

# **NAVAL POSTGRADUATE SCHOOL**

## **Monterey, California**



## **THESIS**

**THE DESIGNING AND DEVELOPMENT OF A “BALANCED  
SCORECARD” FOR THE INTERNATIONAL PROCUREMENT  
DEPARTMENT OF THE PROCUREMENT DIRECTORATE IN  
THE HELLENIC NAVY SUPPLY CENTER**

by

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June 2003

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**THE DESIGNING AND DEVELOPMENT OF A “BALANCED SCORECARD”  
FOR THE INTERNATIONAL PROCUREMENT DEPARTMENT OF THE  
PROCUREMENT DIRECTORATE IN THE HELLENIC NAVY SUPPLY  
CENTER**

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from the

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## **ABSTRACT**

The Balanced Scorecard (BSC) is a performance management model that has been successfully implemented both in the private and public sectors. It is a framework for translating an organization's mission into an integrated set of performance indicators. Kaplan and Norton (1996) developed a BSC model, which has four generic perspectives: Financial, Customer, Internal Processes, and Learning and Growth. The objective of this research is to design a BSC framework for the International Procurement Department (IPD) in the Hellenic Navy Supply Center. Initially, the study analyzed the IPD's environment, mission, strategy, desired outcomes, critical processes, and key success factors. After clarifying strategy, desired outcomes, and critical performance variables, the study focused on identifying causal relationships among performance drivers, multiple objectives and desired outcomes. Finally, performance measures were developed, for those performance indicators that need to be monitored and incorporated into the proposed BSC framework. The ultimate purpose of this study is to clarify and gain consensus about the IPD strategy and performance drivers and design a BSC model that aligns strategy and objectives and contributes to the IPD overall success, thus providing IPD with an innovative management control system.

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## **I. INTRODUCTION**

People and their managers are working so hard to be sure things are done right, that they hardly have time to decide if they are doing the right things.

Stephen R. Covey

### **A. PURPOSE AND OBJECTIVES OF RESEARCH**

The Hellenic Ministry of Defense is continually looking to make the best use of the provided financial resources (Georgios Tsiakiris, 2000). Understanding, adopting, and implementing leading-edge management practices and ideas can make the difference between success and failure. Measures of performance are vital to the future of all organizations whether profit oriented or not-for-profit. The “Balanced Scorecard” (BSC), a concept made popular by Robert S. Kaplan and David P. Norton, suggests an integrated set of performance measures organized in four areas of performance: Financial, Customer, Internal Business Processes, and Learning and Growth. (Kaplan and Norton, 1996, 2000) Although the Balanced Scorecard concept was initially developed for profit-oriented organizations, its concepts have been successfully applied to nonprofit organizations as well (Kaplan and Norton, 1996, 2000; Balanced Scorecard Institute Website, 2003; Department of Energy Website, 2003; Procurement Executives’ Association Website, 2003).

The general purpose of this research is to study and analyze the necessary information and then design and develop a BSC model for the International Procurement Department (IPD) of the Procurement Directorate (PD) in the Hellenic Navy Supply Center (HNSC). The Balanced Scorecard (BSC) building process should help to clarify and gain consensus of the IPD strategy, and communicate the strategy throughout the department. However, the ultimate purpose of this research is to provide the IPD management with an effective performance-based management control system organized in different strategic perspectives depending on the organization and mission of the department.

Specifically, the study is designed to analyze the current conditions and environment in the IPD with the objective of (1) identifying the mission, (2) defining desired outcomes that must be achieved for the IPD overall mission to be accomplished, (3) clarifying strategy and objectives, (4) identifying critical processes and key success factors that contribute to the achievement of the desired outcomes, (5) identifying and analyzing cause-and-effect relationships among critical activities/processes, critical factors and desired outcomes, (6) designing and developing a set of performance measures that can help align departmental effort with strategy from four perspectives: Financial, Customer, Internal Processes, and Learning and Growth, and (7) making recommendations for the communication of the multiple linked objectives and the related performance measures to management and employees in the IPD in order to increase their understanding of the consequences of their actions for IPD overall success.

## **B. BACKGROUND**

### **1. The Examined Department**

The International Procurement Department (IPD) is one of the five Departments in the Procurement Directorate (PD) of the Hellenic Navy Supply Center (HNSC). The HNSC mission is to perform the Hellenic Navy supply program for secondary materials and services (support items/services and spare parts), with the objective of contributing in the effective logistics support of the Hellenic Navy Units (ships and shore-units), in accordance with the official supply policy objectives defined by the Hellenic Navy General Staff. In accomplishing its mission, the HNSC is organized in functions (Directories and Departments) that compose an integrated supply system of which the organization chart is shown in Figure 1.1.

The Procurement Directorate (PD) is responsible for the procurement of secondary material and services from sources inside and outside the country, in accordance with needs specified by the Inventory Provision & Control Directorate or the Hellenic Navy General Staff. The organization chart of the PD is shown in Figure 1.2.

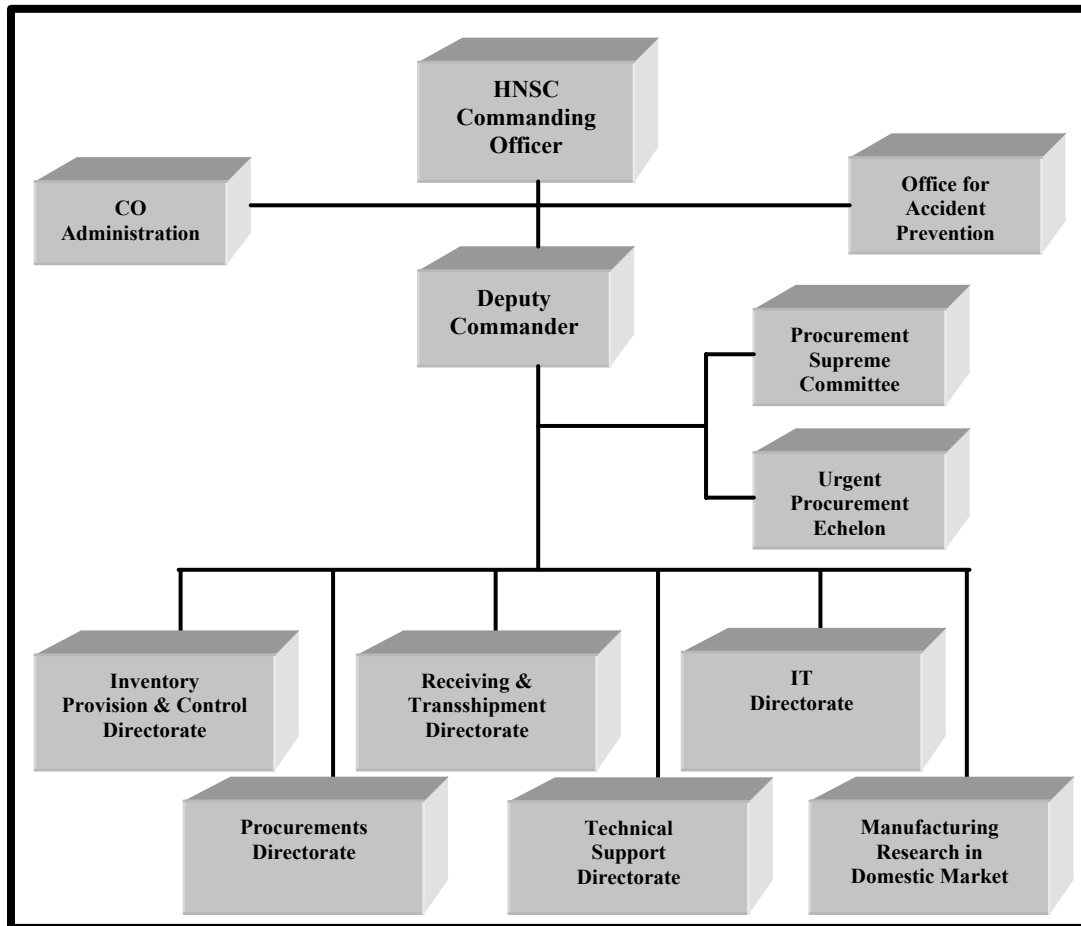


Figure 1.1. HNSC Organization Chart (From: Hellenic Navy General Staff, 2003).

Given the PD organization structure, policy, and objectives, the IPD mission, as described in the departmental Memorandum of Operations (International Procurement Department, 1991), is to procure support items, spare parts and minor systems from sources outside the country in accordance with the Hellenic Navy defined needs through the use of one of the three following methods:

- International Competitions
- Sole Source Procurements
- International Agreements.

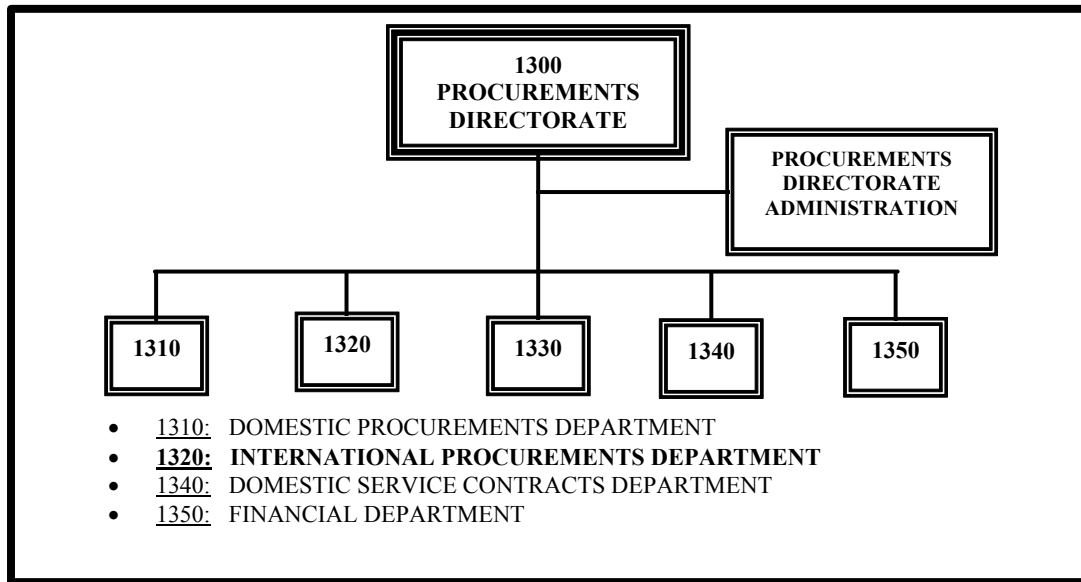


Figure 1.2. Procurement Directorate Organization Chart (From: Hellenic Navy General Staff, 2003).

In order to accomplish its mission, the IPD has been organized in offices and sub-departments as shown in Figure 1.3. According to its organization and mission the IPD, with an annual budget of almost \$50 million, has a unique position in the HNSC organization, as it is the only international procurements agency for secondary items in the Hellenic Navy. It can be considered as a multi-service- process department including processes such as requisitioning funds, contracting, placing procurement orders, placing repair orders, collecting, reviewing, and processing procurement and repair documents, making payments, monitoring deliveries, and accommodating respective accounts. (Hellenic Navy General Staff, 2003; International Procurement Department, 1991)

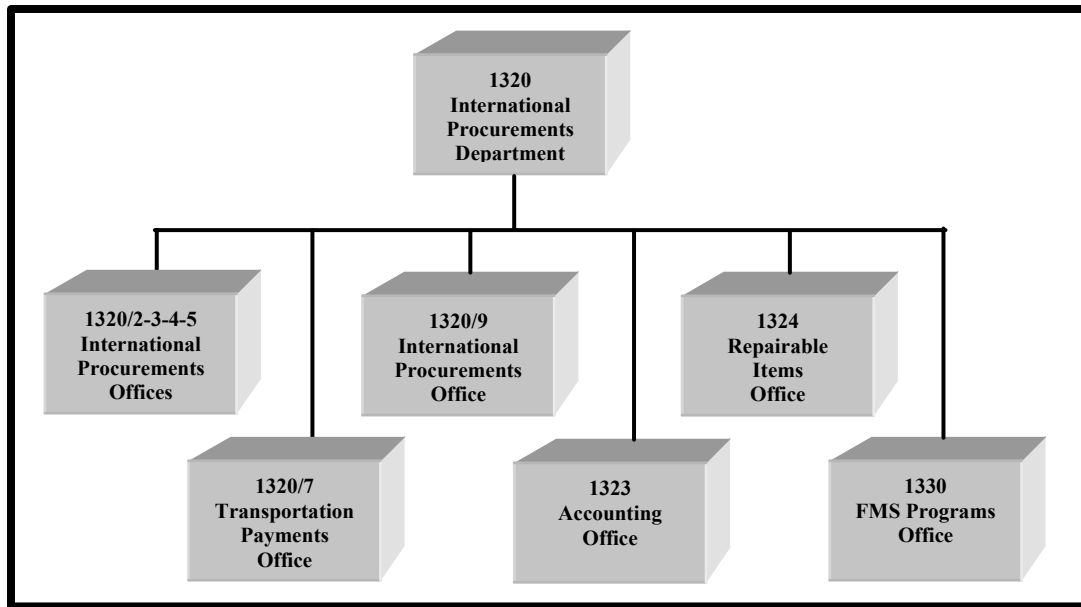


Figure 1.3. IPD Organization Chart (From: Hellenic Navy General Staff, 2003).

## 2. Discussion

Given the mission, organization, and structure of the IPD, the initial objective anticipated to be achieved through the BSC building process is to gain clarification and focus of the IPD desired outcomes and strategy. However, the real power of the BSC process is the development of a performance measurement system that can align departmental and individual efforts with desired outcomes. Studying, analyzing, and discussing with IPD management and key personnel the internal processes and activities should reveal those critical processes and key success factors that contribute to the achievement of the desired outcomes. Mapping of the relationships among the processes, factors, and outcomes is expected to contribute to the identification of those critical processes and factors for which performance measures should be developed. However, setting goals for the IPD processes and activities cannot be based on standards established in the market due to the nature of the specific department. Management experience and past performance can be used as benchmarks in setting the goals wherever applicable.

