becomes inevitable.

South Florida's Miami-Dade County's Office of Strategic Management apparently knew software was a key to strategic success when they hired Active Strategy to provide them with Active Strategy Enterprise™ software. This software permitted drill down capability starting with top-tier objectives and ending with the supporting

measures. (Active Strategy, 2007b) In addition to the ease of data review throughout the different levels and data collection, this system also facilitated "deeper and more beneficial reviews of performance, allowing key managers to focus not only on how they have been performing to date, but much more importantly on where performance levels need to be and how they will get there." Mr. George Burgess, County Manager, added "Active Strategy Enterprise™ software enables business review meetings to be conducted in a format where all the information is easy to share for consideration and feedback." Because of Active Strategy and their provided software, Miami-Dade "has been able to become more focused, on track, and aligned with its strategic goals and performance objectives," which became evident when they were named Overall Performance Management award winner in 2007 by The Performance Institute and The Council for Excellence in Government. (Active Strategy, 2007b)

2GC Active Management also felt software selection is a critical step in process improvement to prevent hampered efforts. They believed a clear understanding of what is needed and wanted in a software system should be made prior to acquisition and its implementation. Their case study on Crosshouse revealed that while software selection was carefully thought out it may not have been the right choice. Crosshouse choose an internal, limited software system for its use and provided a low-profile presentation throughout the company. 2GC concluded that because of the characteristics of the chosen software system and the manner in which it was presented, managers placed a lower priority on their requirement to populate it with their area's measures and targets. Consequently, 2GC conveyed that this lead to a large number of "completion delays

which consumed time and energy that would otherwise have been invested in making use of the BSC system, and probably reduced the utility of the whole project to the organization." (Lawrie et al., 2001)

The literature showed that helpful software is required to help mitigate difficulties in BSC implementation and use. It provides the capability to capture and utilize all BSC data. Helpful BSC software also increases employee buy-in and moral which could lead to increased productivity.

9. Select BSC Goals and Timelines for their Completion

Like objectives, goals and their timelines are commonly selected subjectively. Arthur M. Schneiderman, independent consultant on process management, contended that "...rather than negotiating scorecard goals, they should be based on knowledge of the required corrective actions, or absent that knowledge the capabilities of the improvement process as captured in an empirical model such as the half-life method" (Schneiderman, 1999). Schneiderman also expanded this reasoning stating that if a goal is too low, the company will underperform relative to its potential; if the goal is too high, the company will underperform according to others' expectations. In either circumstance, a non-desirable outcome will be the result. (Schneiderman, 1999)

In the case study of UNUM Corporation, goals were believed to have a strong impact on obtaining desired results. UNUM selected and referred to their goals as 'Goals 1998.' Farrar commented, "Specifying a year by which we reach our goals worked well...because it gave employees something definite to aim for..." (*Building and implementing a balanced scorecard case study: UNUM corporation.*1999). The case

study on UNUM Corporation showed the benefit of establishing goals which were met by a corresponding timeline, but it also demonstrated that they may have also been doing themselves an injustice if those goals were established below the company's potential.

Operating without the establishment of goals would lead to organizations just going through the motions. To maximize potential and results, not only do goals need set and worked towards the "right" goals need selected.

10. Simplify Management System--Do Not Just Add To Existing Framework

Niven wrote that "the key to BSC success lies in selecting, and measuring, just those processes that lead to improved outcomes for customers, and ultimately allow you to work toward your mission" (P. R. Niven, 2002). The BSC was designed to operate as the central management system within an organization. While maintaining current measures until the new BSC is online could prevent a management gap. However, a decision to add the BSC to the existing framework with no intention of making it the primary management system ultimately increases measures which must be tracked. This increase could lead to reduced employee buy in and diluted scorecard ability and results to the decision makers.

2GC Active Management echoed the viewpoint that the BSC should be the central management system by stating the "BSC...is designed to improve focus on what is important.... This increases clarity and reduces ambiguity - not more information, just relevant information." 2GC Active Management's case study on TRURO's BSC implementation, a company which chose not to replace their current management system with their BSC, concluded that "the introduction of additional processes [without

reduction in current measures] did not lead to simpler or more effective business processes." (Antarkar et al., 2001) In a rare case where a company identified through implementation of a BSC that they were in fact not using enough measures to monitor operations, measures could be added. 2GC Active Management's case study on Crosshouse reflected this point and they concluded "new information was relevant and valuable. This offset resistance to [the] increase..." (Lawrie et al., 2001).

The literature indicates that only measures that lead to improved outcomes for customers, and ultimately allow an organization to work toward their mission, should be utilized. By focusing on other than these measures, companies consume precious resources and once again have the potential to decrease moral. Additionally, the literature also indicated that the BSC should be the central management system within an organization. By utilizing more than one management system, companies could be sending unclear messages to employees and increasing manual error through increased data inputs.

11. Cascade the BSC

Niven opened his commentary on cascading the BSC to create alignment by describing a story about former President B. Johnson's tour of Cape Canaveral during the space race to the moon. Niven tells that:

> *During his visit, the president came across a man mopping the floor and asked him, "What's your position here?" The gentleman looked up from his pail and proudly replied, "I'm sending a man to the moon." Such is the power of alignment, when every person, regardless of role or rank, possesses a clear line of sight between his or her job and the organization's loftiest goals.* (P. R. Niven, 2003)

Niven quantified this point by including the results presented by consulting firm Watson Wyatt which revealed that only 49 percent of employees understood their company's goals--a 20 percent decrease from a study completed just three years earlier. Ilene Gochman expanded on these results stating, "There is tremendous positive impact to the bottom line when employees see strong connections between company goals and their jobs. Many employees aren't seeing that connection" (Taub and CFO.com).

Niven explained that cascading should start with the highest-level scorecard, referred to as the corporate-level or organization-wide Scorecard, with its objectives and measures indicating critical drivers for the company's success. And that every scorecard subsequently developed should link back to that document. Niven continued to state that through cascading a two-way flow of information up and down the organizational hierarchy is created (double loop management style). Furthermore, when scorecards are cascaded and results analyzed across the agency, the ability for leaders to see across their organization will increase. As a result, Niven concluded "Analysis is no longer limited to a few high-level indicators...; instead, cascaded Scorecards provide real-time data for decision making, resource allocation, and, most importantly, strategic learning." (P. R. Niven, 2003)

2GC's case study on Crosshouse presented results from their cascaded BSC. Prior to the implementation of the BSC, Crosshouse's evaluating centers would conduct strategic evaluations on the operating units, which required large volumes of data be provided. After their BSC implementation and use, the amount of routinely demanded information by the evaluating centers greatly decreased. They were now simply able to

review the always-available performance measures, and if data were outside of limits, they would inquire as to why. (Lawrie et al., 2001)

In summary, cascading scorecards down to the team and even the individual level provides employees the understanding as to the critical nature of their contributions towards the company's strategic vision. Furthermore, this understanding could even encourage employees to develop personalized measures to assist the company in achieving their strategy. Without establishing goals, even at the lowest levels, companies could fail to reach their potential.

Summary

This literature review provided an overview of the BSC and identified 11 keys for its success, Table 1. These finding are also reflected in Table 2. In Table 2, all case studies that contributed to one or more keys to successful BSC implementation and use are listed and the topic(s) addressed within them annoted by an "X." Understanding the BSC and its key areas to successful implementation and use are critical in developing or evaluating a company's BSC. Specifically, these keys and their information were collected and used to evaluate AFMC's BSC. This is accomplished in the analysis chapter by defining and analyzing AFMC's BSC specifics within each of these keys.

Table 2: Meta-Synthesis Results

	Deploy BSC from the Top Down	*Establish BSC Framework*	*Standardize Within the BSC--but Do Not Standardize Content*	*Select the Right Objectives and Performance Measures*	*Quantify Objectives or Their Performance Measures*	*Ensure Objectives Present a Causal Pattern*	*Implement Strategy Maps*	*Select Software to Help--Not Hinder*	*Select BSC Goals and Timelines for Their Completion*	*Simplify Management Systems--Do Not Just Add To Existing Framework*	*Cascade the BSC*
(2GC Active Management, 2006)		X		X			X				
(Active Strategy, 2007a)	X	X									X
(Active Strategy, 2007b)	X	X		X				X	X		
(Antarkar et al., 2001)	X	X	X							X	
(*Building and implementing a balanc*	X	X		X	X				X		X
(Cardemil-Katunaric & Shadbolt)					X	X	X				
(Chen & Chou)	X			X		X	X				
(Cobbold & 2GC Active Managemen	X		X					X			
(Cuganesan et al., 2006)	X	X		X	X	X	X		X		X
(Excitant, 2005a)				X			X				X
(Excitant, 2005b)	X										
(Lawrie et al., 2001)	X		X					X	X	X	X
(Malina & Selto, 2001)						X					X
(Mooraj, Oyon, & Hostettler, 1999)						X		X	X		
(Neely, 2007)				X							
(Niven, 2006a)			X								
(Othman, 2006)						X	X		X		
(Paladino, Jul 2007)		X					X	X	X		X
(Schneiderman, 1999)	X			X				X	X		
(Stephen, 2006)	X						X	X	X		X
(*Strategy execution and alignment.* 2(	X	X				X					X
(Weinstein & Castellano, 2004)				X					X		

III. Methodology

Chapter Overview

This chapter expounds on the methodology used to guide this study. Meta-synthesis and historical methodologies are employed to research and analyze qualitative Balanced Scorecard (BSC) data. First, this chapter explains the meta-synthesis of qualitative case studies which was completed to synthesize results across numerous case studies on BSC implementation and use. The purpose of performing a meta-synthesis was to identify and develop the list of key areas to BSC implementation and use; this list was discussed under the literature review and was a needed element which provided a baseline for later comparison. Secondly this chapter explains the selection of the historical methodology, which was applied to collect information on Air Force Materiel Command's (AFMC) implementation and use of the BSC. The findings uncovered by these two methodologies paved the way for an analysis of AFMC's BSC.

Qualitative Approach

Although research can utilize combined paradigm designs, Creswell (2003) recommends "having only a single research paradigm for the overall design of the study." Appropriately, and fittingly considering that analysis of quantitative data is not performed within this research, a qualitative paradigm was selected for this research's overall design of study. Furthermore, Creswell writes that "in a qualitative methodology inductive logic prevails and that "this emergence provides rich context-bound information leading to patterns or theories that help explain a phenomenon" (Creswell, 2003). This research did

indeed follow Creswell's advice and provided patterns in the form of keys to BSC implementation and use as well as a history of AFMC's BSC implementation and usage.

The readers must also familiarize themselves with a qualitative researcher's reality. Creswell comments that "for the qualitative researcher, the only reality is that constructed by the individuals involved in the research situation" versus quantitative research where the "researcher views reality as objective and independent of the researcher" (Creswell, 2003). As a result, findings and analyses are based primarily on a methodical research design to promote authenticity and validity but the amount of experience and perception of the researcher are non-excludable factors.

Investigative Question One

What are the key areas of a BSC an organization must address and succeed in to optimize its use?

This investigative question is the foundation of this research. Through identification and understanding of the keys to successful BSC implementation and use, the second investigative question of "How does AFMC's implementation and use of the BSC align with what the literature indicates is needed to obtain maximum results?" can be answered. In order to answer this first investigative question, a meta-synthesis methodology is employed.

Meta-Synthesis

Defined

Meta-synthesis is the synthesis or aggregation of qualitative studies. In line with Marshall and Rossman's guidance from "Designing Qualitative Research," the process of

meta-synthesis of qualitative data within this research was based on **data reduction** and **interpretation** (Marshall and Rossman, 1989). This was accomplished by taking "voluminous amounts of information and reducing it to certain patterns, categories, or themes and then interpret this information by using some schema" (Creswell, 2003).

Data Reduction

Data were primarily collected in the format of case studies which evaluated a company's BSC implementation and use. Additionally, data provided through books and articles were also included. Before data reduction commenced, inclusion criteria were established to focus and guide research efforts.

To collect and reduce the scope of included case studies, it was necessary to determined inclusion criteria. First, the inclusion criteria loosely stipulated that data were collected through case studies which analyzed and provided results from a company's BSC implementation and use. Secondly, with the fairly new nature of the BSC concept, no time stipulations were imposed--a lesson learned immediately following the BSC conception would be just as important as a recent lesson learned. Finally, all case studies that met the above inclusion criteria were included regardless of geographic region in which studied organizations resided.

Advice and guidance published through numerous books and articles from the BSC originators and associates was also utilized only if it met the following inclusion criteria. Inclusion of books and articles were utilized only when the author's research was supported through case studies. Identifying case studies which validated the author's

advice and guidance proved to be a simple task since the format for their publications were merely an expansion of lessons learned throughout BSC implementation and use.

Once the above inclusion criteria on case studies, books and articles had been established for data collection, the author followed Tesch's eight steps for developing an organizing system for unstructured qualitative data.

Interpretation

Renata Tesch (1990) provides eight steps for developing an organizing system for unstructured qualitative data in her book "Qualitative Research: Analysis Types and Software Tools." She wrote that "since qualitative research is inductive, the data themselves remain the most suitable and richest source for the development of an organizing system." By following Tesch's eight steps outlined below, categories for successful BSC implementation and use were outlined and were thereafter referred to as "keys to successful BSC implementation and use." These keys provided a baseline for this research's analyses between AFMC's BSC implementation and use and the literatures' BSC implementation and use.

1. First, get a sense of the whole.
2. Pick a document and make notes of the topics within it--not content.
3. Complete step two for three to five sets of data and make a list of all topics.
4. Take the list and return to remaining data. Abbreviate the topics as codes and write the codes next to the appropriate segments of the text. Try out this preliminary organizing scheme to see whether new categories and codes emerge.

5. Find the most descriptive wording for your topics and turn them into categories. Look for reducing your total list of categories by grouping topics that relate to each other. Perhaps draw lines between your categories to show interrelationships.

6. Make a final decision on the abbreviation for each category and alphabetize these codes.

7. Assemble the data material belonging to each category in one place and perform a preliminary analysis.

8. If necessary, recode your existing data. (Tesch, 1990)

1. First, get a sense of the whole.

This step to get a sense of the whole was designed to provide the necessary background information in the subject area (Tesch, 1990). To accomplish this step, Kaplan, Norton and Niven's books which explained and advised on BSC performance management and strategic leadership framework were read and understood. These books were *The Balanced Scorecard: Translating Strategy into Action, The Strategy Focused Organization, Strategy Maps, Alignment,* and *Balanced Scorecard: Step-by-Step for Government and Nonprofit Agencies.*

This research's main focus was to evaluate AFMC's BSC implementation and utilization. Before that could be completed, first the BSC framework needed understood. Understanding the BSC framework permitted further research into understanding the BSC's key areas for successful implementation and use, which in-turn was used to compare and analyze AFMC's BSC.