In addition, the research may reveal that some of the processes are not value-added in relation to the strategy and the desired outcomes or that new processes need to be established for achieving the desired outcomes. Though there are no explicit obstacles

for the elimination of processes that are not value-added, for new processes that might need to be established it is assumed that the proposed processes should not lead to additional cost of internal operations in terms of either money or time.

Furthermore, due care should be exercised in gathering and using relevant information due to management and employee differing backgrounds and biases as well as different perceptions about objectives and priorities. However, it is estimated that the BSC process is a learning process, thus, it is anticipated to facilitate the participants' common understanding of management objectives and priorities.

Finally, though the whole process is not expected to generate personnel resistance, an effective communication plan prior to the implementation of the BSC model is required. Though the implementation of the proposed BSC model and the development of a respective communication plan are outside the scope of this research, the research will emphasize on the need for the effective communication of the new management control system.

## **C. RESEARCH QUESTIONS**

### **1. Primary Question**

What is the design of a proposed Balanced Scorecard model that applies to the International Procurement Department?

### **2. Secondary Questions**

Secondary, supportive research questions are:

- What is the IPD management perspective about successful desired outcomes?
- What are the strategy and multiple objectives inside the IPD that must be achieved for the desired outcomes to be accomplished?
- What are the processes, activities, and factors in the IPD that contribute to the achievement of the multiple objectives?
- What are the cause-and-effect relationships among processes, activities, factors and desired outcomes?
- What are the critical processes and key success factors that need to be better controlled?

- What performance metrics can be developed for measuring the critical processes, activities, and factors to align overall performance with strategy?

#### **D. SCOPE OF RESEARCH**

The scope of this research will include:

- A discussion of relative literature in order to provide the reader with a general understanding of the BSC concept and its important characteristics, the benefits organizations can realize by its effective implementation, and the potential causes of the BSC failure to function as an effective strategic management system. It is assumed that the reader has a basic knowledge of business, management, and accounting concepts and terminology. The reader should also be aware that the terms framework and model, and measures and metrics, and non-for-profit will be used interchangeably.
- A review of existing IPD organization and management environment, functions, and processes.
- An examination and analysis of the IPD desired outcomes, strategy, multiple objectives, processes, activities, and resources.
- An examination and analysis of the cause-and-effect relationships among critical processes, factors and desired outcomes.
- The design of a BSC proposed framework organized in four perspectives.
- The development of performance measures, wherever applicable, that can effectively capture the cause-and-effect relationships.
- Recommendations for the communication of the proposed BSC model throughout the IPD.

The scope will not include:

- A detailed evaluation of current IPD management control systems.
- A detailed communication plan for the implementation of the proposed BSC model.
- A cost and time analysis required for the implementation of the proposed BSC model.

#### **E. EXPECTED BENEFITS FROM THIS THESIS**

This research is anticipated to provide the IPD management with an integrated performance-based management control model and serve as a pilot project for other Departments inside the Procurement Directorate to develop their own BSC model.

## **F. ORGANIZATION OF STUDY**

This study contains seven chapters. Chapter I provides the background of the study and introduces the thesis subject. Also included in this chapter, are comments on the purpose and the objectives of the study, primary and secondary research questions, the scope of the research, and the benefits of the study. Chapter II emphasizes pertinent information discovered in the literature review intending to add to the readers' knowledge and understanding of the concepts related to the BSC building process. Chapter III presents the methodology used in the study emphasizing the features of questionnaires and the analysis of the information collected. Chapter IV provides an analysis of the IPD organization and management intending to add to the readers' knowledge and understanding of the current IPD structure and environment for which a BSC model will be developed. Chapter V builds a proposed BSC model for the IPD. Chapter VI provides an analysis of the performance measures suggested for the IPD's proposed BSC model. Finally, Chapter VII concludes the thesis with findings and recommendations resulting from this thesis.

## **II. LITERATURE REVIEW**

This chapter, through a discussion of relevant literature, attempts to provide a general understanding of the Balanced Scorecard (BSC) concept and its important characteristics, the benefits organizations can realize by its effective implementation, and the potential causes of the BSC failure to function as an effective strategic management system.

It is assumed that the reader has a basic knowledge of commercial and public organizational structure as well as management concepts and principles and is familiar with the management and accounting terminology used in this chapter.

It is worth emphasizing that the BSC concept as a performance-based management system was developed with the private sector in mind. Arguably, the private sector has a richer experience in performance management techniques than the public sector and nonprofit organizations. (Kaplan and Norton, 1996, 2000; Balanced Scorecard Institute Website, 2003; The Government Performance and Results Act of 1993) Thus, the second part of this chapter deals with issues related to the development and implementation of the BSC concept in the public sector and in nonprofit organizations.

### **A. THE BALANCED SCORECARD CONCEPT**

#### **1. Seeking Balance Out of Chaos**

At the dawn of the 21<sup>st</sup> century, in a rapidly changing business environment, many corporations are struggling to adapt their organization design to this global era of uncertainty and hyper-business competition (Lawler, 1996). The issue of adapting to a changing environment has been the subject of theoretical and empirical inquiry since the days of Heraclitus. Suspended in the webs of uncertainty due to a change-or-die environment, modern complex organizations seek management approaches that provide clarity and direction enhancing their sustainability. The impact of the information age and global competition led both service and manufacturing corporations to seek ways of reinventing and reengineering themselves in an attempt to adopt more responsive and flexible management systems. Traditional management systems that solely focused on

how to achieve financial goals have proved to be ineffective in balancing organizational tensions. Management was losing clarity of direction while organizational uncertainty about long-term success was increasing. (Lawler, 1996)

In today's competitive environment, corporations realized that they could no longer rely on a bureaucratic management approach that used the previous century's management tools and ideas. During the industrial age, the traditional financial control systems accompanied by appropriate financial measures such as return on capital employed (ROCE) and Residual Income (RI) were used both to direct a company's productive investments and monitor the company's effectiveness against those investments. However, in the information age, those tools prove to be inadequate for guiding and evaluating the driving forces behind the results that create future value through investments in customers, employees, processes, technology, and innovation. (Kaplan and Norton, 1996; Simons, 2000)

The new business environment led to the development of a growing market for new management practices and ideas. Complex corporations seeking new direction realized the need for mobilizing and exploiting their intangible assets and using them as "leverage" in creating and sustaining competitive advantage. Performance-based management addressed the need for effectively managing and measuring tangible as well as intellectual assets. The BSC concept, which was developed by Arthur Schneiderman at Analog Devices, Inc. in 1987, emphasized the importance of aligning strategy and multiple organizational objectives with desired outcomes and developing balanced measures for monitoring overall performance. (Euske, 1998; Kaplan and Norton, 1996, 2000; Lynch and Cross, 1995; Schneiderman, 1999)

Since its inception, the BSC concept has attracted significant attention from many organizations in the private and public sectors. An example of its wide interest was noted in a recent World Wide Web search of the term "Balanced Scorecard", which resulted in over 900,000 hits. (Kaplan and Norton, 1993, 1996, 2000)

## **2. Features**

Kaplan and Norton's version of the "Balanced Scorecard", developed in the early 1990's, provides managers with an approach to measure overall organizational

performance. Recognizing some of the weaknesses of previous management approaches, the BSC approach provides a clear prescription as to what strategy-focused companies should measure in order to achieve their long-term objectives. Their basic point, and that of the designers of the original BSC, is that to be successful in an increasingly competitive world, companies must satisfy a variety of benchmarks, not just financial performance. They emphasized that financial and nonfinancial measures must be part of the information system for employees at all levels of the organization. (Kaplan and Norton, 1996, 2000)

The BSC is a management system that can help organizations clarify their vision and strategy and translate them into action. Eventually, the BSC can facilitate translation of mission and strategy into goals and specially developed measures. In the Kaplan and Norton version of the BSC the measures are organized into four perspectives: Financial, Customer, Internal Processes, and Learning and Growth. Additionally, the BSC provides feedback around both the internal business processes and external outcomes, facilitating alignment of organizational multiple linked objectives, in order to continuously improve strategic performance and results. However, the BSC methodology builds on some key concepts of previous management ideas such as Total Quality Management (TQM) and Key Performance Indicators (KPI) scorecards. As Kaplan and Norton have demonstrated through their research, those management ideas are not likely to help companies realize performance breakthroughs unless they are accompanied by an explicit strategy including customer satisfaction, continuous improvement, employee empowerment and commitment, and feedback. (Kaplan and Norton, 1993, 1996, 2000)

Following on their initial efforts at implementing the BSC, Kaplan and Norton emphasized the use of the BSC as a strategy implementation tool. Organizations without any explicit strategy can use the process of building a BSC as the mechanism to develop a strategy. They can use the following principles during the BSC building process to achieve “alignment and focus” realizing performance breakthroughs (Kaplan and Norton, 2000):

- Translate the strategy to operational terms.
- Align the organization to the strategy.
- Make strategy everyone's job.
- Make strategy a continual process.
- Mobilize change through leadership.

Finally, Kaplan and Norton emphasized the need for a “double-loop feedback” (Deming, 1986) process as an effective management tool for measuring overall performance in strategy-focused organizations. The BSC incorporates feedback around internal business process outputs, but also adds a feedback loop around the desired outcomes of business strategies enhancing management attention and facilitating identification of cause-and-effect relationships among linked objectives (Kaplan and Norton, 2000; Simons, 2000). The conceptual framework of the BSC four perspectives is shown in Figure 2.1.

***a. The Four Perspectives of the BSC (Kaplan and Norton, 2000)***

(1) Financial Perspective. The BSC retains the financial performance perspective since the financial measures developed in this perspective are essential in providing the focus for goals, objectives, and measures and indicators across the scorecard. Financial objectives, when isolated from the whole process, become measures of past events, but, when incorporated in the BSC, they effectively indicate the economic consequences of strategy implementation. Companies can choose from a variety of financial objectives, depending on the stage in their life cycle. Kaplan and Norton simplify the choices and identify three major stages of the life cycle: (1) *grow*, (2) *sustain*, and (3) *harvest*. In the early stage (*grow*), traditional financial measures such as sales growth rates and revenue growth rates can be used in the BSC. Later, in the *sustain stage*, additional measures such as return on investment (ROI) or return on capital employed (ROCE) can be used as *lagging indicators* of overall performance. Finally, in the last stage (*harvest*) where short-period paybacks are required, operating cash flows and working capital reduction rates can be used as financial measures indicating organizational effectiveness. (Kaplan and Norton, 1996, 2000)

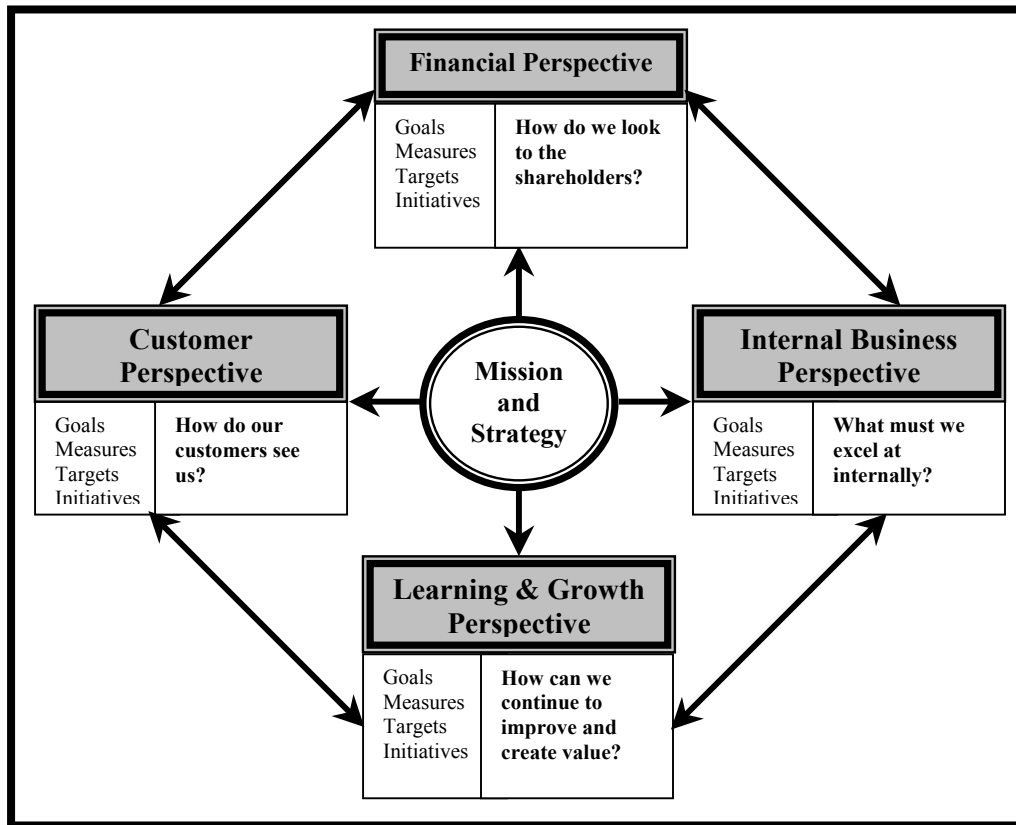


Figure 2.1. The BSC Four Perspectives (From: Simons, 2000).

(2) **Customer Perspective.** This perspective captures the ability of the organization to provide those product/service attributes such as quality, price, delivery time, functionality, and product/service reputation that maximize customer satisfaction and contribute to the development of a unique *value proposition*. Companies must identify their customers and the segments in which they will compete. These customers and segments should be expected to deliver the financial results necessary to sustain the business. Core customer outcomes such as customer satisfaction, loyalty, acquisition, retention, and profitability turn into the *leading indicators* of organizational overall success. The customer perspective includes several core measures that can be used across all kinds of organizations. Examples of metrics include customer satisfaction, market share, customer retention, and customer profitability. (Kaplan and Norton, 1996, 2000)

(3) **Internal Business Processes.** In this perspective, companies must identify those processes that are most critical to achieve financial and customer objectives. These key business processes must be monitored through specially developed measures to ensure that outcomes are satisfactory. However, Kaplan and Norton emphasized the importance for those metrics to be carefully designed by both the BSC model developer and those who know those processes most intimately. An important distinction of business processes in service organizations should be made between: (1) mission oriented processes and (2) support processes. The former are usually unique in nature and more difficult to measure while the latter are repetitive in nature and easier to measure.