2. Pick a document and make notes of the topics within it--not content.

Tesch emphasized that during this step of picking a document and making notes of the topics within it to not pay attention to what is said—to address the substance of the article later in the process. She also added that the researcher should not feel a compulsion to capture everything at this stage. Finally, she advised that when a researcher identifies a topic they should write it in the margins of the document. (Tesch, 1990)

Out of the available case studies collected up until this point, one study conducted by 2GC Active Management titled "Implementing the Balanced Scorecard—Lessons and Insights from a Financial Services Firm" appeared to readily associate with Tesch's second step by already categorizing and titling the different lessons learned. This categorized and titled structure facilitated easy understanding and differentiation between the analyzed BSC topics. To conclude this step, this case study was reviewed and notes were taken to identify the author's topics of importance when implementing and using a BSC.

3. Complete step two for three to five sets of data and make a list of all topics.

In this step, Tesch explains to continue making notes of the topics located within three to five sets of additional data (case studies). After notes have been taken of these additional studies' topics, Tesch advises on how to organize this newfound qualitative data. She advises to drawn lines between similar topics, cluster the similar topics on a separate piece of paper, and select the best fitting name for the cluster of topics or invent a new one that better captures the substance of the group. (Tesch, 1990)

The case studies reviewed in this step were "Implementing the Balanced Scorecard—Lessons and Insights from a Multi-Divisional Oil Company," "Building and Implementing a Balanced Scorecard—Case Study: UNUM Corporation," and "Driving Strategic Transformation and Embedding Accountability at Tri-Health, Inc." Upon completing reviews of these case studies and noting the topics, lines were drawn connecting associated or similar topics. Then, these topics were clustered and an overarching word or theme for the clustered topics was assigned. These overarching words or themes started to form a list of the critical areas a company should focus on when implementing and using a BSC.

4. Take the list and return to remaining data.

Tesch continues her eight step process by indicating that in this step the researcher should abbreviate the topics as codes and write the codes next to the appropriate segments of the text. Then, try out the preliminary organizing scheme to see

whether new categories and codes emerge (Tesch, 1990). Abiding by this step's direction, these remaining documents were coded:

- "Organisational Performance Management in a UK Insurance Firm: Aligning Individual's Goals with the Business Strategy"
- "A BSC Framework for Air Cargo Terminal Design: Procedure and Case Study"
- "Using Strategy Maps and the Balanced Scorecard Effectively: The Case of Manpower Australia"
- "Miami-Dade County: Becoming a Results-Oriented Government with Active Strategy Enterprise™"
- "The Balanced Scorecard as a spontaneous framework in an agricultural hybrid cooperative under strategic change: A case study in the New Zealand kiwifruit industry"
- "Strategic Alignment: Cascading the Balanced Scorecard in a Multi-National Company"
- "Strategy Execution and Alignment"
- "Communicating and Controlling Strategy: An Empirical Study of the Effectiveness of The Balanced Scorecard"
- "Why Balanced Scorecards Fail"
- "Communicating and Controlling Strategy: An Empirical Study of the Effectiveness of the Balanced Scorecard"
- "5 Key Principles of Corporate Performance Management"
- "The Balanced Scorecard: a Necessary Good or an Unnecessary Evil?"
- "Balanced Scorecard and Causal Model Development: Preliminary Findings"
- "Beating the Balanced Scorecard Blues"
- "Scorecard Support"
- "The Search for Meaningful Measures"
- "Strategy Only Sticks if You Have Active Support and Involvement from the Top…and Follow Through"
- "The Case for Balanced, Structured, Performance Management. What difference can it make to an organisation?"
- "The Importance of Terminology to your Balanced Scorecard"
- "Training for Balanced Scorecard Success"

5. Find the most descriptive wording for your topics and turn them into categories.

This step, while potentially applicable in other research efforts where further refinement of an organization system may be needed, was not applied here. The reason

descriptive words were not found for topics and turned into categories is because this would have been a duplication of step three.

6. Make a final decision on the abbreviation for each category and alphabetize these codes.

Tesch explains that alphabetizing codes ensures duplication of codes has not taken place (Tesch, 1990). Alphabetization and review of codes generated under step three showed that the categorical list or codes were not duplicated.

7. Assemble the data material belonging to each category in one place and perform a preliminary analysis.

In this step, Tesch recommends to assemble the data material belonging to each category in one place and perform a preliminary analysis. Furthermore, Tesch advises to look for "a) commonalities in content, b) uniqueness in content, c) confusions and contradictions in content, and d) missing information with regard to the research question/topic." (Tesch, 1990)

This step was completed by first separating material according to topics. Then, each group of material was carefully reviewed to understand the content of the topic and noting commonalities, uniqueness and confusions or contradictions. This step provided in-depth information on each key area to successfully implement and use the BSC.

8. If necessary, recode your existing data.

This step was not necessary for this research. Similar to the decision under step five above, the need to recode data was unnecessary. All data was already organized, coded and analyzed. No further research was warranted to provide greater understanding.

The result once Tesch's eight steps were completed was the list of keys to successful BSC implementation and use. This research, which rendered these keys, answered investigative question one, "What are the key areas of a BSC an organization must address and succeed in to optimize its use?"

Validation

Qualitative analysis contains questions of feasibility, validity, study selection, mechanism and interpretation. To combat these issues, keys were only identified as keys upon finding confirming evidence from multiple sources through multiple researchers. Dr. James Banning (2001) describes that the act "of looking at phenomenon from a variety of vantage points" improves the validity of a researcher's findings. Simply stated, a key to successful BSC implementation and use did not become a key unless it was supported by more than one document. To review a summary of these findings, please refer back to Table 2.

Investigative Question Two

"*How does AFMC's implementation and use of the BSC align with what the literature indicates is needed to obtain optimal results?"*

Robert K. Yin (2003) in his book "Case Study Research Design and Methods," guides researchers in selecting an appropriate methodology for conducting research. Specifically, he explained that a historical methodology can be appropriate for answering "how" or "why" questions, when the researcher has little control over behavioral events and the degree of focus is on historical events as opposed to contemporary. This section will show through Yin's three steps how an historical methodology was deemed appropriate to answer this research question. Specifically, this section explains the answers to Yin's three steps' questions which were: the second investigative question proposed is a "how" question; there is little control over behavioral events; and the degree of focus is on historical events. Upon completing Yin's three steps and understanding an historical approach was appropriate, it was applied to help answer this second investigative question.

Historical

Selection

Historical research, a process to learn and understand the background and growth of a chosen field of study, offers insight into organizational culture and operation. Yin outlines when researchers could select the historical methodology through three conditions:

1) Type of research question posed

2) Extent of control an investigator has over actual events

3) The degree of focus on contemporary as opposed to historical events (Yin, 1994)

1. Type of research question posed

Yin's first condition answered in order to select a proper research methodology addressed the structure of the research question. To aid in this selection, Yin developed a basic categorization scheme which consists of the series: "who," "what," "where," "how," and "why." Furthermore, Yin's table, Table 3, displays this series and shows how it relates to the five research strategies: experiments, surveys, archival analyses, histories, and case studies.

Table 3: Relevant Situations for Different Research Strategies

Strategy	Form of Research Question	Requires Control of Behavioral Events?	Focuses on Contemporary events?
Experiment	How, why?	Yes	Yes
Survey	Who, what, where, how many, how much?	No	Yes
Archival Analysis	Who, what, where, how many, how much?	No	Yes/No
History	How, why?	No	No
Case Study	How, why?	No	Yes

(Yin, 1994)

Yin further explained the relationships amongst the methods and conditions in his book. However, the relevant information extrapolated from his explanation which pertains to this research is that, ""how" or "why" questions are likely to favor the use of case studies, experiments or histories." (Yin, 1994)

The second investigative question to be answered was a "how" question. When a "how" question is to be answered, Yin's three-step process narrows down potential research approaches to case study, experiment or historical. To further delineate between these three approaches, the extent of control required over actual events should be identified.

2. Extent of control an investigator has over actual events

Since the second investigative question contains a "how" differentiator, the next step was to evaluate the amount of control required on actual events. If control over

actual events is not needed, the researcher should turn their focus to either the case study or historical research designs.

This step further delineated between the following potential research methods narrowed down under step one above: case studies, experiments or historical. Since there was no need to control actual events in order to answer this investigative question, the experimental methodology was eliminated leaving historical and case study methodologies as the two remaining potential approaches for this question. In order to isolate the appropriate research method, the last condition answered was the degree of the focus on contemporary as opposed to historical events.

3. The degree of focus on contemporary as opposed to historical events

Finally, Yin differentiated between the case study and historical research approaches. He explained that the historical research is optimal when a researcher "must rely on primary documents, secondary documents, and cultural and physical artifacts as the main sources of evidence" (Yin, 1994).

To answer this investigative question, documents were the sole source of information. The types and details of these documents are outlined under Busha and Harter's second of six steps below. Sponsorship was in place to provide documents and provide slight guidance when needed; however, interviews were not conducted to eliminate potential bias and no other forms of data were collected. Since this research focused almost completely on historical events, the historical approach was deemed appropriate.

The answers to Yin's three steps' were: the second investigative question proposed is a "how" question; there is little control over behavioral events; and the degree of focus is on historical events. Through progression of these answers, Yin's steps narrowed down the appropriate research methodology to historical. Consequently, the historical approach was then applied to help answer this second investigative question.

Historical Research Application

The historical approach to answer the second investigative question was applied by following Charles Busha and Stephen Harter's six steps for conducting historical research noted in their book *Research Methods in Librarianship: Techniques and Interpretation* (Busha and Harter, 1980). By following Busha and Harter's steps, listed below, information was gathered and evaluations were made of AFMC's BSC implementation and use.

1) Recognize an historical problem or identify a need for certain historical knowledge.

2) Gather as much relevant information about the problem or topic as possible.

3) If appropriate, form a hypothesis that tentatively explains the relationships between historical factors.

4) Organize the evidence and then verify the authenticity and veracity of information and its sources.

5) Select, organize and analyze the most pertinent collected evidence and draw conclusions.

6) Record the conclusions in a meaningful narrative. (Busha and Harter, 1980)

1) Recognize an historical problem or identify a need for certain historical knowledge.

First, the need for historical information in order to answer the second investigative question of "How does AFMC's implementation and use of the BSC align with what the literature indicates is needed to obtain optimal results?" was identified. In order to answer this question, historical documents of AFMC's BSC implementation and use were needed to first understand AFMC's BSC specifics within each key.

2) Gather as much relevant information about the problem or topic as possible.

An abundance of information was collected on AFMC's BSC, spanning from 2001 to 2007, from two major sources: 554 ELSG/SBI office and AFMC Strategy webpage. The 554 ELSG/SBI office, which monitored and managed the BSC software system, provided all the information ever collected on the implementation and use of AFMC's BSC. Secondly, information was gathered from AFMC's webpage which, once approved access, provides viewers current information on the command's strategy. Together, information was collected primarily in these formats: presentations, meeting minutes, governance and guidance.

3) If appropriate, form a hypothesis that tentatively explains the relationships between historical factors.

Since this research did not focus on relationships between the historical factors, this step to generate a hypothesis was not deemed appropriate. However, this research would fail to reject the hypothesis that a not for-profit organization could utilize the BSC—which was initially developed for-profit organizations.

4) Organize the evidence and then verify the authenticity and veracity of information and its sources.

The abundance of information on AFMC's BSC was organized chronologically to evaluate is implementation and use. The authenticity of this information was never questioned and assumed to be valid, as it was always in the form of military briefings, planning documents, etc. of an official capacity.

5) Select, organize and analyze the most pertinent collected evidence and draw conclusions.

The most pertinent information was selected, organized and analyzed to identify the specifics of AFMC's BSC within the key areas of successful implementation and use. This entailed focusing on the BSC implementation and utilization data and dismissing irrelevant data such as contracting information, IT system technical specifications, etc. The massive abundance of data required two reviews, once upon initial collection and again prior to analysis. The data was then organized into the 11 categories of successful

BSC implementation and use identified in the literature review. Finally, the specifics of AFMCs BSC within each of these categories were understood and analyzed against finding from the qualitative meta-synthesis.

6) Record the conclusions in a meaningful narrative. (Busha and Harter, 1980)

Finally, perceived differences were noted and listed under areas for recommendation. These recommendations provided the specific areas AFMC should focus on for BSC improvement, if they have yet to be completed.

Summary

This chapter explained the methodical approach taken to answer this research's investigative questions. The meta-synthesis methodology approach was employed to derive the list of keys to successful BSC implementation and use outlined in the literature review chapter to answer the first investigative question. An historical methodology was the approach taken to collect and analyze AFMC's historical documentation in order to understand and note the specific areas of AFMC's BSC. Ultimately, AFMC's BSC specifics were compared against the literature to answer the second investigative question.

IV. Analysis and Results

Chapter Overview

In this chapter, analyses and results of the investigative questions are provided. First, investigative question one is addressed and its importance in answering investigative question two is identified. The remainder of the chapter extensively addressed investigative question two. This was accomplish by providing specifics of AFMC's scorecard within each key to successful BSC implementation and use, comparing those specifics with the findings from investigative question one, and providing analyses.

Investigative Question One

"What are the key business processes an organization must address and succeed in to successfully implement a BSC?"

This question was answered by applying a meta-synthesis approach in researching the literature. The findings from this research established a baseline of 11 keys to successful BSC implementation and use illustrated in Table 4 below, which were extensively discussed under the literature review. That baseline provided the framework for which to identify and contrast the key areas of AFMC's BSC in order to answer investigative question two.