Senior management must understand which internal business processes ultimately contribute to the desired outcomes. Each business will have a unique set of processes for creating value for customers and producing financial results. The *internal value chain* model (Kaplan and Norton, 1996) provides a template that companies can use to customize their own objectives and measures. Figure 2.2 provides a generic value chain model that encompasses the three principal internal business processes: (1) innovation processes, (2) operations processes and (3) post-sale service processes. Examples of measures in this perspective include the cycle time measure (from need identification to need satisfaction), first pass yield, or the amount of time a customer must wait in line for service. (Euske, 1998; Kaplan and Norton, 1996, 2000)

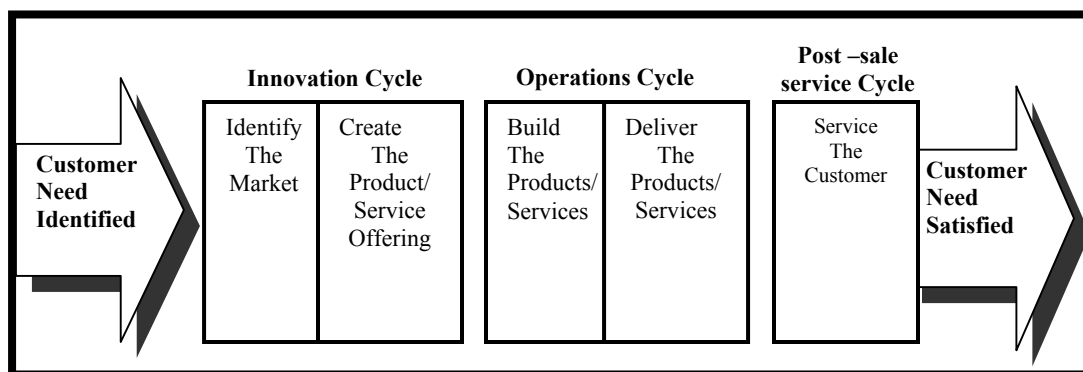


Figure 2.2. The Generic Internal Value Chain (From: Kaplan and Norton, 2000).

(4) Learning and Growth Perspective. This perspective captures the ability of employees, information systems, and organizational alignment to manage the business and adapt to change. Processes will only succeed if adequately skilled and motivated employees, supplied with accurate and timely information, are driving them. Kaplan and Norton identify three principal categories for the learning and growth perspective that exist across a wide variety of organizations: (1) employee capabilities, (2) information system capabilities and (3) motivation, empowerment and alignment. Today, there are few examples of measures in the learning and growth perspective because, as Norton and Kaplan emphasized in their research, companies do not appear to be linking the learning and growth area to their strategy and long-term objectives (Norton and Kaplan, 2000). Core measurements for this perspective include employee satisfaction, employee productivity, team performance versus individual performance, and current level of skills versus skills required to meet customer need satisfaction. (Norton and Kaplan, 1996, 2000)

The multiple measures on a properly constructed BSC should consist of a linked series of goals and measures that are both consistent and mutually reinforcing. This integrated system of scorecard measures should incorporate the complex set of cause-and-effect relationships among the critical variables that describe the strategy. The chain of cause-and-effect relationships should pervade all four perspectives of a BSC. Additionally, the multiple linkages should incorporate both outcome measures (lagging indicators) and performance drivers (leading indicators). In this way the BSC helps translate the business strategy into a linked set of measures that define long-term strategic objectives, as well as the mechanisms for achieving those objectives. (Norton and Kaplan, 1996, 2000)

Finally, there is a question still remaining in the BSC literature as to how many perspectives are sufficient. As Kaplan and Norton emphasize in their research: *No mathematical theorem exists that four perspectives are both necessary and sufficient.* Companies rarely use fewer than four perspectives, but depending on the situation and the business strategy, one or more additional perspectives may be needed. (Norton and Kaplan, 1996, 2000)

### **3. Benefits from Effectively Implementing a BSC Model**

Companies initially adopt the BSC for a variety of reasons, including gaining clarification, consensus, and focus on their strategy and then communicating that strategy throughout the organization. However, the BSC is more than a tactical or an operational measurement system. The BSC can be the cornerstone of an organization's management system since it helps to align and support key processes, including clarification of strategy, communication of strategy, alignment of multiple objectives, alignment of strategic initiatives, and linking of strategic objectives to long-term goals. Used in this way, the BSC can become a powerful strategic management system. (Norton and Kaplan, 1996, 2000)

The BSC as a strategic management system provides feedback around both the internal business processes and external outcomes in order to continuously improve strategic performance results. When fully deployed, the BSC can provide an efficient and effective performance-based management system that (Norton and Kaplan, 1993, 2000):

- Translates mission and vision into clear measurable outcomes that define success, and that are shared throughout the organization as well as with customers and shareholders;
- Provides a tool for assessing, managing, and improving the overall health and success of business systems;
- Facilitates the shift from prescriptive, audit-and-compliance-based oversight to an ongoing, forward-looking strategic partnership;
- Includes measures of quality, cost, customer satisfaction, employee satisfaction, motivation, and employee skills to provide an in-depth understanding of the critical performance drivers;
- Measures process efficiency providing a rational basis for selecting what business process improvements to make first;
- Allows managers to identify performance drivers and cause and effect relationships and expand their usage in new strategic initiatives; and
- Mobilizes the entire organization towards a clearly defined strategic goal.

#### **4. Problems Identified in the BSC Building Process**

Kaplan and Norton, while working on the BSC building process in several organizations, noted that some organizations did not succeed in launching their BSC programs. Despite spending considerable effort and resources, some companies could not implement the new management system. Following up their initial work, Kaplan and Norton identified what they state are the root causes of BSC implementation failures emphasizing that those failures are related to either the BSC design or some organizational pitfalls that hinder the implementation of it. (Norton and Kaplan, 1996, 2000)

According to Kaplan and Norton, using too few or easily attainable measures is one of the primary causes of a BSC design failure. The design fails to achieve a balance between the outcomes and the performance drivers or between individual and organizational objectives. On the other hand, the use of too many measures without identifying the critical ones can lead to management confusion and to a BSC design that fails to illustrate the true “story of success”. In other cases, the companies failed to capture the true cause-and-effect relationship between desired outcomes and performance drivers, developing measures that were not linked with each other. As a result, according to Norton and Kaplan, the organizations created a poor BSC design, which failed to mobilize organizational effort towards the strategic goal. (Norton and Kaplan, 1996, 2000)

Design failures also occurred in cases where corporate strategy was not clearly communicated throughout the organization. Thus, organizational business units developed their BSCs based on their own perception of organizational strategy, which was not aligned with corporate objectives. Their BSC design, though effective for their business unit, failed to fulfill corporate strategic goals leading to confusion and organizational tensions. (Norton and Kaplan, 1996, 2000)

The lack of commitment of senior management is one common cause of implementation failure. Senior management commitment is required because not only do they have the knowledge to articulate the organization’s strategy but they also have the authority to mobilize middle-level management participation in the process. While senior

management commitment is essential for the process, the lack of involvement of lower-level managers can also prove to be fatal. For the BSC to be effective, it must eventually be shared with everyone in the organization. One of the BSC building process objectives is to have everyone in the organization understand the process and contribute to its implementation. (Norton and Kaplan, 1996, 2000)

The perception that the BSC process is a onetime event has also led companies to implementation failure. Believing that they had only one chance to launch their BSC, they spent considerable effort and resources, on the one time effort, trying to produce the perfect scorecard. However, the BSC is not a onetime event. It is a continuous improvement process where objectives, measures, and data collection are modified over time, adjustments continue around objectives and measures, and new measures evolve with use and experience. (Norton and Kaplan, 1996, 2000)

Hiring external inexperienced consultants instead of mobilizing internal forces, during the BSC building process, is another cause of implementation failure. Each organization is a unique entity and a BSC recipe does not exist that fits all organizations. External consultants, when inexperienced with the specific organization, are unlikely to provide an effective BSC design and implementation plan. “Buy-in” is the recommended practice for the effective implementation of the BSC program. (Norton and Kaplan, 1996, 2000)

According to Arthur Schneiderman, who developed and used the corporate scorecard concept at Analog Devices, Inc, the following factors can also lead to BSC implementation failure (Schneiderman, 1999):

- Non-financial variables on the scorecard are incorrectly identified as the primary drivers of future stakeholder satisfaction.
- The metrics are poorly defined.
- Improvement goals are negotiated rather than based on stakeholder requirements, fundamental process limits, and improvement process capabilities.
- There is no deployment system that breaks high-level goals down to the sub-process level where actual improvement activities reside.

- A state of the art improvement system is not used.
- There is not and cannot be a quantitative linkage between non-financial and expected financial results.

## **B. BALANCED SCORECARD IN PUBLIC SECTOR**

In August 1993, U.S. Congress, aiming at improving government, put forth a bill that became Public Law 103-62, entitled the *Government Performance and Results Act* (GPRA) (U.S. Printing Office). The act required Federal agencies to improve their performance through developing strategic plans, clarifying their mission, setting goals and objectives, and developing measures that could monitor progress towards their goals. These goals must focus on results, service quality, and customer satisfaction. Since then, various initiatives have been undertaken that encourage and support the use of performance-based management ideas and practices in the public sector. The implementation of those initiatives indicates that the BSC has the potential to make a contribution to the management of public sector even though the concept was initially developed with the private sector in mind. (Department of Energy Website, 2003)

However, adopting and implementing the BSC concept in organizations where profitability is not the driving force and where the organization's existence depends on mission necessity and not on mission accomplishment, revealed important conclusions. Modifications of the BSC architecture are necessary before the BSC program is implemented. (Department of Energy Website, 2003; Procurement Executives' Association Website, 2003)

Further examination of the BSC implementation efforts in public sector (Balanced Scorecard Institute Website, 2003; Procurement Executives' Association Website, 2003) revealed that financial success could not be at the top of the process since this is not the primary objective of those organizations. Hence, reorganization of the framework putting customer satisfaction at the top of the process was one of the first adjustments made in the BSC architecture. Even though the desire for customer satisfaction is a clear resemblance between private and public sectors, there is still a difference, because the definition of "customer" is different in the two sectors. In the public sector, donors, taxpayers or legislators can be considered customers together with the product/service

end-user. Accordingly, public sector organizations should initially define who is their customer. (Norton and Kaplan, 1996, 2000; Balanced Scorecard Institute Website, 2003; Department of Energy Website, 2003; Procurement Executives' Association Website, 2003)

Additionally, in the public sector, government agencies have the authority to conduct their mission that is delegated either by congressional statute or by Executive order. Hence, unlike private-sector businesses that can change direction in any way depending on their financial goals, government agencies are constrained to work within their authorized mission. Their performance priorities, therefore, are not financial in nature, but rather *mission effectiveness*. Financial goals that are clearly defined in the private sector and are related to profit, growth, and market share, cannot be used as performance indicators. However, another difficulty with mission effectiveness metrics is that they often are defined differently for each departmental mission, and to some extent, they are unique. Consequently, they cannot directly be compared or benchmarked against other more generic measures available in the market. However, past performance can be used as the alternative and comparison of measures against themselves can be made over time. (Balanced Scorecard Institute Website, 2003; Department of Energy Website, 2003; Procurement Executives' Association Website, 2003)

In the learning and growth perspective of the generic BSC framework, the workforce is seen as motivated either by intrinsic incentives, such as recognition and satisfaction, or by extrinsic incentives, such compensation bonuses. However, in the public sector, the values on which incentives can be based may not be the same. On the other hand, nonprofit and public sector organizations are not as likely as profit making organizations to use financial incentives to motivate human behavior. Due care should be exercised during the BSC development process in order to identify those human perceptions that may influence the implementation of the program. (Neely, Walters, 2002)

Additionally, in the public sector, given mission necessity, personnel commitment, somehow, is taken for granted since almost all of them have the sense that they serve a superior idea. However, that perception by itself without training and

encouragement is unlikely to mobilize employee participation during the BSC development process. Therefore, as in the private sector, leadership style becomes the critical ingredient that can effectively communicate change and mobilize personnel involvement and commitment for the successful implementation of the program. Stereotyped leadership that is based on a *command and control* management philosophy is unlikely to create the environment for the communication of vision and strategy throughout the organization and encourage initiatives that contribute to the performance improvement. Accordingly, given the culture in the public sector, leadership that has a management style that emphasizes communication, participation and employee initiative can become the catalytic factor for the successful implementation of the BSC concept. (Norton and Kaplan, 1996, 2000; Department of Energy Website, 2003; Procurement Executives Association Website, 2003)

### **C. CHAPTER SUMMARY**

In today's competitive environment where market globalization has increased business uncertainty about future success, traditional management systems based solely on financial goals are inadequate to provide management clarity and direction and ensure long-term success. A performance-based management approach addresses the need for a performance measurement system that can determine whether goals and objectives are being achieved. Performance measures should not be based solely on tangible assets. They should be expanded on intangible assets as well, since these are the driving forces behind the results that create future value.

This chapter provided an example of a framework for a performance measurement system, which is called the "Balanced Scorecard". Initially developed by Arthur Schneiderman at Analog Devices, Inc. in 1987 and popularized by Kaplan and Norton in the early 1990s, the BSC has become a very popular management system in the private sector. Starting with organizational mission and strategy, the desired outcomes (lagging indicators), critical processes and factors (leading indicators), and cause-and-effect relationships should be identified in order to provide *focus and alignment*. Subsequently, an integrated set of measures should be developed in different perspectives depending on the organization and the conditions. The four commonly used perspectives

are: Financial, Customer, Internal Processes, and Learning and Growth. By balancing performance in all perspectives, alignment of organizational mission, strategy, and overall performance can be achieved leading to long-term success.

This chapter also provided an analysis of the BSC key characteristics emphasizing the benefits organizations can realize by the effective implementation of the BSC concept. It continued by emphasizing the major problems identified during the BSC building process in several organizations. Those major problems, as classified by Kaplan and Norton, are related either to initial design failures or to organizational processes that hinder the effective implementation of the program.

Finally, the last part of this chapter emphasized key differences in business practices between the private and public sectors, illustrating how those differences influence the design and implementation of the BSC concept in public sector organizations. Depending on the mission characteristics, BSC architecture modifications are necessary before the BSC program is implemented in public sector organizations.

### **III. METHODOLOGY**

The features of this research comprise what is known in the research discipline as *field research*. Field research is advisable in studies that are closely related to examining and trying to understand day-to-day practices within a specific environment and regarded as contributing to the study of the processes within their natural setting (Babbie and Huitt, 1983). The nature of this research encourages the use of this method since it contributes to the better understanding of the IPD's management conditions and processes in the course of the BSC building process. Flexibility in the analysis of the data collected is also an advantage of this method given that the majority of data related to this research are qualitative in nature. However, because of its qualitative approach to data and its relatively informal sampling procedures, this research method is not suitable for obtaining generalizable results (Babbie and Huitt, 1983). In this case, it is not an impediment since the research is tailored to one specific unit and not intended to have generalizable results.

#### **A. FEATURES OF THE QUESTIONNAIRES**

Based on the main principles of field research, a series of questionnaires was prepared for collecting relevant data from the examined department. Those questionnaires were closely followed by phone interviews with follow-up questions wherever necessary. This questionnaire method was chosen to collect the data because the respondents were located in Greece, far away from the location of the author, in the USA. Additionally, this method is considered quite useful when used by managerial personnel and it is the most inexpensive method to gather the data needed for such research (Miller, 1996; Babbie and Huitt, 1983).

The questionnaires contained both questions and statements, organized in managerial themes. The questions and statements were followed by a list of responses appropriate to the topic from which the respondent is instructed to choose. This method facilitates the respondent's participation and helps ensure uniformity of responses

(Babbie and Huitt, 1983). Additionally, an open-ended structure was also used for questionnaire items where it was impossible to provide, in advance, an exhaustive list of responses to a particular question or statement allowing for respondent discretion.

Questionnaires unlikely to incorporate all the political and personal issues that are unknown to the researcher and which may influence the responses. Although it is unlikely that biases and misinterpretations due to those parameters can be fully detected and avoided, the follow-up phone interviews are expected to identify and mitigate the effects of those issues.

Another disadvantage, common in this research method, is the tendency of the respondents to focus on confirming evidence and the possibility of an incomplete analysis because of the complexity of the task (Malina, 2001). However, the team approach employed in the process, the involvement of the author in the data interpretation stage, and the critique of two experienced professors is expected to help overcome the potential problems.

Finally, the questionnaires were developed in English, which is not the native language of the respondents. However, a translation of the questionnaires in the respondents' language was not considered to be necessary since the initial contact revealed that all of the participants had adequate knowledge of the English language. Two of the respondents had received their MS in management degree from academic institutions in the USA.

## **B. ANALYSIS OF THE QUESTIONNAIRES AND DISCUSSION**

### **1. The Preliminary Questionnaire**

The preliminary questionnaire (Appendix A) was prepared by the author and answered by the IPD's manager. The IPD's manager was the first contact in the field and was the primary point of focus within IPD. He provided the researcher with background information in relation to the organization and the internal structure of IPD and access to other relevant documentation.

The rationale for the preliminary questionnaire was (1) for the author to gain a better understanding of the IPD operations and management environment and (2) for the first of the key-participants in the research to become aware of the research process. Although the outcomes of this questionnaire were not expected to contribute directly to this research they facilitated the whole process since they helped (1) the writer to make initial assessments about IPD operations and environment and (2) the IPD manager to become familiar with BSC basic concepts. Additionally, this questionnaire, together with telephone interviews, contributed to the development of a “common language” between the writer and the participant, which was necessary for the subsequent research process given the differences in backgrounds, the distance, and the research time available.

This questionnaire was organized in three managerial themes. In the first part, (respondent’s demographics) the IPD’s manager was asked to provide personal information related to his background and position in IPD. In the second part, (organizational profile) the respondent was asked to provide information related to the IPD’s mission, organization, personnel, inputs, processes, and outcomes. This kind of information was regarded as necessary for the analysis of IPD’s organization and structure. In the final part (organizational perspective) the respondent was asked to provide further information related to the IPD’s current management conditions. This information was regarded as necessary for the analysis of IPD’s management environment in relation to the BSC building process.

Regarding the BSC building process, the preliminary questionnaire was used, as the primary source of information for gaining insight into the IPD management perspective of the IPD desired outcomes. Given the IPD manager’s experience and background (Appendix A), it is assumed that the IPD desired outcomes, as they are defined in the preliminary questionnaire, provide a good frame of reference, which together with the IPD mission statement contribute to the clarification of the IPD strategic objectives that need to be fulfilled for the desired outcomes to be achieved and the mission to be accomplished. In essence, strategic objectives and desired outcomes

are the starting points that elicit knowledge of the performance drivers and their causal interdependencies during the building process of the conceptual performance model (Abernethy et al., 2002).

Taking into account the importance of those factors, the analysis of the information collected by this questionnaire revealed that there were some areas of concern in relation to BSC development process that needed further clarification over the next stage. Specifically:

- The desired outcomes should be further tested against the other participants' perspective in order to achieve consensus and focus.
- All the different stakeholders should be familiarized with the nature of the IPD mission.
- The multiple strategic objectives that are associated with the desired outcomes should be identified and described.
- The critical processes and key-success factors that contribute to the achievement of the strategic objectives should be identified and linked, capturing the cause-and-effect relationships.

Finally, in this preliminary questionnaire the respondent was asked to identify the key participants for the study. The key participants of the study are (1) the Head of the FMS Programs Office and (2) the Head of the 1320/4 Office. The sample is considered to be adequate for this research given the qualitative nature of information required for the BSC building process, the total number of the IPD's employees, the participants' experience, and the position of the participants in the department.

Both of the participants are Supply Officers, which indicates that they have been trained for the specific duties that have been assigned in IPD. The distance between their military ranks and the rank of the IPD's manager and their professional relationship are not such that they are likely to influence their discretion in developing their viewpoint about key issues related to the BSC building process. In addition, they perform different roles in the department, have adequate experience with IPD operations and processes, and are involved in the majority of the processes inside IPD. Their participation in the research is expected to facilitate the process and contribute to consensus and identification of performance drivers.

## **2. The First Questionnaire**

The first questionnaire (Appendix B) was prepared by the author and answered by the three key participants in the research. The questionnaire was closely followed by telephone interviews with follow-up questions wherever necessary. The objective of this questionnaire was to elicit knowledge of the key participants regarding their perspectives about IPD's desired outcomes, strategy and objectives, critical processes and key success factors that contribute to the achievement of the desired outcomes, and the perceived interrelationships among critical processes, key-success factors and desired outcomes.

The ultimate objective of this questionnaire is to gain consensus of the IPD's strategy and communicate the strategy among the key participants. Kaplan and Norton (1996) emphasized that, an important condition for success in the development process is the active involvement of an executive team that contributes to the description of the strategic objectives and the identification of the links among multiple objectives and desired outcomes. The three key participants comprise the IPD's executive team, which at this stage of the BSC building process, helps to describe strategy and contribute to the identification of the links among desired outcomes, individual strategies, and performance drivers. Linking strategy with desired outcomes and putting strategy at the center of the process is an essential step in the BSC building process for the strategy-focused organizations (Kaplan and Norton, 2000).

This questionnaire was organized in three managerial themes. In the first part, (Mission and Strategy) the respondents were initially asked to provide their perspectives about the IPD's desired outcomes. Testing the participants' perspective about the IPD's desired outcomes contributes to *consensus* and *focus*. In addition, testing desired outcomes against IPD's mission contributes to the perception of causality between IPD's outcomes and mission accomplishment. The identified desired outcomes are described in Table 3.1. In addition, as shown in Table 3.1 a codification of the desired outcomes was done in order to facilitate the development of the proposed BSC model.

| <b>Outcome Description</b>        | <b>Outcome Coding</b> |
|-----------------------------------|-----------------------|
| Customer Needs Prompt Fulfillment | <b>D1</b>             |
| Regulation Compliance             | <b>D2</b>             |
| On Time Payments                  | <b>D3</b>             |
| Cost Reduction                    | <b>D4</b>             |

Table 3.1. IPD's Desired Outcomes.

In this part, of the questionnaire the respondents were also asked to identify the IPD's different customers. Given the nature of the IPD's mission, identification and consensus of the IPD's customers contributes to the design of a BSC model that includes the whole spectrum of IPD's strategic objectives that need to be achieved for stakeholders' satisfaction and mission success.

Finally, in this part the respondents were asked to identify the multiple strategic objectives that need to be achieved for the customers to be satisfied and the desired outcomes to be accomplished and to link those objectives with the respective desired outcomes. The identification of the multiple objectives contributes to the articulation of a desired strategy that helps to focus on the activities and factors inside IPD that are the drivers of the desired outcomes. The identified multiple strategic objectives and the links with specific desired outcomes are described in Table 3.2.

| <b>Strategic Objective Description</b> | <b>Objective Coding</b> | <b>Linked with Desired Outcome:</b> |
|----------------------------------------|-------------------------|-------------------------------------|
| Lower Delivery Time                    | <b>S1</b>               | <b>D1</b>                           |
| Increase Quality                       | <b>S2</b>               | <b>D1</b>                           |
| Enhance Internal Auditing              | <b>S3</b>               | <b>D2, D3</b>                       |
| Achieve Timely & Effective Review      | <b>S4</b>               | <b>D2, D3</b>                       |
| Increase use of IT                     | <b>S5</b>               | <b>D2, D3</b>                       |
| Achieve Full & Open Competition        | <b>S6</b>               | <b>D4</b>                           |
| Achieve Economies of Scale             | <b>S7</b>               | <b>D4</b>                           |
| Improve Employees' Skills              | <b>S8</b>               | <b>D2, D3</b>                       |
| Increase Employees' Capabilities       | <b>S9</b>               | <b>D2, D3</b>                       |
| Improve Employees' Knowledge           | <b>S10</b>              | <b>D2, D3</b>                       |

Table 3.2. IPD's Strategic Objectives and Their Links.

In Table 3.2 the objectives were coded to facilitate the development of the proposed BSC model.

In the second part of this questionnaire (Strategy and Critical Processes) the respondents were asked to identify the important internal processes that directly contribute to the achievement of the IPD's desired outcomes. The identified important processes are described in Table 3.3. In Table 3.3 the important processes were coded to facilitate the development of the proposed BSC model.

| <b>Process Description</b>                                   | <b>Process Coding</b> |
|--------------------------------------------------------------|-----------------------|
| Requisitioning Funds                                         | <b>P1</b>             |
| Preparing Solicitation Document                              | <b>P2a</b>            |
| Publicizing Solicitation Document                            | <b>P2b</b>            |
| Issuing Contract Award                                       | <b>P3</b>             |
| Placing Procurement Orders                                   | <b>P4</b>             |
| Transferring Funds to Naval Attaches and Banks               | <b>P5</b>             |
| Monitoring Material Deliveries                               | <b>P6</b>             |
| Collecting Procurement, Repair, and Transportation Documents | <b>P7</b>             |
| Reviewing Procurement, Repair, and Transportation Documents  | <b>P8</b>             |
| Making Payments (Procurement, Repair, Transportation)        | <b>P9</b>             |
| Submitting Procurement and Repair Documents for Audit        | <b>P10</b>            |

Table 3.3. IPD's Important Processes.

An additional question was added in order to clarify cause-and-effect relationships among those important processes and their links with the strategic objectives. The supplementary question contributed to the clarification of the previously identified important activities inside IPD that are the drivers (lead indicators) of the desired outcomes (lag indicators) and their interrelationships. Identifying the interrelationships among those important processes also contributed to the identification of the processes inside IPD that need to be controlled and measured (critical processes) since they contribute to the IPD's overall success. The identified critical processes and their influence upon other important processes are illustrated in Table 3.4.

| <b>Critical Process:</b> | <b>Could Improve Process:</b> |
|--------------------------|-------------------------------|
| P1                       | P5, P9                        |
| P2b                      | P3                            |
| P6                       | P7, P8, P10                   |
| P7                       | P8                            |
| P8                       | P9, P10                       |

Table 3.4. IPD's Critical Processes and Their Influence.

In addition, the supplementary question contributed to the classification of the critical processes in strategic themes based on their direct influence on specific strategic objectives. The identified direct influences of the critical processes on specific strategic objectives and their classification are described in Table 3.5.

| <b>Critical Process:</b> | <b>Links with Strategic Objective:</b> | <b>Perspective</b> |
|--------------------------|----------------------------------------|--------------------|
| P1                       | S3, S4,                                | Internal Processes |
| P2b                      | S6                                     | Financial          |
| P6                       | S1, S2                                 | Customer           |
| P7                       | S3, S4                                 | Internal Processes |
| P8                       | S3, S4                                 | Internal Processes |

Table 3.5. Critical Processes and Strategic Objectives.

The identification by the key participants of the critical processes and the interrelationships among critical processes and strategic objectives contributes to the development of a causal model that is based on the key interviewees' experience. This method of capturing causality is considered to be advantageous in this stage of the BSC building processes, taking into account that either objective data are unavailable or over-reliance on available data could lead to an irrelevant model that is unrelated to original strategic goals (Abernethy et al., 2002).