Table 4: Keys to Successful BSC Implementation and Use

Implementation Order	Key to Successful BSC Implementation and Use	
1	1	Deploy BSC from the Top Down
2	2	Establish BSC Framework
3	3	Standardize Within the BSC--but Do Not Standardize Content
4	4	Select the Right Objectives and Performance Measures
	5	Quantify Objectives or Their Performance Measures
	6	Ensure Objectives Present a Causal Pattern
	7	Implement Strategy Maps
5	8	Select Software to Help--Not Hinder
6	9	Select BSC Goals and Timelines for Their Completion
7	10	Simplify Management Systems--Do Not Just Add To Existing Framework
8	11	Cascade the BSC

Investigative Question Two

"*How does AFMC's implementation and use of the BSC align with what the literature indicates is needed to obtain optimal results?"*

In order to answer this question, an analysis of AFMC's BSC implementation and use was completed. In this analysis, the 11 keys identified as critical to successful BSC implementation and use were taken and, in succession and separately, used to identify and analyze AFMC's specifics within each key. AFMC's implementation within each key as compared to the literature was then rated as having a low, medium or high implementation level. A low level was assigned if AFMC missed a critical area within a key. A medium level was assigned if AFMC met the basic intent of the key. And a high rating was assigned if AFMC fully met a key's intent. This rating is shown in the Table 5 and is further explained within each key's section.

Table 5: Rating Summary

Key to Successful BSC Implementation and Use	Rating
Deploy BSC from the Top Down	Low
Establish BSC Framework	High
Standardize Within the BSC--but Do Not Standardize Content	Medium
Select the Right Objectives and Performance Measures	Medium
Quantify Objectives or Their Performance Measures	Medium
Ensure Objectives Present a Causal Pattern	Low
Implement Strategy Maps	High
Select Software to Help--Not Hinder	High
Select BSC Goals and Timelines for Their Completion	Medium
Simplify Management Systems--Do Not Just Add To Existing Framework	Medium
Cascade the BSC	Low

1 and 11. Deploy and Cascade the BSC from the Top Down

The literature indicated that BSCs should be deployed from the top-down for two main reasons. The first reason is to gather the management's consensus of the strategic goal, objectives and their measures. Secondly, to receive support and financial backing that accompanies top-level involvement. Furthermore, top-down deployment can take two forms: governance and cascaded BSCs. Therefore, both of these keys to successful BSC implementation and use are discussed within this section: BSCs should be deployed from the top-down and should be cascaded. As noted previously by Niven, it is critical for organizations to cascade scorecards in order to create a two-way flow of information, increase organizational visibility and provide "...real-time data for decision making, resource allocation, and most importantly, strategic learning" (P. R. Niven, 2003).

This research identified the top of AFMC's corporation as the President--our Commander and Chief--and his Secretary of Defense. Therefore, the question answered in this section is: Was the BSC deployed and cascaded from the President and Defense

Secretary level? Consequently, a low rating in this key is given to the DoD as a whole—not solely to AFMC—because the BSC was neither deployed nor cascaded from the top of the DoD by way of the Office of Secretary of Defense's (OSDs) BSC. It was, however, deployed from the top of AFMC and cascaded down to the center levels but research failed to show further deployment or cascadement down to team or individual levels.

Overview

Throughout the remainder of this section, the specifics of AFMC's implementation within keys one and eleven are discussed and analyzed. First, a figure representing different levels of scorecards and guidance is presented. Then, the different levels are explained. Finally, an analysis is provided.

Levels of Scorecards and Guidance

By combining governance, timelines and various BSCs, a possible top-down involvement hierarchy integrated with cascaded BSCs is illustrated in Figure 4. As reflected in this figure, the driving force behind performance management started in 1993 with the Government Performance and Results Act (GPRA) (United States Congress, 1993). In the 2001 President's Management Agenda (PMA), the progress of performance measurement implementation and use within the government was assessed, and deemed unsatisfactory (Executive Office of the President and Office of Management and Budget, 2001). Shortly thereafter, AFMC immediately started their campaign with the BSC, and when they felt the timing was right, cascaded it down to their centers. Lastly, in close succession between 2002 and 2003, three governance documents titled management

initiative decisions (MIDs), the Office of Secretary of Defense (OSD) BSC and Expeditionary Logistics for the 21st Century (eLog21) BSC were published (OSD PA&E; Department of the Air Force; *MID 901: Establishing performance outcomes and tracking performance results for the department of defense.*; *MID 910: Budget and performance integration (BPI) initiative.*; *MID 913: Implementation of a 2-year planning, programming,*
budgeting and execution system.).

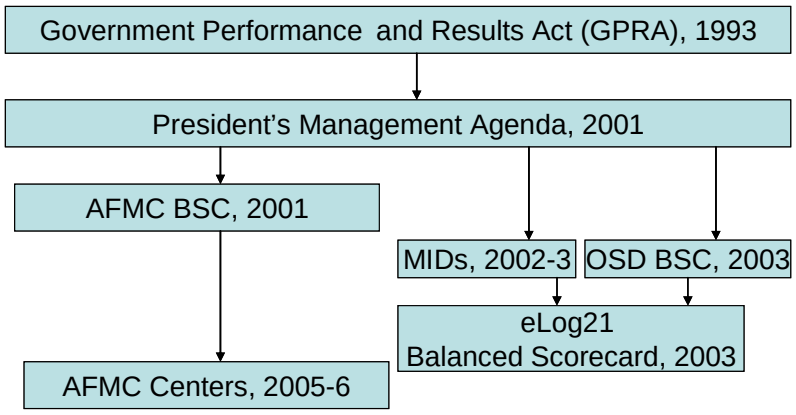


Figure 4: BSC Flow Chart

Government Performance and Results Act, 1993

On August 3, 1993, President Bill Clinton signed into law the Government Performance and Results Act (GPRA) with a focus "to provide for the establishment of strategic planning and performance measurement in the Federal Government..." (United States Congress, 1993). This was the driving guidance behind the use of performance

management and could be categorized as top-down performance management deployment, albeit not specifically BSC deployment.

President's Management Agenda

President George W. Bush, in his 2001 President's Management Agenda (PMA), formally labeled our government as one that fails to finish grand plans and aimed to rectify this mindset and practice. Specifically, he stated:

> *Government likes to begin things—to declare grand new programs and causes. But good beginnings are not the measure of success. What matters in the end is completion. Performance. Results. Not just making promises, but making good on promises. In my Administration, that will be the standard from the farthest regional office of government to the highest office in the land.* (Executive Office of the President and Office of Management and Budget, 2001)

Additionally, he expounded stating:

> *New programs are frequently created with little review or assessment of the already-existing programs to address the same perceived problem. Over time, numerous programs with overlapping missions and competing agendas grow up alongside one another—wasting money and baffling citizens.* (Executive Office of the President and Office of Management and Budget, 2001)

President Bush intended to address government's reform through the implementation of five government-wide management initiatives and nine agency-specific reforms. Of the five government-wide management initiatives, one was "Budgeted and Performance Integration." (Executive Office of the President and Office of Management and Budget, 2001) Under this initiative, seven convincing problem bullets are listed--one of which stated that after the enactment of GPRA "progress towards the use of performance information for program management has been discouraging." Consequently, the budget and performance integration initiative focus

was to "formally integrate performance review with budget decisions." (Executive Office of the President and Office of Management and Budget, 2001)

Air Force Materiel Command's BSC

The requirement for AFMC to "develop [a] plan for [an] executive management system" was briefed in August of 2001 and was presumably driven from the 2001 PMA (HQ AFMC/XP Deputy, 2001). AFMC immediately responded to this directive and developed the first version of their BSC. AFMC should be applauded for their responsive change management. Unfortunately, their quick implementation made them a pioneer in BSC implementation within the DoD, and because of such, they were unable to align it to the higher levels within the corporation—such as OSD and AF—because those levels had yet to develop BSCs. AFMC did, however, cascade their scorecard down to their centers but research failed to show cascadement down to the team or individual level.

Secretary of Defense Balanced Scorecard

The OSD did not develop a BSC until 2003—two years after AFMC's BSC implementation. Because this scorecard was developed after AFMC's BSC, the two were not linked. Additionally, the OSD did not cascade any scorecards. In a Balanced Scorecard Interest Group, the OSD acknowledged that military services were already utilizing the BSC but stated that the OSD BSC was differentiated through further strategic reach (Scala and Office of Secretary of Defense, 2003). It appears the OSD used this reasoning to avoid or explain the lack of cascaded scorecards.

Management Initiative Decisions

In response to the President's Management Agenda (PMA), management initiative decisions (MID) 901, 910 and 913 were created in concert with the OSD BSC (*MID 901: Establishing performance outcomes and tracking performance results for the department of defense.*; *MID 910: Budget and performance integration (BPI) initiative.*; *MID 913: Implementation of a 2-year planning, programming, budgeting and execution system.*). These MIDs were part of the BSC key, top-down level deployment, albeit once again not specifically for the BSC but for performance management.

These MIDs were illustrated in the January 2004 Air Force Effects Management Program (AFEMP) Primer presentation (HQ USAF/DPM, 2004). The goals of these initiatives were to "establish performance outcomes and tracking performance results for the DoD, implement the budget and performance integration initiative, and implement a two year planning, programming and execution process." (HQ USAF/DPM, 2004) These three MIDs provided guidance initiatives within the DoD. MID 901 "assigned responsibility for OSD performance measurement collection..." which in-turn required each service to use a performance measurement system. Under MID 910, the AF established a plan to obtain 100 percent integration between performance measures and budget. Finally, MID 913 guided "the department's strategy development, identification of needs for military capabilities, program planning, resource estimation and allocation, and other decision processes." (HQ USAF/DPM, 2004).

Air Force Balanced Scorecard

To comply with the literature, the OSD BSC should cascade down to the next level within the corporation—the military branches. Through review of the historical data, it is unclear whether the OSD BSC was cascaded down to the AF in an AF BSC and whether that AF BSC was then cascaded down to an AF Logistics BSC, whether two BSCs within the AF were developed independent of the OSD BSC and each other, or whether the first AF BSC was merely a proposed scorecard whereas the AF Logistics BSC was operational. The historical documents only revealed that the AF BSC was a proposed idea, whereas the second scorecard discussed here—AF Logistics BSC—showed as being implemented. It was concluded that the OSD BSC did not cascade down to an AF BSC and the AF Logistics BSC was developed independent of any other scorecards. Consequently, these scorecards were identified as not cascaded or aligned/linked.

The first scorecard, AF BSC, was presented during the AFEMP Primer (HQ Department of the Air Force /DPM, 2004). There was not much information surrounding this scorecard. The only available information was from a strategy map figure, which showed a possible link between it and the OSD's BSC through use of the same four OSD perspectives. Once again, however, no further documentation was found on this scorecard, and it was concluded to only be a proposed scorecard that never undertook further development.

A second BSC, the AF Logistics BSC, was also identified. This scorecard did not have any linking indicators to other scorecards and most likely was an independent scorecard.

Analysis

The BSC key of top-down deployment was rated as low, because even though top-down deployment appeared to be present in the guidance and direction of performance management it did not directly support the implementation and use of a BSC to conduct the required performance management. Without top-down BSC deployment, the literature showed that corporations are exposed to a lack of financial and resource BSC support and therefore may fail to get started or maintain. AFMC's responsibility to implement top-down deployment showed positive results in their guidance and creation of center scorecards but research failed to show further cascadement down to team or individual levels.

The BSC key of cascading scorecards was also rated low because the data showed that BSCs were established at different levels within the hierarchy but were not always aligned (linked). Through review of the data, it was shown that the top of the corporation--the OSD's BSC--was developed after AFMC's BSC. Therefore, the two were not engineered to align and research failed to show any attempts to link the two. After the AFMC BSC and OSD BSC were developed, the AF BSC and AF Logistics BSC were discussed. It appears the AF BSC was never implemented and the link between the OSD's BSC and the AF Logistics BSC was not visible, if even present.

AFMC, however, did cascade their scorecard down to the center levels but further cascading was uncertain.

The absence of links between BSCs reflects a potential lack of strategic alignment. Utilizing the BSC throughout the DoD could prove beneficial; however, without alignment of linked scorecards throughout the entire corporation (from our President down to team and individual scorecards), integration of strategic goals and objectives may be misaligned or demands for excess resources required. The overall misalignment of the BSC throughout the DoD should not ultimately be the responsibility of AFMC; however, if AFMC has failed to attempt to rectify this misalignment or has failed to cascade their BSC and align their strategic goals down to the team and individual levels, then an opportunity exists to further optimize their BSC in these areas.

2. Establish Balanced Scorecard Framework

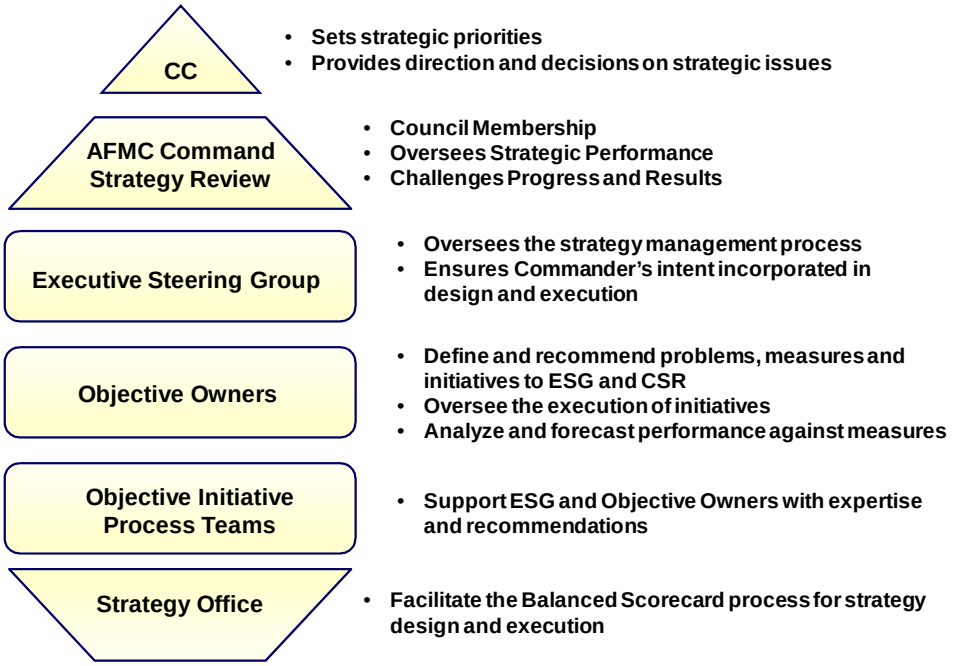
Implementing a BSC can be an intensive, slow process and therefore requires a BSC framework. A BSC framework could include infrastructure, governance and processes. AFMC was rated high in the implementation of this key, because the research showed that they were successful in implementing and using a BSC framework.

Overview

In this section, the details of AFMC's framework are provided. Initially, the infrastructure of the BSC framework and its involvement in the BSC are discussed. Then, some of AFMC's governance, review processes and procedures are reviewed. Finally, an analysis of this key is provided.