In the last part of this questionnaire (Strategy and Key Factors) the respondents were asked to identify the important factors (key success factors) that directly influence internal processes and contribute to the achievement of the IPD's desired outcomes. However, slight differences were observed in the respondents' perspective about the key-success factors. Ultimately, the "majority rule" approach was used in order to isolate those important factors, which need to be incorporated in the BSC model, and for which performance measures need to be developed. Based on that principle, two of the eight factors initially mentioned as important (Empowerment and Information Technology) were ultimately not incorporated in the model since they were not regarded as important by two of the three key interviewees. This "majority rule" approach also contributes to simplicity of the BSC design.

The process also revealed that there is an exogenous key factor, which influences IPD's activities and which is outside IPD management's control. The identification and inclusion of this important external factor in the IPD's BSC model can contribute to the validity of its design. (Abernethy et al., 2002) However, including in the BSC model external factors for which there is no previous experience of controlling and measuring may contribute to the complexity of the model and increase the difficulties during the implementation process.

The identified key success factors for which the IPD key participants reached consensus are described in Table 3.6. In Table 3.6 the key success factors were coded to facilitate the development of the proposed BSC model.

Finally, in this part the respondents were asked to identify the cause-and-effect relationships among key success factors and critical processes. After interactions with the key participants the "consensus" approach was used in order to capture and describe the influence of the key success factors upon the critical processes.

| <b>Factor Description</b>  | <b>Factor Coding</b> |
|----------------------------|----------------------|
| Available Funds            | <b>F1</b>            |
| Communications             | <b>F4</b>            |
| Employee Commitment        | <b>F5</b>            |
| Employee Responsibility    | <b>F6</b>            |
| Access to Information      | <b>F7</b>            |
| Procurement Policy Changes | <b>X1</b>            |

Table 3.6. IPD's Key Success Factors.

The identified influence of the key success factors upon the IPD's critical processes is illustrated in Table 3.7. The critical processes are those presented in bold. The identification of those interrelationships contributes to *focus* on the key-success factors that need to get management attention. It also facilitates the inclusion in the BSC model of those key factors (lead indicators) that need to be controlled and measured for contributing to the IPD's overall success.

| <b>Improvement in factor:</b> | <b>Could improve process:</b>       |
|-------------------------------|-------------------------------------|
| <b>F1</b>                     | <b>P1, P2b, P9</b>                  |
| <b>F4</b>                     | <b>P2a, P2b, P4, P5, P6, P7, P8</b> |
| <b>F5</b>                     | <b>P3, P6, P7, P8, P9, P10</b>      |
| <b>F6</b>                     | <b>P3, P6, P7, P8, P10</b>          |
| <b>F7</b>                     | <b>P2b, P6, P7, P8</b>              |

Table 3.7. Influence of Factors Over Processes.

### 3. The Second Questionnaire

The second questionnaire (Appendix C) was prepared by the author and answered by the three key participants in the research as a team. The questionnaire was closely followed by telephone interviews with follow-up questions wherever necessary.

This questionnaire included a set of balanced performance measures that was developed by the author and suggested to the key interviewees as appropriate for monitoring IPD's performance. The development of those measures was based on the

principles identified in the literature (Fitzgerald et al., 1993; Simons, 2000; Kaplan and Norton, 2000; Balanced Scorecard Institute Website, 2003; Procurement Executives' Association Website, 2003) regarding the selection of appropriate performance measures and the IPD's specific conditions.

Those suggested metrics were tailored to specific elements of the IPD's BSC model and classified in different strategic areas based on the perceived priorities and objectives of the IPD's management. In addition, taking into account the IPD's characteristics that are demonstrated in Chapter IV and the nature of the metrics in addition to the definition of the metrics (formula), a method of measurement was suggested for each performance metric, which is expected to facilitate the implementation of the BSC model.

The respondents were then asked to read the suggested measures and make recommendations (adjustments, deletions, or additions) in accordance with their experience and the applicability of implementing that set of performance measures. In addition, the respondents were asked to keep in mind during the evaluation of the suggested measures that the measurement method has been identified in the literature as a suitable method for collecting measurement data. Other methods can also be applicable depending on the IPD's characteristics and options. In that sense, the suggested measurement method should not function as a restrictive factor in the evaluation of the suggested metrics. The whole process contributed to the development of performance measures that are tailored to specific objectives, in accordance with the principles identified in the literature, and meaningful for the users. The outcomes of this questionnaire are presented in Chapter VI together with the analysis of the selection principles and the suggested measures.

### **C. CHAPTER SUMMARY**

In the first part of this chapter, the methodology that was used for this study was presented. The features of this research comprise what is known as field research. After that, the advantages and restrictions of this research method were demonstrated with emphasis on the main characteristics and the nature of the questionnaires that were prepared for collecting relevant data for the purposes of this study.

In the second part of this chapter, an analysis and discussion of the relevant data that were collected by the three questionnaires that were developed for this study were provided. Those questionnaires were used as the source of information for accommodating the IPD's management analysis and the BSC building process.

Specifically, the *preliminary questionnaire* together with telephone interviews (Appendix A) was used as the primary source of information for collecting data in relation to the IPD's organization, mission, operations, important processes, desired outcomes, and management environment. In addition, this questionnaire was used for identifying all of the IPD's key participants in the study.

The *first questionnaire* (Appendix B) together with telephone interviews was used for collecting information in relation to the IPD's strategic objectives, critical processes, key success factors and their interrelationships. The whole process contributed to *focus* and *consensus* about IPD's desired outcomes and strategic objectives, the identification of the performance drivers, and their causal interrelationships. The analysis revealed those critical processes and key success factors that need to be incorporated into the IPD's BSC model and measured for contributing the IPD's mission success.

Finally, the *second questionnaire* (Appendix C) was used for testing the performance measures that were developed and suggested by the author to be incorporated into the IPD's BSC model against the key interviewees' perspective in relation to the metrics' usefulness and applicability. The process contributed to the development of performance measures that are tailored to specific objectives, in accordance with the principles identified in the literature, and meaningful for the users.

## **IV. OVERVIEW OF INTERNATIONAL PROCUREMENT DEPARTMENT**

### **A. IPD BACKGROUND**

As shown in Figure 1.2, the International Procurement Department (IPD) is one of the five departments of the Procurement Directorate (PD) in the Hellenic Navy Supply Center (HNSC). The HNSC is one of the major commands in Hellenic Naval Logistic Center (NLC). The HNSC is the primary Supply Center of the Hellenic Navy, organized in functions (Directorates and Departments) that compose an integrated supply system for procuring secondary items (support parts, minor systems, and services) from sources inside and outside the country. The HNSC deals with about 500,000 Stock Keeping Units (SKU) and monitors them through a central database, which is an automated and integrated logistic system first established in the early 1980's. The organization chart of the HNSC is shown in Figure 1.1. (Hellenic Navy General Staff, 2002)

The IPD function is unique in nature inside the HNSC since it is the only International Procurement Agency for the acquisition of support items and minor systems in the Hellenic Navy. The mission of IPD is described in the IPD Memorandum of Operations (International Procurement Department, 1991) and is cited below:

To procure secondary items (spare parts and minor systems) from sources (manufacturers and vendors) outside the country, for fulfilling the Hellenic Navy's specific needs through the following processes:

- International Competitions
- Sole Source Procurements
- International Agreements

To accomplish its mission the IPD is organized in sub-departments and offices as shown in Figure 1.3. The IPD currently employs 16 employees including the IPD manager. The IPD can be considered to be a multi-process department and among the processes distributed across the sub-departments and offices. The processes as described in the departmental Memorandum of Operations are the following:

- Requisitioning funds from Inventory Provision & Control Directorate
- Preparing solicitation documents and issuing contract awards
- Monitoring contract execution
- Monitoring material delivery
- Collecting, reviewing, and processing procurement and repair documents
- Making payment proposals
- Ordering item shipment to the repair sites
- Making transportation cost payments
- Transferring funds to respective bank accounts (including Naval Attaché Offices bank accounts)
- Managing the account balances of the Naval Attaché offices in Washington, London, Berlin, and Paris
- Managing FMS programs requisitioning process
- Submitting all the procurement and repair documents to the Audit Agency for the final account accommodation

The activities and the specific operations of each sub-department and office inside IPD are described in detail in Appendix A. Appendix A is the result of a preliminary questionnaire prepared for this research and answered by the IPD manager. As demonstrated in the previous chapter, the objective of this questionnaire was (1) for the author to elicit knowledge of the IPD's operations and management environment and (2) for the first of the key participants in the research to become familiar with the research process.

The IPD's desired outcomes described by the IPD manager (Appendix A) provide a good frame of reference, which together with the IPD mission statement, contribute to the clarification of the IPD strategic objectives that need to be fulfilled for the desired outcomes to be achieved and the mission to be accomplished. However, the desired outcomes, as they are described in previous chapter, do not have associated measurable goals that can translate strategic objectives into operational terms. Further elaboration is required during the implementation phase of the BSC model in order to clarify desired outcomes in terms of measurable goals.

Regarding the identification of inputs the IPD utilizes in carrying out its operations, the departmental Memorandum of Operations (International Procurement Department, 1991) was used as the primary source of information. However, given the time since the Memorandum of Operations was first issued and the potential changes that may have taken place a question was included in the preliminary questionnaire regarding inputs. The IPD manager's response about inputs is concurrent with the information contained in the departmental Memorandum of Operations. Research in the literature also revealed that these inputs are regarded as generic among public procurement agencies. (Procurement Executives' Association Website, 2003; The Balanced Scorecard Institute Website, 2003). The inputs the IPD uses for accomplishing its operations are the following:

- Procurement funds that are approved and made available by the Inventory Provision & Control Directorate (IP&CD)
- Public laws, acquisition regulation, and directives issued by the HNGS and NLC for procurement actions
- Human resources
- Information Technology (IT) for data collection and data processing

According to the fund-approval process, IP&CD makes the decision for the funds approved and allocated to IPD. IPD is not officially involved in the IP&CD budget allocation policy before a procurement requisition is submitted. IP&CD, based on its inventory policy, submits to IPD a procurement requisition accompanied by a purchase description with an initial cost estimation. IPD is then held responsible for developing initiatives and exploring alternatives in determining the most effective procurement method in terms of time and money that satisfies the specified need. Additionally, there are procurement cases where the funds are not obligated in advance but the final decision-making about fund approval is based on the IPD's detailed fund-proposal and the funds that are available. The process is depicted in Figure 4.1.

Although acquisition regulations and human recourses are two distinctive inputs in procurements agencies, they are fairly interrelated in the sense that each of them is a necessary but not sufficient condition for the internal operations to be effective. Clarity of regulations and personnel understanding the regulations are both essential for the

effective implementation of internal operations. (The Government Performance and Results Act of 1993; Procurement Executives' Association Website, 2003)

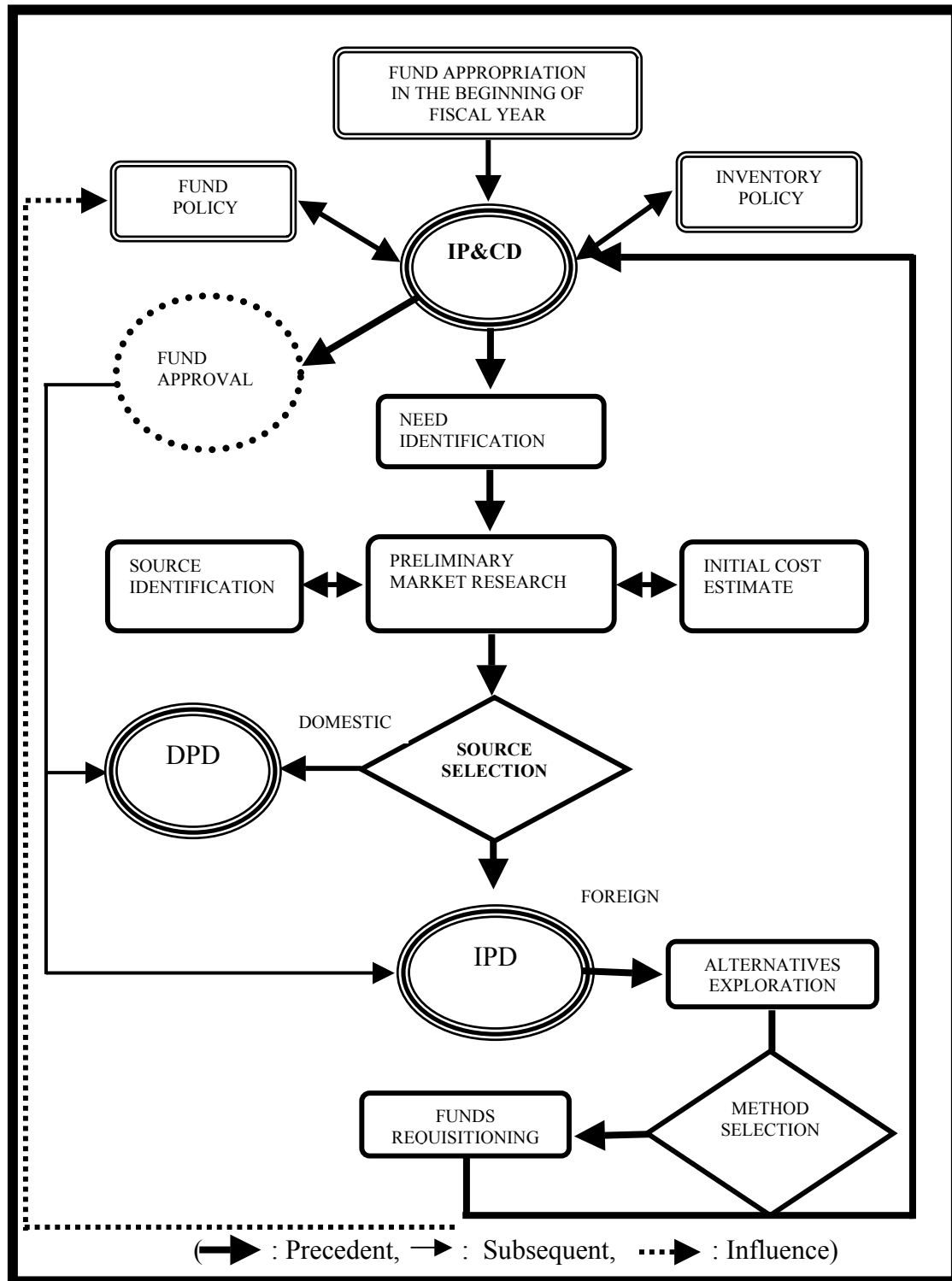


Figure 4.1. Fund Approval Process.