Infrastructure

The first reason AFMC was given a high rating in key was because they developed a BSC infrastructure, which is visually represented in illustration Figure 5 (AFMC, 2007b). This infrastructure proved critical to continuous improvement and management of their BSC. While all the players identified in this infrastructure definitely contributed to AFMC's BSC, some of the most visible players were the AFMC Command Strategy Review (CSR) and the Executive Steering Group (ESG). Throughout AFMC's BSC use, historical documents reflected repetitive meetings and operations of these groups. Furthermore, these groups discussed new and existing objectives, measures, initiatives and processes--just to name a few of their responsibilities. Governance, a relationship triad and the four areas to each objective were some of the tools used by AFMC in BSC management.



(AFMC, 2007b)

Figure 5: AFMC's BSC Infrastructure

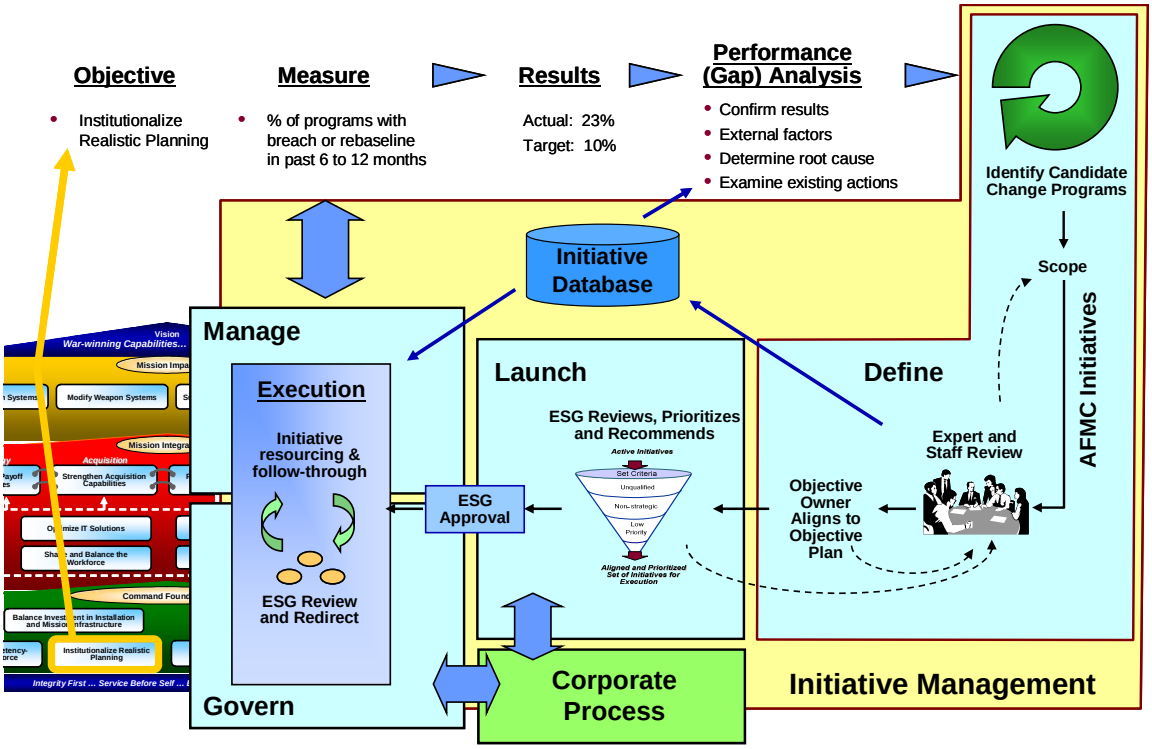
Governance

Another reason AFMC was rated high in this key was due to its governance process. The military understands that governance is critical in change management and implementing and using a BSC was no exception. In one of their briefings, they introduced and defined governance as a leadership process to manage long-term direction, establish responsibilities for strategic objectives, review strategic performance, and revise priorities (HQ AFMC/XPX, 2005). Two of AFMC's governance publications are discussed here. First, command instruction AFMCI 90-104 titled "Implementing Improvement and Change Initiatives: An Integrated AFSO21 and BSC Approach" was published. This instruction's purpose follows the title—it instructs a user on how to

implement improvement and change initiatives within an Air Force Special Operations for the 21st Century (AFSO21) and BSC context. The second source of governance is an AFMC strategy webpage. This webpage provides an interested reader the ability to access information (once approved and using the required computer access card and password) in the following AFMC strategic categories: training, objective, measure, communication, governance, AFMC senior leader briefs, and meetings-groups. This webpage's information provides a reader the ability to not necessarily review the BSC development but to understand the current BSC structure and surrounding documentation.

Processes

A third reason AFMC scored high in this key's implementation was because processes were implemented to manage the BSC. In command strategy reviews (CSRs), executive steering groups (ESGs) and similar working groups, a triad was utilized to understand the relationship between objectives, measures and initiatives (AFMC). This triad played a critical role in facilitating change and the working relationship of these components can be viewed in Figure 6. In this AFMC change process, the first step would be to establish an objective and assign a performance measure (metric). Then, a target would be established and a gap analysis performed. Finally, initiatives would be established in an attempt to close this gap. Through this cycle, managers could actively focus on specific objectives and their performance measure(s) which were improved through initiative management.



(*Strategy execution and alignment.*2007)

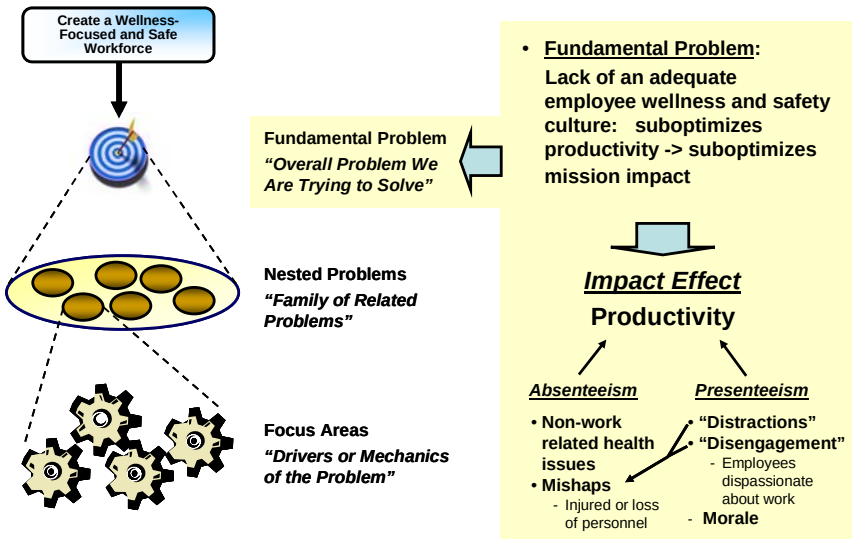
Figure 6: Applying the Triad

Another reason AFMC received a high rating in this key was because they also actively reviewed and reduced existing, non-relevant initiatives. Their focus was on aligning and prioritizing current and proposed initiatives in order to reduce non-essential initiatives and align essential initiatives.

The final reason AFMC received a high rating in this key was because they developed a stringent application process which was required to propose and evaluate objectives. To submit an area as an objective, an objective owner would provide information in four areas. This information was required in order to gain objective

approval, place the objective on the strategy map, and evaluate it over time. These four areas are as follows:

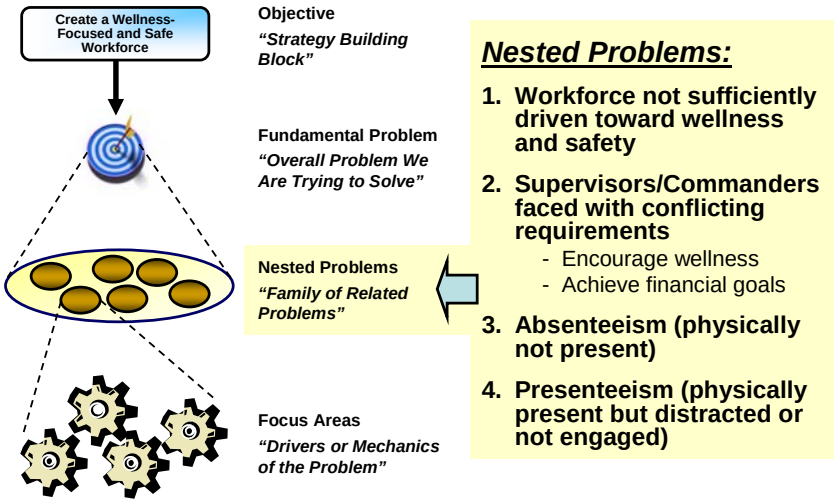
1) Fundamental Problem statement- In this step, the owner would describe the fundamental problem that warranted inclusion into the strategy map in the form of an objective. Specifically, this problem should reflect not inadequate processes, resources or tools but reflect what the commander cannot do, does poorly or inadequately, or which warrants leadership attention. An example of this step is illustrated in Figure 7. Under the objective "create a wellness-focused and safe workforce," the fundamental problem, or the "overall problem [they] are trying to solve," is a lack of adequate employee wellness and safety culture.



(AFMC, 2006)

Figure 7: Fundamental Problem

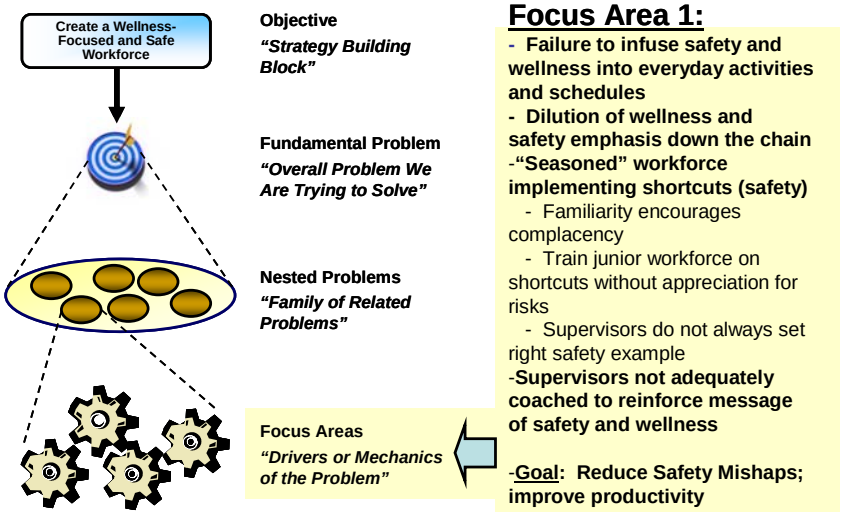
2) Nested Problems- Under the second step, the owner identified three to five nested problems, prioritized if possible, that underlie the fundamental problem. An example of this is illustrated below containing four nested problems. These problems were also referred to as the "family of related problems."



(AFMC, 2006)

Figure 8: Nested Problems

3) Focus Areas- To further decompose the nested problems, the owner would identify the focus areas by identifying general problems and root causes that will closely align to solutions. An example of this is illustrated below.



(AFMC, 2006)

Figure 9: Focus Areas

4) Measures- Finally, the owner would list and attach the strategic measures which reflected the performance of the proposed objective.

Analysis

This key appeared to be a strong suit for AFMC and not much, if any, could be added to this already great program. The research showed that some of AFMC's framework appeared to match or surpass civilian companies' infrastructure. In addition to the highlights of AFMC's active involvement discussed in this section, this framework is the core of AFMC's BSC and is integrated with almost all of the keys to successful BSC implementation and use.

3. Standardize Within the BSC—but Do Not Standardize Content

Standardization, in areas such as vocabulary and approach, can increase companies' BSC effectiveness. Standardized BSC content, on the other hand, could

decrease its success. AFMC was given a medium level rating in this key. The reason they received a medium rating was because they took several steps towards the positive aspect of BSC standardization, but they missed the opportunity to standardize areas and required standardized content within their cascaded scorecards.

Overview

This section reviews standardization within AFMC's BSC. First, how AFMC standardized the main BSC terms to increase communication but did not provide a published standardized vocabulary listing is presented. Next, the benefit of AFMC's standardized BSC objective template is reviewed. Then, AFMC's process for cascading scorecards to their centers is applauded for standardizing the approach but questioned for requiring standardized content. AFMC's standardized measure definitions and charting guidelines, which ensured appropriate data collection and efficient data reviews, are discussed next. Finally, a standardized metric building process is covered, which ensured approved metrics were built to the required standards and contained the required information. In conclusion, an analysis is completed on this key to "standardize within the BSC—but do not standardize content."

Standardized Vocabulary

The literature showed that by utilizing a standardized vocabulary to define BSC components, organizations can increase communication as well as understanding. Although the historical research of AFMC failed to show any standardized AFMC vocabulary publications or consolidated listings, a user could gather definitions of the main BSC terms through other governance. For instance, the terms "fundamental

problem," "nested problem" and "focus area," were defined through a process explanation, which can be seen through Figures 7-9 above. The fact that AFMC provided definitions throughout different presentations and media most assuredly guided users; however, a consolidated listing would provide a complete, one-stop-shop for understanding their BSC vernacular.

Standardized Objective Template

Another positive implementation in this key was the development of a standardized objective template (AFMC, 2005b). This template ensured all necessary parameters of the AFMC BSC strategic objectives were identified and provided a standard approach for new objective development. The parameters this template required were frequency of update, measure, frequency of executive review, measurement intent, units of measure, measurement definition and formula, next steps, assumptions, comments, target setting approach, whether measurement information is available, data elements and sources, and data and performance owners.

AFMC mandated the completion of this template for all objectives (AFMC, 2005b). This standardized requirement and approach for detailing future objectives and their parameters enabled everyone involved to readily review an objective's details and understand its parameters as well as build an all encompassing objective.

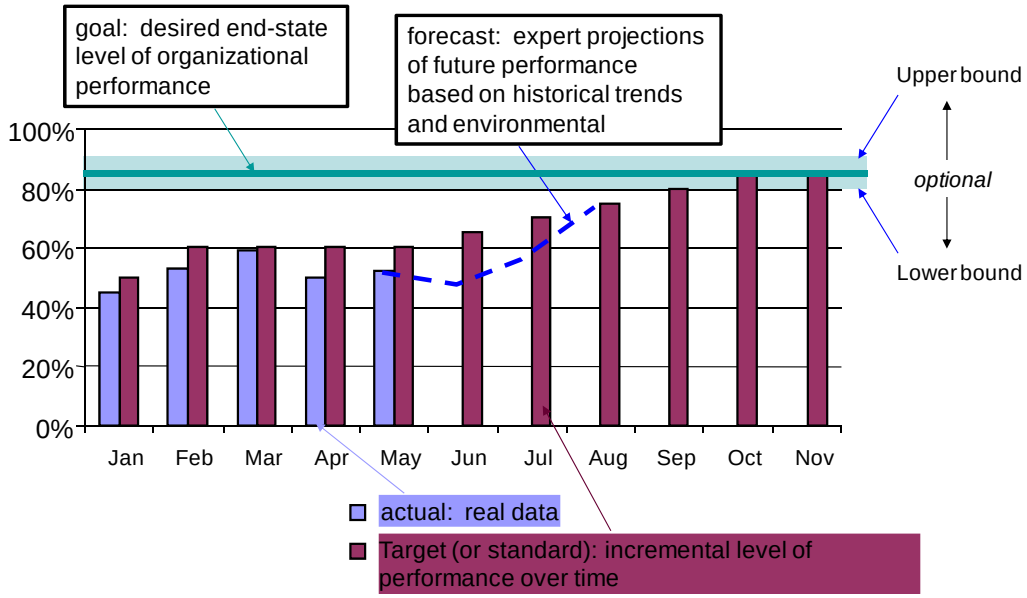
Standardized BSC Cascadement

AFMC attempted to improve their BSC by developing a standardized approach to cascading scorecards. While their standardized approach provided guidance and facilitated completion of cascaded scorecards, it may have potentially eliminated these

benefits by requiring standardized content (AFMC, 2006a). Specifically, they instructed the centers to use the same 10 objectives the command utilized for two out of the three objectives and to individualize the remaining objective. There are two area of interest in this approach: 1) Did the standardized approach facilitate development of cascaded scorecards? 2) By requiring standardized content within these scorecards, did AFMC reduce the optimality which could have been provided had the centers been given the flexibility to further customize their scorecards? The historical research showed that center scorecards were developed. Secondly, research was unable to identify the affect the command's requirement to standardize content had. This standardized content may have had no adverse reactions to BSC optimization or perhaps it hampered potential center productivity and buy-in by removing the opportunity for the centers to modify their scorecards to best fit their needs.

Standardized Measure Definitions and Charting

AFMC published measure definitions to ensure appropriate data collection and efficient data reviews (AFMC, 2007a). Leadership outlined measure definitions by explaining eight relevant factors to a measure: actual, target (or standard), forecast, goal, upper and lower bounds, variance and deviation. Additionally, an example of how to standardize measures' charting was provided, Figure 10. This publication mandated charts to be of the same format across the command to create effective and efficient review.



(AFMC, 2007a)

Figure 10: Measure Representation

Standardized Metric Building

A SMIS User's Manual defined and explained steps for building metrics (AFMC, 2007b). While AFMC may have used this information when building metrics, the research failed to show such application. Computer Science Corporation, the developers of SMIS, developed this section "for engineering a metric that will provide information, not just a measurement, about how a process is contributing to strategic goals." The "building a metric" section of this manual proceeds to define: what is a metric; what is its intent; three essential metric components; five-step metric design process; metric context; parameter selection; and how to represent the metric's performance. If these metric building steps were standardized, AFMC could increase

the probability that an area is accurately measured to in-turn evaluate how the said area contributes to the strategic goal and how it should be properly managed.

Analysis

AFMC met a large amount of this key's intent and therefore received a medium rating. The areas of this key in which AFMC excelled were they: provided some form of standardized vocabulary; implemented a standardized objective template; provided a standardized approach to cascade scorecards; and standardized measure definitions and charting. The possibility still exists to optimize this key by: providing a consolidated BSC vocabulary listing; removing the required scorecard content with cascaded scorecards; and implementing instructions on how to properly build metrics.

4. Select the Right Objectives and Performance Measures

Selecting the right objectives and performance measures are critical to a company's BSC success. First, objectives must be correctly identified. The selection of incorrect objectives will lead to optimization of non-value added processes—meaning that even though process will be optimized they may fail to contribute to the optimization of the company as a whole. Secondly, appropriate measures must also be selected to accurately reflect the objective. If measures are not correctly selected, they will be measuring performance somewhere other than in the objective. If the selected measures fail to measure the objective, not only will managers fail to understand the performance within that objective and its result on the strategy but it will also be wasting resources. Therefore, careful considerations should be taken to select both the appropriate objectives and their measures.

Overview

This section of AFMC's key to select the right objectives and measures was given a medium rating. First, this section explains AFMC's developed a process for identifying and capturing both internal and external requirements. Then, shortcomings within this key are presented. Next, the processes and guidance AFMC used to rectify these shortcomings are discussed. Finally, an analysis is provided.

External and Internal Requirements

AFMC worked towards selecting the right objectives and measures by attempting to balance external and internal requirements. Because AFMC is not the top of the corporation--it is a business unit within a larger AF corporation--it possesses both internal and external requirements. One way AFMC identified that all requirements were met was through implementation of a requirements pyramid. This pyramid provided structure in three main categories—customer effects metrics, process performance metrics, and strategic plan assessment—which drilled down to 11 specific metric areas. (HQ AFMC/XP Deputy, 2001) AFMC could use then use these metrics throughout the pyramid structure to balance all requirements.

Identified Shortcomings

Evidence of incorrectly selected objectives and measures began to surface through command performance reviews (CPR), offsite visits, direct feedback from participants, input from field leadership and teams, and strategic management integrated process teams (IPT) (HQ AFMC/XP, 2005). One of these challenges was identified as "BSC Quality." Under this observation, it was noted that AFMC's BSC had:

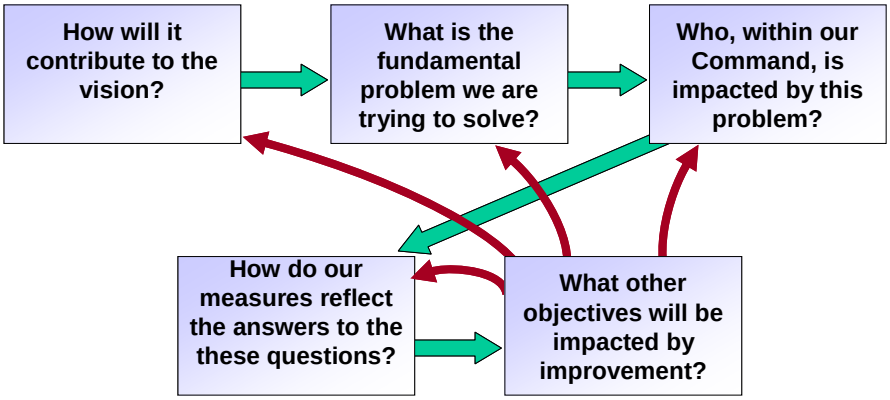
> *missing or buried commander intent, does not directly support the mission, insufficient attention to customer voice, missing core activities of the command, [too] operational instead of strategically focused, as well as too many measures and measures [that] do not fit objectives* (HQ AFMC/XP, 2005).

A later analysis also identified shortcomings with the objectives and measures. Specifically, the briefer identified that: specific directorates were selecting measures to showcase projects or activities; measures had "little relationship to mission objectives or vision impact"; and, the BSC contained many historically reported measures of limited change value. (Hocker and RTS Partners LLC, 2005)

Processes for Selecting the Right Objectives and Measures

The identified shortcomings in objective and measure development drove AFMC to take action. They attempted to improve this key through several steps (Hocker and RTS Partners LLC, 2005). Their first thing AFMC did to improve in this area was define a strategic measure. Then, a three-by-four chart was presented to help users differentiate between urgent, operational and strategic measures by looking at frequency, rationale, scope and examples. Now that AFMC provided information so users could more easily differentiate between different measures, they attempted to improve this key further by identifying eight principles for strategic measure design: 1) lead (input) versus lag (output) 2) control versus influence 3) tipping point measures 4) averages 5) the role of surveys 6) top 10 measures 7) the danger of indices and 8) be strategically focused (Hocker and RTS Partners LLC, 2005). Two other improvements came by way of the SMIS Users Manual which provided extensive guidance on measure selection and implementation and through AFMC's "logic of questions" to further aid in objective and

measure selection (Figure 11). (554 ELSG/SBI, 2006a) One final improvement noted in this section was guidance to "not pursue measures [just] to have something to show--they must add significant value..." (AFMC, 2006a).



(AFMC, 2006b)

Figure 11: Logic of Questions

Analysis

This section attempted to show AFMC's specifics within this key and discuss the reasons it received its medium rating. The identified shortcomings section highlighted how the process of selecting objectives and measures can be very subjective and where subjectiveness can lead. To combat these shortcomings, AFMC instituted a number of actions. These actions not only provided assistance in delineating and understanding the different types of measures but also provided guidance to reduce subjectivity when selecting objectives or measures. Unfortunately, the research failed to show whether the results of these action were ever re-evaluated as to whether they succeeded in improving objective and measure selection and rectified the identified shortfalls. Ultimately, the

development of guidance and governance improved the potential to select the right objectives and measures but AFMC needs to verify its results.

5. Quantify Objectives or Their Performance Measures

There are two areas of importance when it comes to BSC objectives or their performance measures. First, they need to be quantified. Evaluation of a BSC's success can easily be reflected quantitatively to stay the course, change directions or simply convince sponsors of the BSC's success. Secondly, when numerous measures are identified to represent a single objective, those measures should be weighted to reflect each measure's importance on the objective.

Overview

AFMC received a medium rating in this key because they developed quantified measures but did not assign weights when numerous measures were aggregated to reflect one objective. This section reviews the specifics of AFMC within this key in two areas. First, AFMC's position on quantified and weighed objectives and measures is identified. Secondly, the development of quantified measures and their lack of weights are provided. In conclusion, an analysis is presented.

AFMC's Position

AFMC believed that measures were important. Two areas that reflected this position were through discussion of measures themselves and the type of measures used. Their position for measures was evident through their series of logic which stated that since strategy represents leaderships' choices and priorities, and measures communicate priorities that, by association, measures must be tied to strategy. They further detailed

the types of measurer by stating that one of their strategic vision attributes was to have "weighting and aggregation functions" (MSG/MMD7, 2002).

Quantified and Weighed Measures

The initial BSC, with fairly simple objectives had but one measure per objective. These measures were quantified and therefore fulfilled the first portion of this key to BSC success. As AFMC's scorecard evolved, however, objectives became more generalized and each objective became theoretically driven by numerous, unweighted measures (554 ELSG/SBI, 2006b).

Analysis

This key proved to be straight forward within AFMC's historical documentation. AFMC received the medium rating because while they did realize and develop quantified measures they did not assign weights to numerous measures when they theoretically represented one objective. By not allocating weights to an objective's measures, a user might then inappropriately assume that each measure should be weighed evenly when in actuality certain measures may play a larger role in the objectives improvement. This could lead to a misuse of critical resources. The absence of weighted measures could also possibly invalidate any analytical analyses performed in an attempt to verify the BSC's cause and effect.

6 & 7. Ensure Objectives Present Causal Pattern and Implement Strategy Maps

These two keys—objectives should present a causal pattern and implement strategy maps—are reviewed together. The concept and use of strategy maps was not considered part of the BSC framework until a number of years after the BSC was

introduced. Companies that have developed their BSC after the criticality of implementing strategy maps had been revealed have used the development of their strategy maps to blueprint their BSC. This blueprinting not only provides the blueprint of a company's BSC by identifying all their perspectives and perspectives' objectives but also ensures and reflects the causal relationships within those objectives through the use of arrows. Because it is now common for companies to develop cause-and-effect relationships through development of strategy maps, research in one area reveals insights into the other.

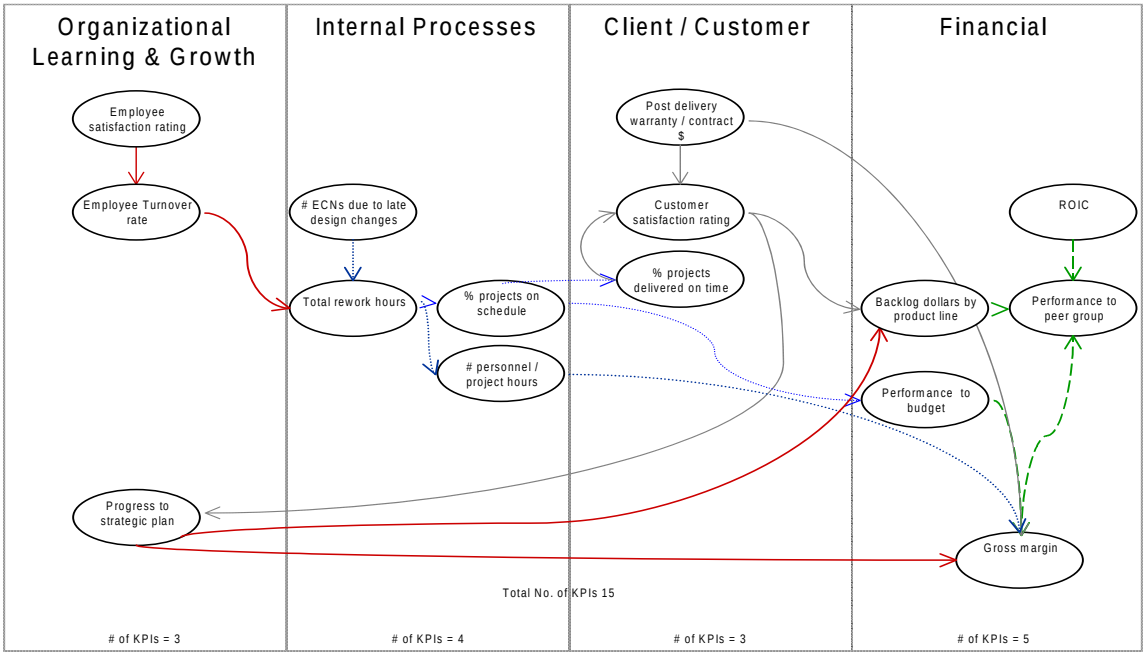
Overview

The research conducted to confirm that AFMC did use strategy maps also answered that, while their initial objectives did present a causal pattern, objectives after December 2005 may not have. Consequently, AFMC received a high implementation rating because they did implement strategy maps but a low rating in the key to ensure objectives present a causal pattern because their objectives from 2005 onward failed to show causal relationships and any hypothesized relationships were never validated.