Based on the preliminary questionnaire, it is assumed that both preconditions are satisfied in IPD's current environment. This assumption is also reinforced by the fact that according to management's perspective IPD's personnel are quite qualified for carrying out their duties.

Regarding IT, NLC and particularly HNSC were pioneers in integrated computerized logistics and utilization of IT in everyday operations in Greece. HNSC installed its first automated and integrated logistic system in the early 1980's. However, even though the usage of IT in IPD for carrying out its operations is taken for granted, due care should be exercised in later stages of the BSC building process since IT current capabilities are essential for the establishment of an effective BSC feedback process.

Finally, according to Fitzgerald et al. (1993), there are three archetypal service types that are met across the entire spectrum of service organizations: professional services, service shop, and mass services. Each service organization can be classified in one of the three generic service types. This classification contributes to the identification of common problems shared among the three major services types and facilitates the development and selection of performance measurements that are appropriate for the specific service class. The criterion for the differentiation of the service organizations is the volume of the customers processed in relation to the following six classification dimensions (Fitzgerald et al., 1993):

- People/equipment focus.
- Front/back office focus.
- Product/process focus.
- Level of customization of the services provided.
- Discretion available to front office staff.
- Contact time available by front office staff.

Figure 4.2 represents a version of the service classification scheme that was developed by Fitzgerald (Fitzgerald et al., 1993).

Given the organization, the mission, and the input-process-output model that applies in IPD, a classification of the services provided is regarded as necessary since

such a classification will contribute to the better understanding of the IPD management conditions and facilitate the selection of performance metrics during the last stage of the BSC building process.

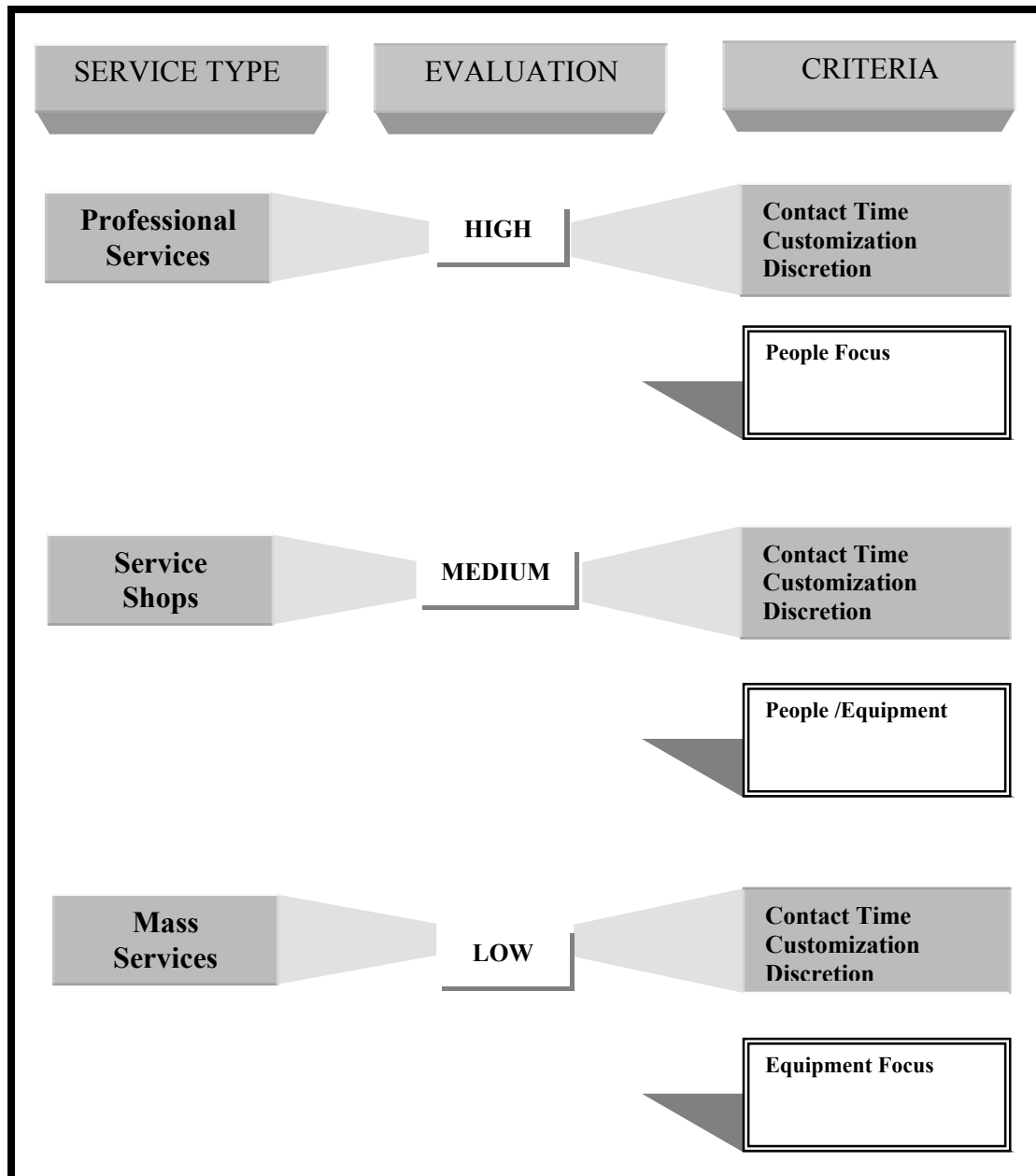


Figure 4.2. The Service Classification Scheme (From: Fitzgerald *et al.*, 1993).

Table 4.1 depicts the results of the IPD evaluation in relation to the criteria developed by Fitzgerald et al. Based on the organization structure and operations carried

out in IPD, the department can be classified as a *mass service* type organization. Taking into account the main characteristics of the *mass service* organizations, which have been identified by Fitzgerald et al. (1993), this classification will help us extract valuable conclusions about the development and selection of appropriate performance measures during the performance metrics development phase. Many customer transactions, limited contact time, little customization, modest discretion, and difficulties in cost traceability are some of the key characteristics of the *mass service* organizations. Though companies do not necessarily fit neatly into one category, the differentiations in functions and activities related to cost control, quality, resource utilization, and flexibility among the three generic service types influence strategic objectives and the performance measures that are needed to ensure overall success (Fitzgerald et al., 1993).

| <b>DIMENSIONS</b>                | <b>HIGH</b> | <b>MEDIUM</b> | <b>LOW</b> |
|----------------------------------|-------------|---------------|------------|
| <b>Contact Time</b>              |             |               | <b>IPD</b> |
| <b>Customization</b>             |             |               | <b>IPD</b> |
| <b>Discretion</b>                |             |               | <b>IPD</b> |
| <b>Equipment Focus</b>           |             | <b>IPD</b>    |            |
| <b>Front Office<br/>Oriented</b> |             |               | <b>IPD</b> |
| <b>Product Oriented</b>          |             | <b>IPD</b>    |            |
| <b>People Focus</b>              |             |               | <b>IPD</b> |
| <b>Process Oriented</b>          |             | <b>IPD</b>    |            |

Table 4.1. IPD Classification as Service Type.

## **B. IPD MANAGEMENT ANALYSIS**

The contribution of IPD performance to HNSC overall mission is demonstrated by the fact that (1) the Hellenic Navy essentially procures a large majority (above ninety percent) of its major systems (ships and weapon systems) from sources outside the

country and consequently, all the support items and spare parts for those systems should also be procured from sources outside the country and (2) the average annual budget for IPD procurements (almost \$50 million) is approximately three times the funds spent for procuring secondary items from domestic sources. (HNSC Annual Budget, 2001)

Additionally, although IPD cannot directly participate in allocation of the HNSC's budget, the IPD's operations have an indirect impact on the effectiveness of the HNSC's budget management (Figure 4.1). The contribution of the IPD operations to the management of the budgeted HNSC resources seems to be well understood inside IPD and is reflected by (1) the inclusion of the *fund requisitioning process* as an important course of action in the operations of IPD offices and sub-departments and (2) the IPD manager's perspective of the *acquisition cost reduction* as one of the desired outcomes. Although the whole process allows the IPD to exercise discretion in selecting the most effective procurement method that contributes to budget efficiency, budget process does not facilitate the IPD's long-term procurement planning process, which is considered to be essential for the implementation and use of the BSC model as a strategic system.

Given the importance of the IPD's role in the HNSC operations, a first assessment regarding IPD mission was regarded as necessary for this study. The mission statement as described in the Departmental Memorandum was used as the frame of reference for the first assessment. By examining the IPD mission in relation to the HNSC overall mission we can notice that the IPD as the international procurement function seems to fit well within the HNSC's overall mission. It contributes to the HNSC's *Integrated Supply System* organizational concept since it exclusively fulfills the supply system requirement for procuring items from international sources.

However, the fact that IPD is responsible for *fulfilling specific needs* implies that the procurement needs have already been identified and approved on another management level and the IPD management has little if any discretion in developing initiatives or setting management objectives for need identification, evaluation, and prioritization. In essence, IPD management appears to be limited in exploring alternatives and to selecting one of the three procurement methods and based on the time and cost to make procurement proposals for satisfying the already identified needs to the

responsible agencies (Inventory Provision & Control Directorate or Hellenic Navy General Staff), which exercise control over the need generation process. Yet, excluding the IPD management from the need identification and need prioritization process influences the IPD's management function of planning resources to meet new challenges in the long term. The IPD is forced to operate as a reactive unit, of which the mission is to fulfill submitted procurement orders and comply with procurement regulations exercising initiatives only in terms of selecting one of the three acceptable procurement methods that best meets the time and cost requirements. Additionally, the fact that the procurement methods that IPD can use for fulfilling its mission are clearly defined in its mission statement implies that IPD management discretion is restricted if not prohibited from seeking different procurement methods that could increase effectiveness and efficiency.

Although lack of internal management control is common in public organizations and does not significantly influence the development of a BSC model, the lack of IPD's management control over external environment and changed policy objectives may in the long run hinder the BSC model from being transformed into a strategic system that can capture exogenous important factors that influence IPD's long term strategic planning. (Muralidharan, 1997) Recommendations will be made at the end of the BSC building process that contribute to the effective implementation of the BSC model, emphasizing the need of the development of a mission statement that does not exclude the IPD management from the need-identification and fund-approval processes.

Given such a mission philosophy, the IPD's management perspective about desired outcomes that emphasize *regulation compliance* and *procurement cost reduction* is justified by the mission necessity. This is not uncommon in public organizations. One of the major concerns in government and nonprofit organizations is *accountability*. Accountability is essential for preserving public trust and satisfying the different customer's interests (Taylor, 1996). However, effective measuring of *accountability* in government and nonprofit organizations is a major concern highlighted in relevant literature (Conroy, 2002). A potential solution emphasized by recent research is the development of an integrated set of measures for both legal compliance and economic

efficiency compatible with the existing regulatory regime of the respective organization (Conroy, 2002). In that sense, given the IPD's regulatory environment, *regulation compliance* and *procurement cost reduction* comprise an effective set of performance indicators of the IPD's overall mission.

Given the important role of IPD and the initial assessment made in relation to IPD's mission statement, further analysis of the IPD's management environment was made in three dimensions. First, the current management environment was evaluated in relation to its readiness and ability to adopt and implement leading-edge management practices such as the BSC model. Second, IPD was examined in relation to its position on the organizational structure of the HNSC in order to identify potential obstacles in the BSC building process. Finally, the major issues that have been identified in the literature and are connected to the adoption and implementation of the BSC model in the public sector were examined in relation to the IPD's current conditions.

### **1. IPD Readiness**

To assess the IPD readiness to adopt and implement the BSC concept the results of similar research, conducted by Georgios Tsiakiris in 2000, is used. The results of that research are compared with the current information gained through the preliminary questionnaire and the interviews with the IPD manager in order to obtain a better understanding of the issues related to the adoption and implementation of a BSC model in IPD.

Tsiakiris (2000) examined the readiness of two units in the Hellenic Navy to implement leading-edge management practices. The two units examined were the NLC and the Naval Base of Crete. IPD is a sub-unit inside NLC. The process used during that research was based on questionnaires designed by the Consortium for Advanced Manufacturing-International (CAM-I) and answered by five respondents from each organization. Although that research was oriented to adopting and implementing Activity Based Cost Management (ABCM), the indicators generated provide valuable conclusions about the management environment of those two units in relation to their readiness to adopt contemporary management practices (Tsiakiris, 2000). The results of that research

are also examined in contrast with the assessments based on information gained by the preliminary questionnaire (Appendix A) and the interviews through the phone with IPD's manager and key personnel.

***a. Tsiakiris Findings***

Five respondents were selected in NLC to complete the CAM-I instrument. The respondents were selected in order to represent different departments inside NLC. Although the sample size was small the research provided the general indication of the readiness of the NLC. The questionnaire included two major categories of questions; questions that dealt with the unit's situation profile and questions that dealt with the readiness assessment. From those questions, 20 indicators were produced and used to evaluate the unit's readiness. Table 4.2 presents the indicators and the evaluation (*negative, indeterminate, or positive*) of NLC in different managerial areas related to its readiness (Tsiakiris, 2000). For the purposes of this research we did not include those indicators that were tailored to the ABCM implementation process because they were regarded as irrelevant to this research.

The important features of those indicators that are relevant to this research are summarized next (CAM-I, 2000):

(1) Indicator 1. This indicator refers to the structure of the organization. The likelihood of a successful implementation of a new management practice is greater when the organization is flat, less bureaucratic, and has a process orientation.