This section will reveal AFMC's specifics within these keys by first introducing AFMC's position on causal relationships and explaining how they initially were tied to strategy maps. Then, the critical error of AFMC to validate their causal relationships, as well as future potential capability, is discussed. Finally, an analysis on these findings is provided.

AFMC's Position and Causal Relationship Evolution

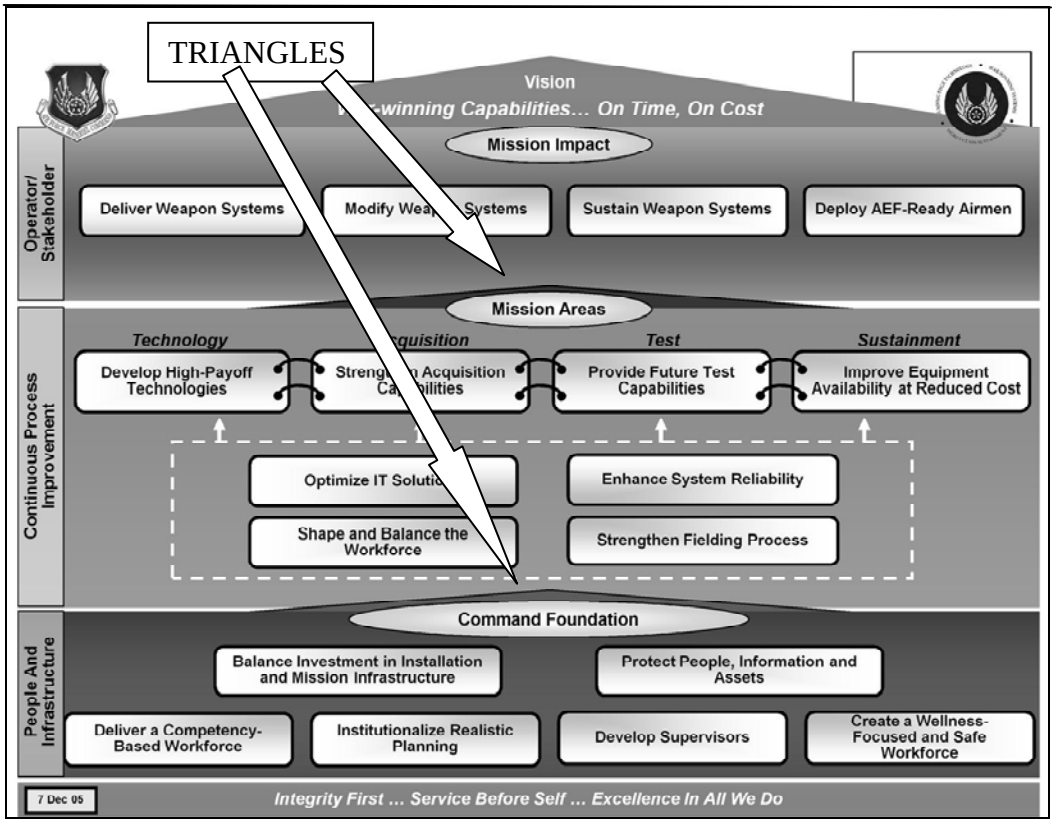
At the onset of AFMC's BSC development, the command acknowledged that causal relationships within a BSC were critical to its success and provided two prototype mappings that could help ensure the causal relationships existed. The first prototype mapping was horizontal (Figure 12) and the second was vertical (HQ AFMC/XP Deputy, 2001). The text within the bubbles of Figure 12 is not important. The importance reflected by this figure is that the objectives are connected through a series of arrows. This series of arrows identified to any viewer that by improving an objective, its succeeding objective should also improve.



(HQ AFMC/XP Deputy, 2001)

Figure 12: Cause and Effect Horizontal Mapping

AFMC selected this mapping technique of using arrows to acknowledge and reflect causal relationships. They implemented and continued to use this technique through a number of strategy map revisions until December of 2005. In the December and all succeeding strategy maps, cause-and-effect arrows were no longer utilized (Figure 12). This abandonment of arrows may lead to generalizations about causal relationships. For example, when a viewer looks at the strategy map in Figure 13, are they to generalize that since each perspective has a triangle at the top of it that the triangle is similar to a causal arrow and that the objectives between the perspectives are linked? And by that reasoning, improvements in any one of the objectives in the lowest level perspective will drive improvements in all the next higher level perspective's objectives? This example demonstrates that unless the viewer was involved in the strategy map's development they may not understand its true meaning.



(AFMC, 2005a)

Figure 13: December 16th, 2005 Strategy Map

Validating Hypothesized Relationships

In order to undeniably verify the validity of hypothesized cause-and-effect relationships in a BSC, quantitative analyses should be performed. These analyses can answer whether a change in driving objectives affected the desired result in the driven objectives. Through this process, managers can confirm or change relational hypotheses. Research of AFMC failed to reveal any statistical analysis to validate causal relationships. One presentation did, however, forecast an ability within SMIS to run

"Cause/Effect Simulations" but SMIS has been decommissioned since this research was conducted.

Analysis

Research showed that AFMC initially developed their scorecard with causal relationships. By implementing strategy maps, they received a high implementation rating in the key to implement strategy maps. While AFMC may understand and contend a causal relationship is also present among the most recent objectives, research has failed to surface any analyses verifying these hypothesized cause-and-effect relationships. The lack of causal relationships and their validations are critical shortcomings in AFMC's scorecard and therefore received a low rating. Without validated causal relationships, AFMC cannot confirm their BSC relationships are accurate or verify whether their BSC is structured to meet their strategic goal. If AFMC's hypothesized relationships were not valid and their BSC was not properly structured to meet their strategic goal, then valuable resources would have been wasted and the command as a whole would have missed an opportunity to become "balanced."

8. Select Software to Help--Not Hinder

Software should help, not hinder the efforts to manage business processes. This key to successful BSC implementation and use proved to be one of AFMC's strong suits. AFMC contracted with Computer Science Corporation (CSC) to build the Strategic Management Information System (SMIS), which was the system of choice for AFMC's BSC. To provide the reader with an understanding of the type of software AFMC was using, CSC earned the "Enhancing Operational Readiness in Defense" annual award,

presented by Cognos Corporation, for unparalleled implementation. Because of CSC's product and its capabilities, AFMC received a high rating within this key.

Overview

This section explains why AFMC received a high rating for this key. First, the activity locations and operations covered by SMIS are identified. Then, AFMC's requirements and SMIS's ability to meet those requirements are discussed. Finally, an analysis is provided on this key's findings.

SMIS Activity Locations and Operations

SMIS was AFMC's primary system for collecting, tracking, analyzing, and reporting performance. One reason AFMC received a high implementation level in this key was because SMIS accomplished these tasks through a web-based access across numerous activity locations and operations listed below (AFMC):

The activity locations:

- AFMC Headquarters (Wright-Patterson AFB, OH)
- AF Research Laboratories (reported from AFRL HQ at Wright-Patterson AFB, OH)
- AF Flight Test Center (Edwards, AFB, CA)
- Air Armament Center (Eglin AFB, FL)
- Aeronautical Engineering and Development Center
- Electronic Systems Center (Hanscom AFB, MA)
- Aeronautical Systems Center (Wright-Patterson AFB, OH)
- AF Security Assistance Center (Wright-Patterson AFB)
- Aerospace Maintenance and Regeneration Center (Davis-Monthan AFB, AZ)
- Nuclear Weapons Center (Kirtland AFB, NM)
- Ogden Air Logistics Center (Hill AFB, UT)
- Oklahoma City Air Logistics Center (Tinker AFB, OK)
- Warner-Robins Air Logistics Center (Robins AFB, GA)

The operations involved:

- Headquarters (including Community Action Information Board (CAIB))
- Acquisition
- Test and Evaluation
- Sustainment
- Science and Technology
- Mission Support (base infrastructure)
- Human Resources

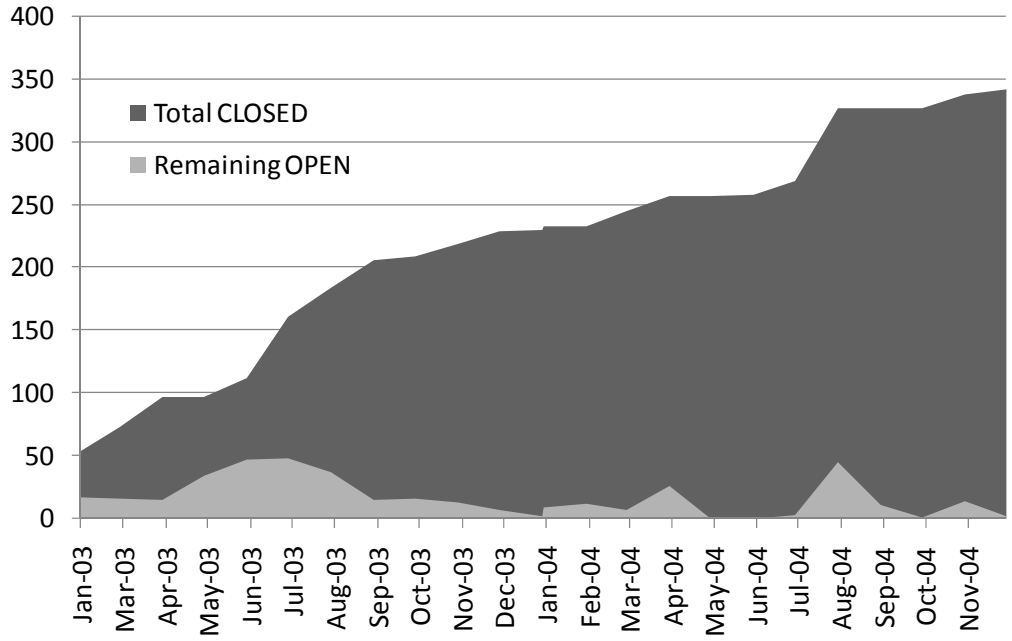
AFMC Requirements and SMIS Capabilities

SMIS was introduced at the same time and alongside AFMC's BSC (HQ AFMC/XP Deputy, 2001). Another reason SMIS enabled AFMC to receive a high rating was because it advertised the capability and met AFMC's "management system characteristics" to be "simple," "aggressive," "flexible," and have a "low overhead." It proved to be "simple" by providing "a view of AFMC we can review together and balanced measures for strategic management." It proved to be "aggressive" by "increasing amount of communication up and down, [providing a] window into what strategic actions are needed, and get to the point." It proved to be "flexible" by being able to "follow the focus of I know what I want when I see it." Finally, it proved to have "low overhead" by using "common/existing databases."

The first two requirements of simplicity and aggressiveness can be viewed through a succession of strategy maps with drill-down functions and correlated initiatives within SMIS. Upon entry into the SMIS system, a user could review the current strategy map which provided the user the ability to review its objectives and each objective measure's status through associated "piecons." Then, with a simple click on a plus symbol located on a navigation toolbar positioned to the left side of the screen, very similar to folders in Microsoft's Windows Explorer, the user could drill-down to view cascaded, center scorecards. This allowed the user to readily review the same features available at the command's scorecard. Proceeding through the SMIS system, the user had the ability to further drill-down in order to view a number of items, such as objectives' driving performance measures, performance information measures and

reports, links between strategy maps and initiatives, initiative overview capability, milestone tracking capability, AFSO21 reporting capability, return on investment analysis ability, and an earned value analysis capability. These abilities certainly provided the "simplicity" for reviewers, as well as the aggressiveness to increase communication.

The SMIS system also proved flexible through its ability to respond to the desired mindset to "follow the focus of I know what I want when I see it"--a mindset most custom software applications likely follow. A two-year representation of the SMIS's responsiveness and flexibility can be seen in Figure 14 (AFMC). This figure's time-series data illustrated how SMIS's capabilities increased to meet increasing needs of the command. The total area reflected the total needs of AFMC; the dark area reflected the capabilities that were identified and met, whereas the light area reflected the small amount of capabilities that were identified and yet to be fulfilled. As shown, capabilities increased approximately seven times over a two-year period. In spite of the fast-paced increase, CSC was able to ensure SMIS consistently met these increased demands and ultimately met all but a few of those requirements by the end of this two year period.



(AFMC)

Figure 14: Two-Year Capability Sample

Finally, the requirement to use "low overhead and common/existing databases" was completed through the use of four pre-existing sources: AFMC Strategic Plan, Center Plans, Metrics and Existing Data Systems (HQ AFMC/XP Deputy, 2001). These preexisting sources appeared to be used in lieu of requiring another central data management system.

Analysis

In summary, AFMC received a high rating because their software was able to meet all of AFMC's BSC requirements. Furthermore, SMIS proved to be a software system equal or better than those in the civilian industry. As was mentioned during the validating hypothesized relationships section, SMIS has been decommissioned. Since the

software system is the backbone of a BSC, a lot of responsibility rests with the new software system to continue meeting all of AFMC's requirements.

9. Select BSC Goals and Timelines for Their Completion

Operating without the establishment of goals would lead to organizations just going through the motions. To maximize potential and results, not only do goals need set and worked towards--the "right" goals need to be selected (Griffis *et. al*. 2004).

Overview

AFMC received a medium rating in this area, because while research revealed they understood the importance and implemented goals, the research was unable to identify whether timelines for their completion were also established. This section will review AFMC's position on goals as well as their overarching and specific goals. An analysis is then provided on these findings.

Position

AFMC recognized through a command review of lessons learned that targets and time-phased goals should be utilized in their BSC (MSG/MMD, 2003). Consequently, AFMC released guidance on target setting as a method to further clarify strategy. This guidance explained their rationale, process and available methods for target setting. The rationale was that target setting communicates clear expectations from leadership. They guided the process for target setting by 1) starting with top perspectives and working down 2) introducing customers into as many measures as possible 3) balancing stretch versus incremental goals 4) set one target per measure 5) retain the story of the strategy in each target, and 6) ensure leadership responsibility. Moreover, this guidance identified

historical, baseline and benchmark as methods for target setting. (Hocker and RTS Partners LLC, 2005)

Goals

Following their advice AFMC's established overarching and specific goals. The overarching goals of their BSC were:

- Develop and transition technology to maintain air, space and information dominance
- Develop, field and sustain war-winning expeditionary capabilities on time, on cost
- Provide opportunities for career development and progression
- Operate quality installations
- Sustain a safe, healthy, fit and ready workforce
- Organized and resource the command to improve and increase effectiveness (HQ AFMC/XPX, 2005)

AFMC also set specific goals within each measure. While examples of these goals are not discussed here, they were numerous and their format can be reflected in Figure 10.