(2) Indicator 2. This indicator concerns the stability of the organizational structure and the degree of employee turnover. The likelihood of a successful implementation is greater when the organizational structure is stable and has relatively low employee turnover.

(3) Indicator 3. This indicator is related to the successful implementation of and sustaining previous initiatives and the perception that people in organization have about change initiatives. The unsuccessful implementation and support of previous improvement initiatives in an organization is an issue of concern.

(4) Indicator 4. This indicator concerns the perception employees have about management. The likelihood of a successful implementation of a new management practice is greater when employees at the site perceive management as being open-minded, trustworthy, proactive, and effective communicators.

(5) Indicator 5. This indicator is related to the degree employees have a high morale, support the current leadership, feel empowered, have a continuous improvement mindset, place larger organizational goals above work unit/department objectives, and work effectively in a team environment. When employees support the current leadership, are empowered, have a high morale, and strive to improve their organization, the likelihood of a successful implementation is greater.

(6) Indicator 6. This indicator is related to the characterization of an organization's information system as state-of-art, well documented, integrated, accessible, reliable, timely, and user-friendly. The shortage of a well documented, integrated, accessible, reliable, timely, and user-friendly information system is an issue of concern. Higher-quality IT systems enable managers more than insufficient IT systems to implement management techniques because the costs of measurements are lower.

(7) Indicator 7. This indicator is related to the degree the management stayed involved and validated its past improvement initiatives. The degree of participation in the initiatives and validation of initiatives upon completion to ensure that original objectives are met is an issue of concern.

(8) Indicator 8. This indicator concerns the decision-making process and the use of relevant data. The likelihood of success is greater when management uses an effective decision-making process by gathering the necessary information, objectively developing and considering alternatives, and then acting on those decisions.

(9) Indicator 9. This indicator is related to the degree that management aligns change initiatives with the strategic objectives of their organization. The degree of alignment of significant change initiatives with the strategic objectives is an issue of concern.

(10) Indicator 10. This indicator is related to communication. The likelihood of success is greater when management effectively communicates the purpose and value of system changes and improvement initiatives to all levels of the organization.

(11) Indicator 11. This indicator is related to the degree that management solicits and responds to feedback on new initiatives. The degree to which management solicits feedback on initiatives and the responses it takes due to this feedback is an issue of consideration.

(12) Indicator 12. This indicator is related to the degree that user and customer needs have driven initiatives and the degree of satisfaction the users and customers have received from those initiatives. The degree to which past customers' and users' needs have driven and been satisfied by previous initiatives is an issue of concern.

(13) Indicator 13. This indicator is related to the degree that innovation is encouraged and rewarded, while failures resulting from the pursuit of innovation are not punished. The absence of encouragement, recognition, and reward for innovations is an issue of concern.

(14) Indicator 14. This indicator is related to the degree that a new management initiative is provided adequate financial resources, dedicated and capable personnel, time, training, and a good project plan. The expectation that management will not provide financial and personnel support, adequate time, training, and a good project plan is an issue of concern.

| <b>A/A</b> | <b>INDICATOR</b>                                                                                                                                                                      | <b>NLC</b>    |
|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| 1.         | Organization is flat, less bureaucratic, and has a process orientation                                                                                                                | Indeterminate |
| 2.         | Organizational structure is stable and has relatively low employee turnover                                                                                                           | Indeterminate |
| 3.         | The site has successfully implemented and sustained other improvement initiatives without negatively perceived headcount reductions                                                   | Negative      |
| 4.         | Employees at the site perceive management as being open-minded, trustworthy, proactive, effective communicators, team players, and change agents                                      | Indeterminate |
| 5.         | Employees support the current leadership, are empowered, have a high morale, and strive to improve the organization                                                                   | Indeterminate |
| 6.         | The site has effectively used IT to develop systems that are current, accurate, reliable, timely, integrated, and user friendly                                                       | Negative      |
| 7.         | Management has a history of following through on improvement initiatives                                                                                                              | Indeterminate |
| 8.         | Management uses an effective decision-making process by gathering the necessary information, objectively developing, and considering alternatives, and then acting on those decisions | Positive      |
| 9.         | Management aligns improvement initiatives with the strategic objectives of the organization                                                                                           | Indeterminate |
| 10.        | Management effectively communicates the purpose and value of system changes and improvement initiatives to all levels of the organization                                             | Negative      |
| 11.        | Management solicits and responds to feedback on new initiatives                                                                                                                       | Indeterminate |
| 12.        | Systems satisfy users/customers needs                                                                                                                                                 | Indeterminate |
| 13.        | Organizational culture is conducive to change                                                                                                                                         | Indeterminate |
| 14.        | The new initiative receives adequate time, financial, and personnel support, and is accompanied by adequate training                                                                  | Indeterminate |

Table 4.2. Indicators and the Evaluation of NLC (After: CAM-I (2000) and Tsiakiris (2000)).

The conclusions of that research indicated that indeterminate and negative indicators could be turned into positive ones by management. Tsiakiris concluded that if management is interested in adopting and implementing new management initiatives it should focus primarily on indicators 2, 6, 7, 9, 10, 11, and 14. Some of those indicators can be relatively easily turned into positive ones. Leadership and management commitment can turn indicators 2, 4, 6, 7, 9, 10, and 11 into positive ones while financial support by higher-level management and personnel commitment could turn indicators 6

and 14 into positive. Tsiakiris' final conclusion was that without specific management actions factors represented by the indicators would likely hinder the effective implementation of a new management practice.

...without specific management attention and action to influence the indeterminate and negative indicators a successful implementation is not highly likely. However, if NLC takes certain actions it could increase the likelihood of successful implementation (Tsiakiris, 2000).

***b. Comparative Analysis***

Comparing the results of that research with the information gathered through the preliminary questionnaire (Appendix A) we can observe that the current management conditions in IPD are analogous with those described in the research. Specifically, the answers to questions 5, and 6 of the preliminary questionnaire indicate that employee involvement and empowerment is still *indeterminate* in IPD.

Additionally, the answer to question 9 of the preliminary questionnaire indicates that top management's *interactive* communication with departmental personnel in relation to new improvement initiatives is an issue of concern. In essence, the fact that eighty five percent of the manager's working time is used *diagnostically* to review and control internal processes indicates a strict organizational structure that emphasizes a "following the rules" philosophy. This philosophy is clearly reflected in one of the perceived desired outcomes, which emphasizes *regulation compliance*.

On the other hand the answers to questions 3 and 4 of the preliminary questionnaire indicate a quite qualified workforce. Moreover, the answer to question 8 of the preliminary questionnaire indicates that incentives can be used to motivate employee participation and commitment toward a new initiative. Both of them, when seen in conjunction, point out that *indicator 5* can be turned into positive one with the appropriate management conduct.

Additionally, through the interviews with IPD's top management, it was confirmed that current IT capabilities in IPD is not an issue of concern since current technology is utilized and personnel are quite qualified in its use. However, IT capability is relevant depending on the project requirements. Thus, further investigation of the current IT capabilities may be required prior to the implementation phase.

Finally, the answers to questions 8 and 9 of the preliminary questionnaire indicate that IPD has in effect a management control system to measure its performance. Even if that system at the moment does not capture the relationships between performance drivers and strategic objectives, the BSC building process can be used as the mechanism which will help to clarify strategic objectives and cause-and-effect relationships and contribute to the development of the appropriate measures and goals enhancing the existent management system (Kaplan and Norton, 2000).

### *c. Discussion*

The above analysis revealed that there are issues of concern in the current IPD management environment that are related to the implementation of the BSC model. However, those issues are not expected to create obstacles in the design of an effective BSC model. On the contrary, the BSC development process should help IPD to clarify strategic objectives, mobilize leadership, and focus organizational improvement initiatives. Organizations without any explicit or shared strategic direction and change initiatives have used the process of building a BSC as the mechanism to clarify strategic objectives, focus, and direction (Kaplan and Norton, 2000).

Additionally, strategic thinking and control are two essential ingredients for the development of strategy-focused organizations and the BSC provides the framework to develop and enhance that strategic control (Kaplan and Norton, 2000). To demonstrate the contribution of the BSC building process to the adjustment of the IPD's current management environment towards a more strategic one, we used the five management principles, suggested by Muralidharan (1997). According to Muralidharan, those principles when followed by the public sector, organizations can enhance strategic control (Muralidharan, 1997). Those preconditions are summarized next:

- Agree on unambiguous descriptions of a set of strategic goals.
- Agree on the actions necessary to achieve these goals and the results that are expected (cause-and-effect relationships).
- Monitor the implementation of the plan using indicators chosen and tailored to the identified purpose (performance metrics).
- Monitor changes in the external environment (policy, directives, economy).
- Involve staff in the decision-making process.

In Table 4.3, we developed a matrix showing how the current IPD's management environment will be affected through the BSC building process in relation to those preconditions.

|                                                |          |          |          |          |          |
|------------------------------------------------|----------|----------|----------|----------|----------|
| <b>MURALIDHARAN<br/>PRECONDITIONS:</b>         | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
| <b>IPD ENVIRONMENT/<br/>IMPACT ASSESSMENT:</b> | <b>F</b> | <b>F</b> | <b>F</b> | <b>U</b> | <b>U</b> |

(F=Favorably, U=Unclear)

Table 4.3. Matrix Assessing Impact of BSC Process on IPD Environment.

Based on the BSC building process, the current environment in IPD will become favorable for preconditions 1, 2, and 3. It is not clear whether the process by itself can influence preconditions 4 and 5. Recommendations will be made at the end of the building process and prior to the implementation process, which can contribute to the alteration of the unclear preconditions to favorable ones facilitating the implementation process and enhancing strategic control.

Finally, another area of concern, vis-à-vis the ability of IPD to implement new management practices such as the BSC model, is related to the leadership style and commitment employed for the development and implementation of the new management initiative. Leadership is an essential ingredient that can effectively communicate the

change and mobilize personnel involvement and commitment for the successful implementation of the program (Kaplan and Norton, 2000). Regarding the BSC building process followed by IPD, a team approach is suggested for the development of the BSC model. Though this approach contributes to the effective design of the BSC, it does not make an effective implementation certain. Given the management philosophy in IPD, leadership style and commitment are the primary concerns for an effective implementation of the BSC model. Recommendations will be made at the end of the design process that contribute to the adoption of a leadership style that can mobilize personnel towards the successful implementation of the model.

## **2. IPD as Organizational Unit**

One of the major concerns of organizations that decide to develop their BSC for the first time is the identification of the appropriate organizational unit for launching their program. There is no a simple answer to that question. The answer depends on several factors related to organizational structure, strategy, and leadership. (Kaplan and Norton, 1996, 2000) Given the organizational structure of IPD and the uniqueness of its mission, it is assumed that IPD is a good organizational level for developing a BSC model. Since a clear mission statement has been defined for IPD and a comprehensive strategy can be formulated, IPD is a valid candidate for a BSC program. (Kaplan and Norton, 1996, 2000) Additionally, the initial BSC can be used as frame of reference for other departments inside PD to develop their own BSC model.

Again, once more, it is necessary to emphasize that independent of the organizational level that is chosen for the first BSC program, leadership style is an essential ingredient contributing to an effective implementation. Additionally, if this model will be used as a pilot program for other departments inside PD to launce their own BSC, further analysis is required for achieving alignment of the strategic objectives of the different organizational units with the higher-level organizational strategy. Such an alignment contributes to the BSC program's successful expansion. (Kaplan and Norton, 1996, 2000)

### **3. IPD and Common Issues in Public Organizations**

In the public sector, the *financial* perspective differs from that of the traditional private sector. Financial considerations for public organizations may have an enabling or constraining role, but will rarely be the primary objective for business systems. Success for public organizations is related to mission effectiveness and the desired outcomes should be tailored to mission necessity. (Kaplan and Norton, 2000; Procurement Executives' Association, 2003; The Balanced Scorecard Institute, 2003)

A closer look at IPD's organization and mission verifies the above-identified features of the public sector in relation to the BSC model. The creation of financial value cannot be the ultimate goal of IPD since it is a nonprofit organization and its mission statement defines a nonprofit orientation. Given the IPD's mission necessity for the HNSC overall success, efficiency of operations, customer satisfaction, and accountability (public trust) for the work authorized to the department are better performance indicators. The desired outcomes, as IPD management defines them, reflect the IPD's perspective for performance success. However, even those clearly defined and mission-tailored outcomes are not free from concerns related to complexities inherent in governmental agencies.

The team approach employed in the BSC building process (IPD manager and key personnel) along with the involvement of the author in the data interpretation stage and the critique of two experienced professors, contribute to a valid design of a conceptual causal performance model. However, there are complexities related to the IPD's mission nature and organizational structure that need careful consideration before using the proposed model as a functioning performance measuring model.

Identification and gaining consensus of the IPD's different stakeholders should be one of the first priorities in the development process. They will contribute to the design of a performance model that includes the customer concept with a broadened perspective. In effect, they should contribute to the development of a valid performance model that includes the whole spectrum of IPD's strategic objectives that need to be achieved for the stakeholders' satisfaction and the mission success.

Additionally, given the uniqueness of IPD's mission, it is apparent that the metrics that need to be developed for the desired outcomes cannot be compared or benchmarked against other more generic measures available in the market. Past performance should be used as the alternative. However, lack of available data on which reliable measures can be based is a common issue in public organizations (Procurement Executives' Association, 2003; The Balanced Scorecard Institute, 2003). Even though this may not be the case in IPD it is not certain that the data available in IPD are relevant to the specific program given that this is a unique program developed for the first time. This deficiency may influence the implementation of the model (Abernethy et al., 2002). On the other hand, over-reliance on available data could lead to an irrelevant model that is unrelated to original strategic goals (Abernethy et al., 2002). Consequently, the current data availability in IPD should not be expected to influence the ability of the conceptual model to capture the IPD's intended strategy and casual interrelationships. Additionally, the classification of IPD as a *mass service* organization should help in the selection and development of appropriate performance measures tailored to this specific service type in the final stage of the BSC building process. However, a potential lack of adequate data should be expected to influence the testing of the model during the implementation process. Recommendations will be made at the end of the development process for the collection and maintenance of relevant past performance data that can be used as benchmarking of future performance.