Analysis

As introduced, this key received a medium rating because AFMC set goals but research failed to show timelines for their completion. Additionally, similar to selecting the right objectives and measures, goals could also be selected in a methodical way. Research failed to show whether goals were selected in this way but by establishing goals methodically, as through the use of statistical analyses, AFMC could avoid a situation where unobtainable results are requested and resources are wasted. General Carlson understood this point and wisely reminded to one of AFMC's councils 'to set targets based on the requirement (How many do we need and how good do we really have to be? To do more than what's really needed takes resources away from other areas)' (Dolan, 2007). Even though the research failed to show whether goals and their timelines for

completion were set methodically, it is possible they were constructed in this manner. If scientific methods were not employed in the selection of said goals when appropriate, a number of biases may have taken place—conservatism, recency, availability, illusory correlations, optimism and selective perception—just to name a few (Makridakis *et. al*. 1998).

10. Simplify Management Systems--Do Not Just Add To Existing Framework

This key focused on two main areas: only implement and use necessary measures and use the BSC as the central management system. Specifically, the literature indicated that only measures that lead to improved outcomes for customers, and ultimately allow an organization to work toward their mission, are to be utilized. The literature also indicated that the BSC should be the central management system within an organization.

Overview

AFMC received a medium rating within this key. They abided by the literature's guidance by selectively adding only necessary objectives and measures to help meet their strategy. However, research failed to show how AFMC attempted to reduce existing, non-essential measures. Together, this resulted in using necessary objectives and measures along with unnecessary measures. Finally, research showed that AFMC took steps to place the BSC as their central management system.

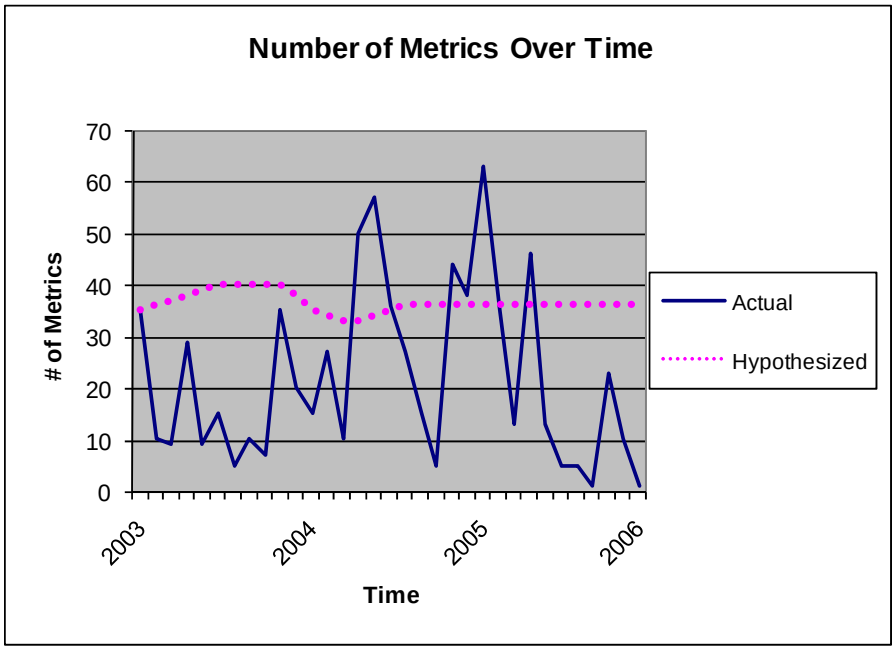
Measures

AFMC understood that only critical measures to the operation should be added. Consequently, they developed a methodical process for selecting and approving any additional measures. (This process was explained under the process section of "establish

balanced scorecard framework" above.) By establishing this process, AFMC attempted to prevent the addition of frivolous measures. The historical research, however, showed no such process for evaluating or eliminating active, non-current measures. A process to review measures could confirm whether all active measures are necessary to more most efficiently manage resources.

The reality of AFMC's number of measures graphed over time is reflected in Figure 15 (554 ELSG/SBI). The actual number of metrics, between the years of 2003 to 2006 (solid line), shows to be very erratic without any sign of stability. The hypothesized metric count (dashed line) reflects a more hopeful result in metric numbers. Discussing this hypothesized metric count, the metrics would begin to rise during BSC implementation because players are just getting involved in the new management tool and are providing their inputs. Then, the number of metrics would stabilize for a short time during leadership, and potentially management software, changeover. Succeeding that short time of stabilization would be a decreasing number of metrics resulting the elimination of past, outdated metrics. Finally, the number of metrics over time would mostly stabilize, save for times of war or other dynamic events when priorities may change causing existing and metrics to be redirected or new metrics to be derived to reflect and meet any changes in priorities. The rate of progression in the hypothesized number of measures over time may increase or decrease depending on the size of the organization, funding, etc. Regardless whether the reader agrees with this hypothesized number of measures over time, they must concede that AFMC's number of measures

over time reflected an erratic pattern. The lack of stability could lead to increased difficulty within AFMC's BSC implementation and use.



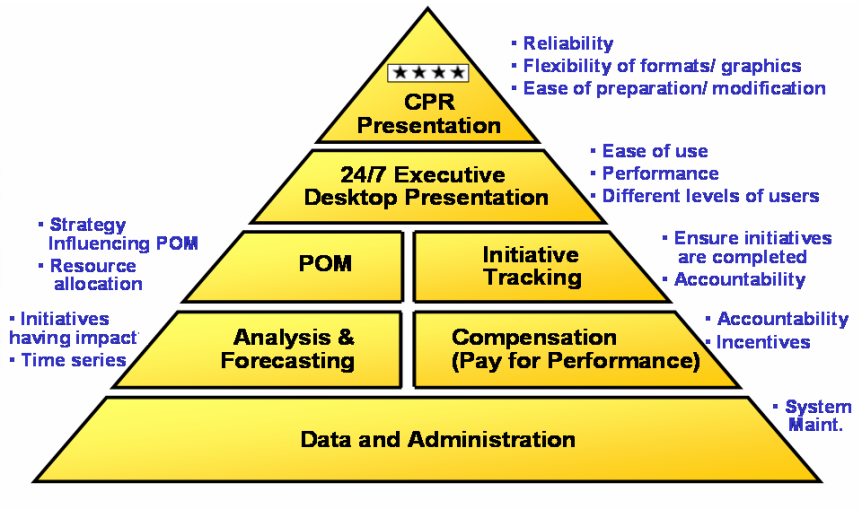
(554 ELSG/SBI)

Figure 15: Number of Metrics Over Time

Central Management System

AFMC also understood that the BSC should be the central management system and declared it as such (HQ AFMC/XPX, 2005). It was initially forecasted to become the central management system through the use of in-place data sources. Using in-place data sources would maintain simplicity of BSC implementation and use through integration in order to avoid "just adding to the existing framework" (HQ AFMC/XP Deputy, 2001). The way the BSC acted as AFMC's centralized system is reflected in the Figure 16 (554 ELSG/SBI, 2006b). This pyramid reflected the different levels of the

management system starting with the base—data and administration—and ending with the peak—command performance reviews (CPR). Through this framework, AFMC planned to obtain reliability, flexibility, ease of preparation/modification/use, performance, different levels of users, accountability, incentives, system maintenance, strategy influencing programs management agenda (POM), resource allocation, initiatives that have an impact, and time series data. As shown below, these results are identified within the different levels of the pyramid.



(554 ELSG/SBI, 2006b)

Figure 16: SMIS's Functional Framework

Analysis

AFMC appeared to meet most of this key's requirements by establishing a process to add only essential measures and use the BSC as the central management system and therefore, received a medium rating. Research failed to show, however, whether active,

non-essential measures were removed. Selectively adding measures but neglecting to reduce non-essential measures is similar to a profit driven company solely focusing on improving revenue but neglecting to reduce cost--except in this BSC example the goal is to minimize the resource requirement versus maximize profit.

RESOURCE REQUIREMENT = NEW MEASURES (+) EXISTING MEASURES

PROFIT = REVENUE (-) COST

By not exploring the possibility to focus on—and reduce if appropriate—non-critical measures, additional resources may be required or additional strain may be placed on those monitoring the existing and now additional measures. This could possibly lead to a decrease in measurement accuracy, employee buy-in or morale. Furthermore, while AFMC may have had a process for selectively adding objectives and their measures to the BSC, Figure 15 above shows the number of measures to be very erratic. This lack of stability, may have translated into a workforce which experienced constantly changing priorities, and because of this, productivity may never have had the chance to become optimized.

Summary

Throughout this chapter, the 11 keys identified as critical to successful BSC implementation and use were taken and, in succession and separately, used to identify and analyze AFMC's specifics within each key. While AFMC may not have received high ratings under each key, they should be applauded for identifying and being involved in all of the keys. In summary, the ratings of each key can once again be reviewed in Table 6.

Table 6: Ratings Summary

Key to Successful BSC Implementation and Use	Rating
Deploy BSC from the Top Down	Low
Establish BSC Framework	High
Standardize Within the BSC--but Do Not Standardize Content	Medium
Select the Right Objectives and Performance Measures	Medium
Quantify Objectives or Their Performance Measures	Medium
Ensure Objectives Present a Causal Pattern	Low
Implement Strategy Maps	High
Select Software to Help--Not Hinder	High
Select BSC Goals and Timelines for Their Completion	Medium
Simplify Management Systems--Do Not Just Add To Existing Framework	Medium
Cascade the BSC	Low

V. Conclusions and Recommendations

Chapter Overview

This chapter will summarize the research findings. First, conclusions of the research will be addressed by investigative question. Secondly, this section provides recommendations for AFMC's BSC. Finally, the significance of this research is discussed and recommendations for future researcher are provided.

Research Conclusions

The primary focus of this research was to evaluate whether AFMC's BSC implementation and use aligned with what the literature indicated was required to obtain optimal results. To complete this evaluation, two investigative questions to guide the research were established and answered.

Investigative Question One

What are the key areas of a BSC an organization must address and succeed in to optimize its use?

The BSC management tool is a fairly new concept with developing guidance. Because of this, various organizations' BSC implementation and use were collected and reviewed through case studies. By answering this investigative question, 11 key areas referred to in this paper as keys to successful BSC implementation and use were revealed.

Investigative Question Two

How does AFMC's implementation and use of the BSC align with what the literature indicates is needed to obtain optimal results?

BSC implementation within the DoD is also fairly new, with AFMC being the pioneer. In order to evaluate AFMC's BSC implementation and use, the 11 key areas which were identified from answering investigative question one, were focused on. By addressing AFMC's specifics within each key, a list of recommended actions to better optimize AFMC's BSC was developed and organized below.

Recommendations for Action

In this section, the eleven keys to successful BSC implementation and use are listed and recommendations provided. These recommendations are based solely on historical data and may have already been considered or implemented.

1. Deploy BSC from the Top Down

- Attempt to align with higher offices
- Deploy the BSC down to AFMC team or individual level

2. Establish Balanced Scorecard Framework

- None

3. Standardize Within the BSC—but Do Not Standardize Content

- Consolidate and publish list of AFMC BSC vernacular
- Re-evaluate standardized material in cascaded BSC for possible diminishment of local relevance.
- Establish standardized instructions, with options, for developing metrics.

4. Select the Right Objectives and Performance Measures

Ensure that the following challenges identified within AFMC have been addressed:

- Missed or buried commander intent
- Did not directly support the mission
- Insufficient attention to customer voice
- Missed core activities of the command
- Too many measures and measures [that] do not fit objectives
- Specific directorates selected measures to showcase projects or activities
- Measures had "little relationship to mission objectives or vision impact"
- BSC contained many historically reported measures of limited change value

5. Quantify Objectives or Their Performance Measures

- Ensure that weights are assigned to supporting measures

6. Ensure Objectives Present a Causal Pattern

- Conduct causal analysis to verify hypothesized relationships

NOTE: This appeared to be the largest, potential shortfall within AFMC. Understanding that Generals with years of experience collaborated to build AFMC's BSC, the hypothesized relationships are likely valid ones. Still, quantitative analyses could be used to verify these relationships to solidify the relationships, convince sponsors, and provide the weights of supporting measures when objectives have more than one to better manage resources.

7. Implement Strategy Maps

- Review current strategy maps and evaluate whether the initial position to "easily and effectively communicate" is still being met

8. Select Software to Help--Not Hinder

- None--as researched

NOTE: The software researched here has been decommissioned. Careful consideration should be taken to ensure the new software provides equal or superior service.

9. Select BSC Goals and Timelines for Their Completion

- Ensure timelines are established for goals
- Ensure scientific methods for goal generation are used when appropriate

10. Simplify Management Systems--Do Not Just Add To Existing Framework

- Ensure active measures are reviewed and out-dated measures are discontinued

11. Cascade the BSC

- Ensure teams and individuals at the lowest levels understand their involvement with the command's BSC. Encourage the generation and use of measures at their level towards improvement of the command's BSC objectives.

Significance of Research

The significance of this research is twofold. First, it identified eleven key areas which business units similar to that of AFMC should carefully address when implementing and using a BSC. Secondly, it provided AFMC an evaluation which may help guide their efforts through future BSC use.

Recommendations for Future Research

This case study laid the foundation for the future of AFMC's BSC. Specifically, two main areas could be further researched. First, a case study approach could be applied to further evaluate AFMC's BSC and provide further recommendations or corrections to this study. The case study could include interviews, surveys and other methods of data collection to better understand AFMC's BSC. Secondly, a quantitative approach could be applied to the scorecard. If provided the required quantitative data, this approach could potentially validate causal relationships, assign weights to supporting measures, and most importantly, evaluate whether AFMC has achieved overall improvement.

Summary

The purpose of this research was to evaluate AFMC's BSC implementation and use. Because of this effort, eleven keys to address during BSC implementation and use were identified. A historical synopsis of AFMC's BSC was provided and analyzed within each of these areas. This thesis provided recommendations for AFMC's BSC, if not already completed or considered. Finally, two areas of future research were identified in the form of case study or quantitative designs.

Bibliography

2GC Active Management. (2006). "Organisational Performance Management in a UK Insurance Firm: Aligning Individual's Goals with the Business Strategy." 4 October 2007 http://www.2gc.co.uk/pdf/2GC-IIC.pdf

554 ELSG/SBI. "Metric Data by Load Date." Internal Working Document.

554 ELSG/SBI. (2006a). *SMIS User's Manual.* Internal Working Document.

554 ELSG/SBI. (2006b). "Spiral 10 Support of Strategy Management Process: AFSO 21/Initiative Application." Internal Working Document.

Active Strategy. (2007a). "Driving Strategic Transformation and Embedding Accountability at TriHealth, Inc." 11 October 2007 http://www.activestrategy.com/pdfs/TriHealth_Case_Study.pdf

Active Strategy. (2007b). "Miami-Dade County: Becoming a Results-Oriented Government with ActiveStrategy Enterprise." 9 October 2007 http://www.activestrategy.com/about_us/miami_dade_case_study.aspx

AFMC. (a). "Brief to Mike Henke." Internal Working Document.

AFMC. (b). "Functional Requirements." Internal Working Document.

AFMC. (c). "Measure Development Changes." Internal Working Document.

AFMC. (d). "Objective-Metric-Initiative Relationships." Internal Working Document.

AFMC. (2003). "Achieving ESC Strategy Using the Balanced Scorecard Tool." Internal Working Document.

AFMC. (2005a). "AFMC BSC Measures." Internal Working Document.

AFMC. (2005b). "AFMC Measurement Template." Internal Working Document.

AFMC. (2006a). "Center BSC Video Teleconference." Internal Working Document.

AFMC. (2006b). "CSR Draft Briefing Version Three." Internal Working Document.

AFMC. (2007a). "Measure Definitions." Internal Working Document.

AFMC. (2007b). "Strategy Implementation within AFMC." Internal Working Document.

AFMC/A8. (2006). "AFMC Command Strategy." Internal Working Document.

Antarkar, N., Cobbold, I. and 2GC Active Management. (2001). “Implementing the Balanced Scorecard--Lessons and Insights from a Multi-Divisional Oil Company.” 1 October 2007 http://www.2gc.co.uk/pdf/2GC-Truro.pdf

Armitage, Howard and Scholey, Cam. (2004). “Hands-on Scorecarding.” CMA Management, ABI/INFORM Research.

Blair, M. M. (1995). “Ownership and Control: Rethinking Corporate Governance for the Twenty-First Century.” Brookings Institute Press.

“Building and Implementing a Balanced Scorecard Case Study: UNUM Corporation.” (1999). 13 December 2007 http://www.exinfm.com/training/pdfiles/Balanced %20Scorecard %20Cs.pdf

Busha, C. H. and Harter, S. P. (1980). “Research Methods in Librarianship Techniques and Interpretation.” New York: Academic Press.

Cardemil-Katunaric, G. and Shadbolt, N. “The Balanced Scorecard as a Spontaneous Framework in an Agricultural Hybrid Cooperative Under Strategic Change: A Case Study in the New Zealand Kiwifruit Industry.” 1 October 2007 http://www.ifama.org/tamu/iama/conferences/2006conference/Symposium%20Presentations/Ombu%202/Ombu%202/S3_O2/S3_O2_1132_Shadbolt.pdf

Chen, M. C. H. and Chou, S. Y. “A BSC Framework for Air Cargo Terminal Design: Procedure and Case Study.” *Journal of Industrial Technology*, 22(1)

Cobbold, I. and 2GC Active Management. (2001). “Implementing the Balanced Scorecard--Lessons and Insights from a Financial Services Firm Balanced Scorecard Case Study--Arran Ltd.” 1 October 2007 http://www.2gc.co.uk/pdf/2GC-Arran.pdf

United States Congress. (1993). *Government Performance and Results Act of 1993.* 26 August 2007 http://govinfo.library.unt.edu/npr/library/misc/s20.html

Creswell, J. W. (2003). *Research Design Qualitative, Quantitative, and Mixed Method Approaches*. Thousand Oaks, California: Sage Publications.

Cuganesan, S., Ford, G. and Khan, H. (2006). “Using Strategy Maps and the Balanced Scorecard Effectively: The Case of Manpower Australia.” 9 October 2007 http://www.mgsm.edu.au/download.cfm?DownloadFile=5CEAF106-9185-1122-50ED311B730670BB

Dolan, M. (2007). “AFMC Council Meeting Minutes.” Internal Working Document.

Excitant. (2005a). “The Case for Balanced, Structured, Performance Management.” 15 November 2007 http://www.excitant.co.uk/

Excitant. (2005b). “Strategy Only Sticks if You Have Active Support and Involvement from the Top…and Follow Through.” 15 November 2007 http://www.excitant.co.uk/

Executive Office of the President and Office of Management and Budget. (2001). *The President's Management Agenda.* 17 November 2007 http://www.whitehouse.gov/omb/ budget/fy2002/mgmt.pdf

Griffis, Stanley E. and Cooper, Martha C. and Goldsby, Thomas J. and Closs, David J. (2004) “Performance Measurement: Measure Selection Based Upon Firm Goals and Information Reporting Needs.” Journal of Business Logistics, Vol. 25, No.2, pp. 95-118.

Hocker, G., and RTS Partners LLC. (2005). “Implementing Strategy within AFMC: Developing Strategic Measures.” Internal Working Document.

HQ AFMC/A8. (2006). “Command Strategy Review.” Internal Working Document.

HQ AFMC/XP. (2005). “Institutionalizing the BSC CPR Process.” Internal Working Document.

HQ AFMC/XP Deputy. (2001). “Strategic Management Information System.” Internal Working Document.

HQ AFMC/XPX. (2005). “AFMC Strategic Management.” Internal Working Document.

HQ USAF/DPM. (2004). “Air Force Effects Management Program Primer.” Internal Working Document.

Kaplan, R. S., and Norton, D. P. (1996). “Using the Balanced Scorecard as a Strategic Management System.” *Harvard Business Review, 74*(1), 75-85.

Kaplan, R. S., and Norton, D. P. (2002). *The Strategy-Focused Organization.* Harvard Business School Press.

Kaplan, R. S., and Norton, D. P. (1992). “The Balanced Scorecard--Measures that Drive Performance.” *Harvard Business Review*, 70(1), 71-79.

Kaplan, R. S., and Norton, D. P. (2004). *Strategy Maps Converting Intangible Assets Into Tangible Outcomes*. Boston: Harvard Business School Press.

Lawrie, G., Cobbold, I. and 2GC Active Management. (2001). “Strategic Alignment: Cascading the Balanced Scorecard in a Multi-National Company Balanced Scorecard Case Study--Crosshouse.” 1 October 2007 http://www.2gc.co.uk/pdf/2GC-Crosshouse.pdf

Makridakis, Spyros and Wheelwright, Steven C. and Hundman, Rob J. (1998) *Forecasting: Methods and Applications.* John Wiley and Sons Ltd.

Malina, M. A., and Selto, F. H. (2001). “Communicating and Controlling Strategy: An Empirical Study Of The Effectiveness of The Balanced Scorecard.” *Journal of Management Accounting Research. 13*(1), 47–90.

Marr, B. and Schiuma, G. (2003). “Business Performance Measurement-Past, Present and Future.” *Management Decision*, 41(8), 680-687.

Marshall, C., and Rossman, G. B. (1989). *Designing Qualitative Research*. Newbury Park, California: Sage Publications.

MID 901: Establishing Performance Outcomes and Tracking Performance Results for the Department Of Defense. 17 November 2007 http://www.asafm.army.mil/ceac/perfmgt/mid/ mid901.pdf

MID 910: Budget and Performance Integration (BPI) Initiative. 17 November 2007 http://www.asafm.army. mil/ceac/perfmgt/mid/mid910.pdf

MID 913: Implementation of a Two-Year Planning, Programming, Budgeting and Execution System. 17 November 2007 http://www.asafm.army.mil/ceac/perfmgt /mid/mid913.pdf

Mooraj, S., Oyon, D., and Hostettler, D. (1999). “The Balanced Scorecard: A Necessary Good or an Unnecessary Evil?” *European Management Journal, 17*(5), 481-491.

MSG/MMD. (2003). “The Balanced Scorecard: An Approach to Strategic Management.” Internal Working Document.

MSG/MMD7. (2002). “AFMC Balanced Scorecard.” Internal Working Document.

Neely, A. (2007). “The Search for Meaningful Measures.” *Management Services,* ABI/INFORM Research

Niven, P. R. (2002). *Balanced Scorecard Step by Step: Maximizing Performance and Maintaining Results*. John Wiley and Sons.

Niven, P. R. (2003). *Balanced Scorecard Step-By-Step for Government and Nonprofit Agencies*. John Wiley and Sons.

Niven, P. (2006a). “The Importance of Terminology in Your Balanced Scorecard.” 2007 http://balancedscorecard.biz/articles/Importance_of_Terminology.pdf

Niven, P. (2006b). “Training for Balanced Scorecard Success.” 9 December 2007 http://www.senalosa.com

OSD PA&E. “The DoD Balanced Scorecard: Overview.” 17 November 2007 http://unpan1.un.org/intradoc/groups/public/documents/ASPA/UNPAN013239.pdf

Othman, Rozhan. (2006). “Balanced Scorecard and Causal Model Development.” Emerald Group Publishing Limited.

Paladino, B. (Jul 2007). “5 Key Principles of Corporate Performance Management.” *Strategic Finance,* ABI/INFORM Research.

Scala, M., and Office of Secretary of Defense. (2003). “Balanced Scorecard Interest Group--The US Defense Department's Use of a Risk-Management Scorecard.” 17 November 2007 http://unpan1.un.org/intradoc/groups/public/documents/ASPA/UNPAN013238.pdf

Schneiderman, A. M. (1999). “Why Balanced Scorecards Fail.” *Journal of Strategic Performance Measurement,* 2(S 6), 11.

Stephen, B. (2006). “Beating the Balanced Scorecard Blues.” 7 March 2007 http://www.wipfli.com/Wipfli/Impact_Magazine/Industry_Archive/Health_Care/General/200601HCA_Balanced_Scorecard_Troubleshooting.htm

“Strategy Execution and Alignment.” (2007). 10 October 2007 http://www.insightformation.com/learn-more/strategy-execution-alignment.html

Taub, S., and CFO.com. “The Peasants Are Revolting.” 2007 http://www.cfo.com/article.cfm/3006358/c_3043096?f=singlepage

Tesch, R. (1990). *Qualitative Research Analysis Types and Software Tools*. New York: Falmer Press.

Department of the Air Force. “eLog21 Course.” 24 August 2007 https://www.my.af.mil/gcss-af/afp40/USAF/ep/globalTab.do?channelPageId=-738606andpageId=681743

Webber, A. M. (2000). “New Math for a New Economy.” *Fast Company,* 214.

Weinstein, L. B., and Castellano, J. F. (2004). “Scorecard Support.” *Management for Strategic Business Ideas.* 78(2), 18.

Yin, R. K. (1994). “Case Study Research Design and Methods.” Thousand Oaks: Sage Publications.

Vita

Captain Aaron J. Hepler graduated from Montoursville High School in Montoursville, Pennsylvania. He enlisted in the military in 1996 and became a Refueling Maintenance Technician. During his enlistment, he served tours in Little Rock AFB, AR, Osan Air Base, Korea, and Dover, DE. While enlisted, Captain Hepler began undergraduate studies at Southern Illinois University, Carbondale, where he graduated in May 2002 with a Bachelor of Science degree in Industrial Technology. He was commissioned through Officer Training School in February of 2003.

Captain Hepler's only assignment as an officer was at Lackland AFB, TX. He served as the Officer in Charge of Contingency Planning and Training Flight and later as Flight Commander of the Management and Systems Flight.

In August 2006, Captain Hepler entered the Graduate School of Engineering and Management, Air Force Institute of Technology. Upon graduation, he will be assigned to the Air Force Materiel Command.

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 074-0188

1. REPORT DATE *(DD-MM-YYYY)*	2. REPORT TYPE	3. DATES COVERED *(From – To)*
19-03-2008	Master's Thesis	March 2007 – March 2008

4. TITLE AND SUBTITLE

BALANCED SCORECARD:
EVALUATION OF AIR FORCE MATERIEL COMMAND'S IMPLEMENTATION AND USE

5a. CONTRACT NUMBER

5b. GRANT NUMBER

5c. PROGRAM ELEMENT NUMBER

6. AUTHOR(S)

Captain Aaron Hepler

5d. PROJECT NUMBER

5e. TASK NUMBER

5f. WORK UNIT NUMBER

7. PERFORMING ORGANIZATION NAMES(S) AND ADDRESS(S)

Air Force Institute of Technology
Graduate School of Engineering and Management (AFIT/EN)
2950 Hobson Way, Building 640
WPAFB OH 45433-8865

8. PERFORMING ORGANIZATION REPORT NUMBER

AFIT/GLM/ENS/08-03

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Headquarters Air Force Materiel Command
Building 262
Wright Patterson AFB, OH 45433-5006

10. SPONSOR/MONITOR'S ACRONYM(S)

554 ELSG/SBI

11. SPONSOR/MONITOR'S REPORT NUMBER(S)

12. DISTRIBUTION/AVAILABILITY STATEMENT

APPROVED FOR PUBLIC RELEASE; DISTRIBUTION UNLIMITED.

13. SUPPLEMENTARY NOTES

14. ABSTRACT

Managing in a contemporary world has become increasingly more complex. It has evolved from a manufacturing setting with little to steer managers but a single, financial indicator to managing a greater percentage of intangible assets through numerous leading and lagging indicators. The industry has also evolved from centrally located and managed to decentralized, multi-national companies. In response to these changes, a new strategic management tool was developed called the Balanced Scorecard (BSC). This management tool has proved extremely successful throughout the last decade.

In 2001, Air Force Materiel Command (AFMC) implemented a Balanced Scorecard (BSC). The purpose of this research was to evaluate the implementation and use of AFMC's BSC. To guide this effort, both meta-synthesis and historical methodologies were employed. First, a meta-synthesis approach was used to synthesize qualitative BSC data that resulted in eleven keys to successful BSC implementation and use. Secondly, an historical methodology was employed to review AFMC's BSC history within each of these key areas. Once the literature and AFMC's history were compared, perceived gaps were identified and recommendations provided. Finally, the significance of the research and recommendations for future research were also provided.

15. SUBJECT TERMS

16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT	18. NUMBER OF PAGES	19a. NAME OF RESPONSIBLE PERSON
a. REPORT	b. ABSTRACT	c. THIS PAGE			Bradley Anderson, Lt Col, USAF
U	U	U	UU	117	19b. TELEPHONE NUMBER *(Include area code)* (937) 255-6565, ext 4646 (emailname@afit.edu)