Finally, another area of concern common in the public sector is related to the degree of influence various exogenous factors may have on the organization's operations and the ability of the organization to monitor and control that influence (Neely and Walters, 2002). The identification and inclusion of those important external factors in the IPD's BSC model can contribute to the validity of its design. (Abernethy et al., 2002) However, including external factors in the BSC model for which there is no previous experience of controlling and measuring may contribute to the complexity of the model and increase the difficulties during the implementation process. Regarding IPD, the design process is expected to reveal those important exogenous factors that influence its operations. The inclusion of those factors in the conceptual performance model should

contribute to the validity of its design. However, further research may be required for the evaluation of those factors and the ability of IPD management to control or influence those factors. Though such a study is outside the scope of this research, recommendations will be made at the end of the BSC development process.

### **C. CHAPTER SUMMARY**

The first part of this chapter provided information about the IPD's organizational structure and mission. The mission statement, important processes, desired outcomes, and additional managerial information were illustrated in order to provide the reader with a clearer understanding of the IPD's operations and organizational objectives. The information presented in this part was based on two primary sources; the departmental Memorandum of Operations (International Procurement Department, 1991) and a preliminary questionnaire developed for this purpose (Appendix A).

Additionally, the IPD was classified according to in relation to the three typical service types identified by Lin Fitzgerald (1993). Taking into account the IPD's organization and operations, the department was classified as a *mass service* organization. This classification will contribute to the better understanding of the IPD management conditions and facilitate the selection of performance metrics during the last stage of this study.

In the second part of this chapter information was provided about the role of IPD in relation to the HNSC's overall mission. An initial assessment of the IPD's mission statement was made in relation to the HNSC's overall mission. This assessment provided further insight into the nature of the mission emphasizing issues related to management philosophy and departmental objectives. The analysis revealed that the mission and management philosophy are reflected in the management perspective about IPD's desired outcomes. Given the management environment and the defined desired outcomes, the development of a valid conceptual performance model is possible for IPD. However, in the long run the current management conditions may hinder the proposed BSC model from being employed as an effective strategic management tool.

In this part of the chapter further analysis of the IPD's current management conditions was also made in three dimensions. First, the current management environment was evaluated in relation to its readiness and ability to adopt and implement leading-edge management practices. Second, IPD was examined as an organizational unit in HNSC in order to identify potential obstacles in the BSC building process. Finally, the major issues that have been identified in the literature and are connected to the adoption and implementation of the BSC model in public sector were examined in relation to the IPD's current conditions.

Regarding the examination of IPD's readiness to adopt and implement new management practices, the results of similar research, conducted by Georgios Tsiakiris in 2000, was initially used. The results of that research were examined in conjunction with the current information gained through the preliminary questionnaire and the interviews with the IPD manager. The analysis revealed that there are no major obstacles for the design of a valid BSC model for IPD. However, there are some managerial areas in IPD that need particular consideration before the commencement of the BSC implementation process. Given the IPD's current management conditions, and the contribution of the BSC building process to IPD's strategic thinking, leadership style and commitment are anticipated to become the catalytic factors that contribute to the effective implementation of the model.

Regarding the examination of IPD as an organizational unit, the analysis revealed that IPD is a valid candidate for a BSC program. According to Kaplan and Norton, since a clear mission statement has been defined for IPD and a comprehensive strategy can be formulated, the conditions are favorable for IPD to launch its initial BSC model.

In the last part of this chapter several important issues related to the development of the BSC model in public organizations were examined in conjunction with IPD's conditions. Different perceptions about financial and customer perspectives between the public and private sector are expected to influence the architecture of the BSC model in IPD. Desired outcomes are to be primarily tailored to mission effectiveness while customer concept needs to be broadened to include all the identified stakeholders. Additionally, the proposed measures cannot be benchmarked against measures available

in the market due to IPD's unique mission. Collection and maintenance of relevant past performance data are important for the effective implementation of the model. Finally, though the identification and inclusion of exogenous factors may contribute to the validity of the conceptual performance model it is not quite certain whether IPD management has the ability to control and measure the influence of those factors on its operations. Further study may be required for the evaluation of those factors and the ability of IPD to monitor them.

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## V. BUILDING A PROPOSED MODEL

### A. IPD STRATEGIC GOALS

A strategy map describes the process of transforming intangible assets into tangible desired outcomes. Building a strategy map for an organization helps make explicit the strategic objectives and the links among performance drivers (leading indicators) and desired outcomes (lag indicators). Based on the data gathered through the first questionnaire (Appendix B) we identified the IPD's desired outcomes, critical processes, and key success factors (Tables 3.1 through 3.6). Based on that data, we developed the architecture of the IPD's BSC for describing its strategy. The proposed BSC architecture is based on the IPD's links among its mission, desired outcomes, and strategies to achieve them.

The desired outcomes of the IPD are classified in three primary strategic themes that constitute the initial architecture of the IPD's BSC. Figure 5.1 below depicts the IPD's BSC architecture.

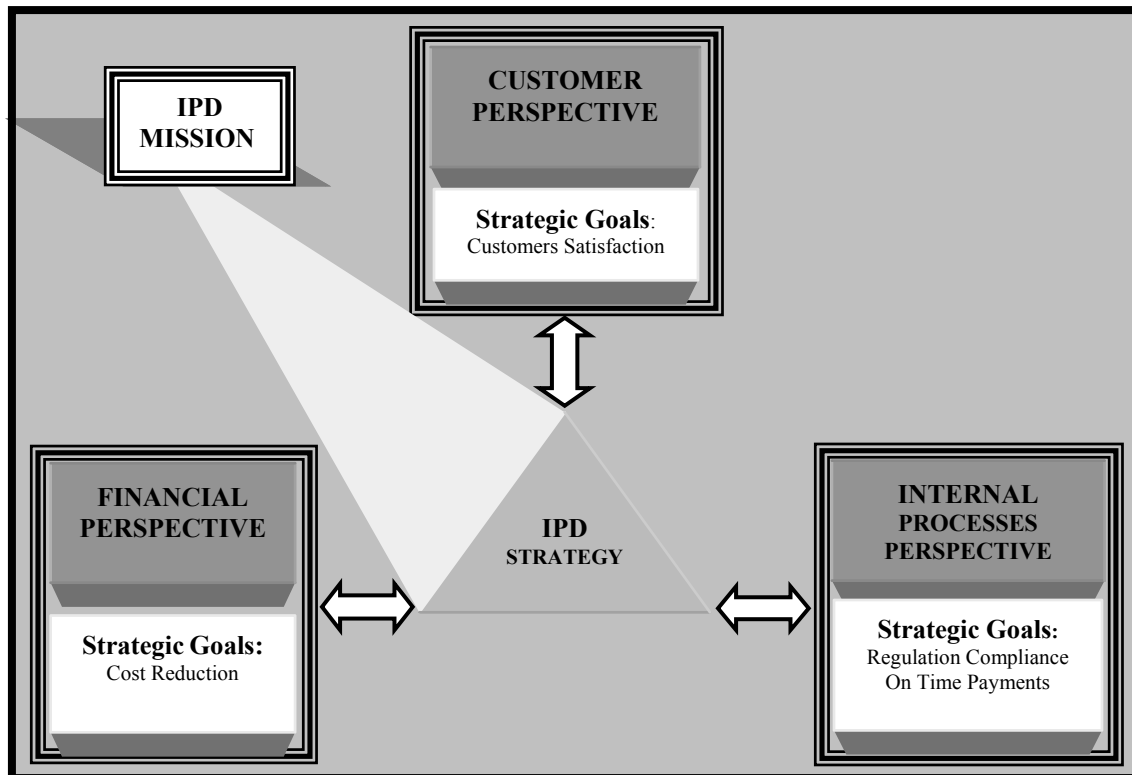


Figure 5.1. IPD's BSC Architecture.

Starting with IPD's mission, the IPD's strategy is classified in three strategic themes. Based on the IPD's desired outcomes (Table 3.1) the specific strategic goals that need to be achieved for mission accomplishment have been identified and described in each of the three strategic themes.

The three strategic themes in Figure 5.1 represent three of the four generic BSC perspectives described in the literature. Modification of the generic BSC architecture was necessary given the IPD's mission necessity. Financial success could not be at the top of the process since it is not the primary objective. Putting customer satisfaction at the top of the process was one of first adjustments made in the BSC architecture. Additionally, taking into account that IPD has authority to conduct its mission that is delegated by public law and that its performance priorities are not financial in nature, but rather mission effectiveness and accountability, the internal processes perspective with emphasis on regulation compliance was necessary to be included in the BSC architecture. On the other hand, based on the IPD's executive team perspective about desired outcomes, the fourth generic perspective (learning and growth) was not included in the IPD's initial BSC architecture.

## **B. IPD MULTIPLE OBJECTIVES**

Based on the above-identified strategic goals and Table 3.2, this section provides a description of the IPD's multiple strategic objectives. The description in turn contributes to the articulation and explicit description of the IPD's desired strategy. The description of the multiple strategic objectives assists in the identification of the priorities inside IPD and facilitates the identification of the activities and factors that are the drivers of the desired outcomes. Since in the analysis and description of the IPD's strategic objectives some strategic objectives were identified to be directly related to the IPD's *people* factor, in this stage of the IPD's BSC design the *people* perspective was also included in the IPD's strategy map in order to facilitate the inclusion of the whole spectrum of the cause-and-effect relationships in the final BSC design. Figure 5.2 depicts the IPD's multiple strategic objectives that need to be achieved, classified in the four

strategic themes. These strategic objectives comprise the IPD's integrated strategy. They illustrate the IPD's management priorities that need to be measured since they contribute to the IPD's mission accomplishment.

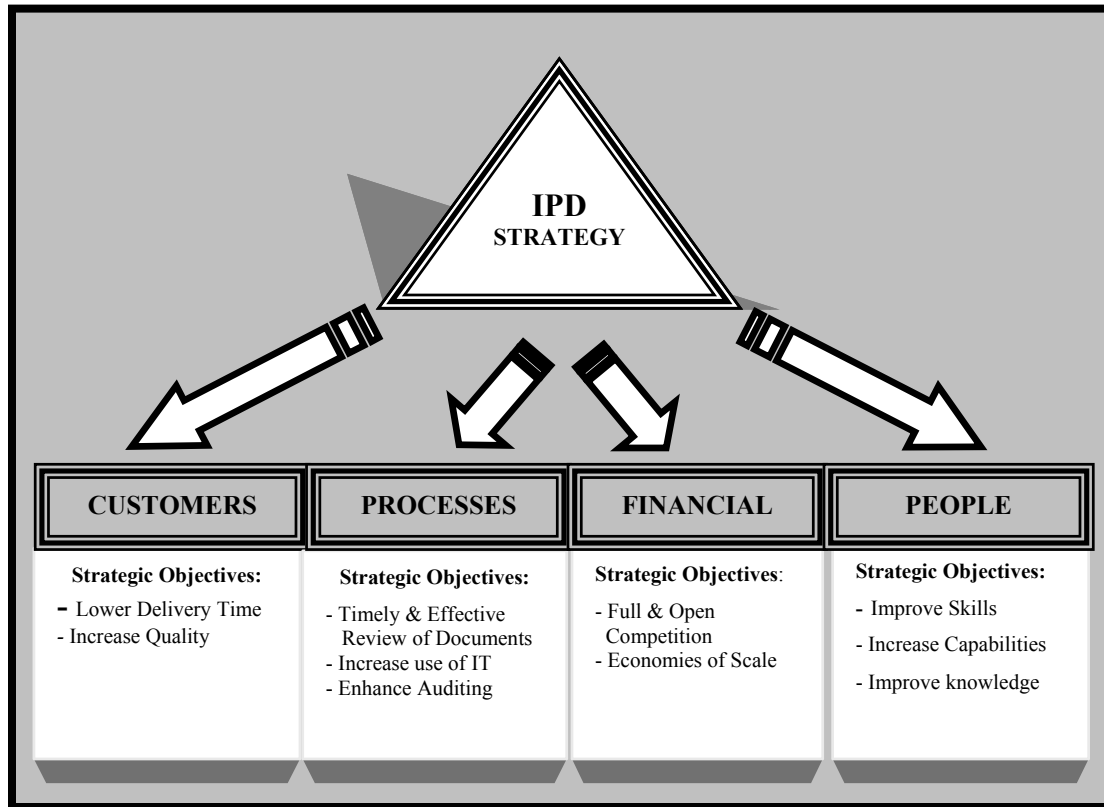


Figure 5.2. IPD's Strategic Objectives.

However, strategy is a *set of hypotheses* that implies the movement of an organization from its present position to a desirable but uncertain position (Kaplan and Norton, 2000). In that sense, the identification of the multiple objectives contributes to *alignment* and *focus* for a valid design of a BSC model, In the future, this set of hypotheses should be tested again and adapted as required.

### C. IPD CRITICAL PROCESSES AND KEY FACTORS

The critical processes identified in Chapter III (Table 3.4) are classified in the respective strategic theme based on the direct impact they have on the identified strategic objectives (Table 3.5). Figure 5.3 depicts those direct links (dashed arrows) of critical processes with the IPD's strategic objectives that have been identified by the key

interviewees and analyzed by the author. In addition, in Figure 5.3, the interrelationships among the critical processes are also depicted (black arrows) illustrating the cause-and-effect relationships among the critical processes as they have been identified by the key interviewees, based on their experience. This method is advantageous for creating causal models in early stages of developing conceptual performance models, when more objective data are either unavailable or inappropriate (Abernethy et al., 2000). The critical processes depicted in Figure 5.3 are those from which a black directional arrow begins. These critical processes need to be controlled, and performance measures need to be developed.

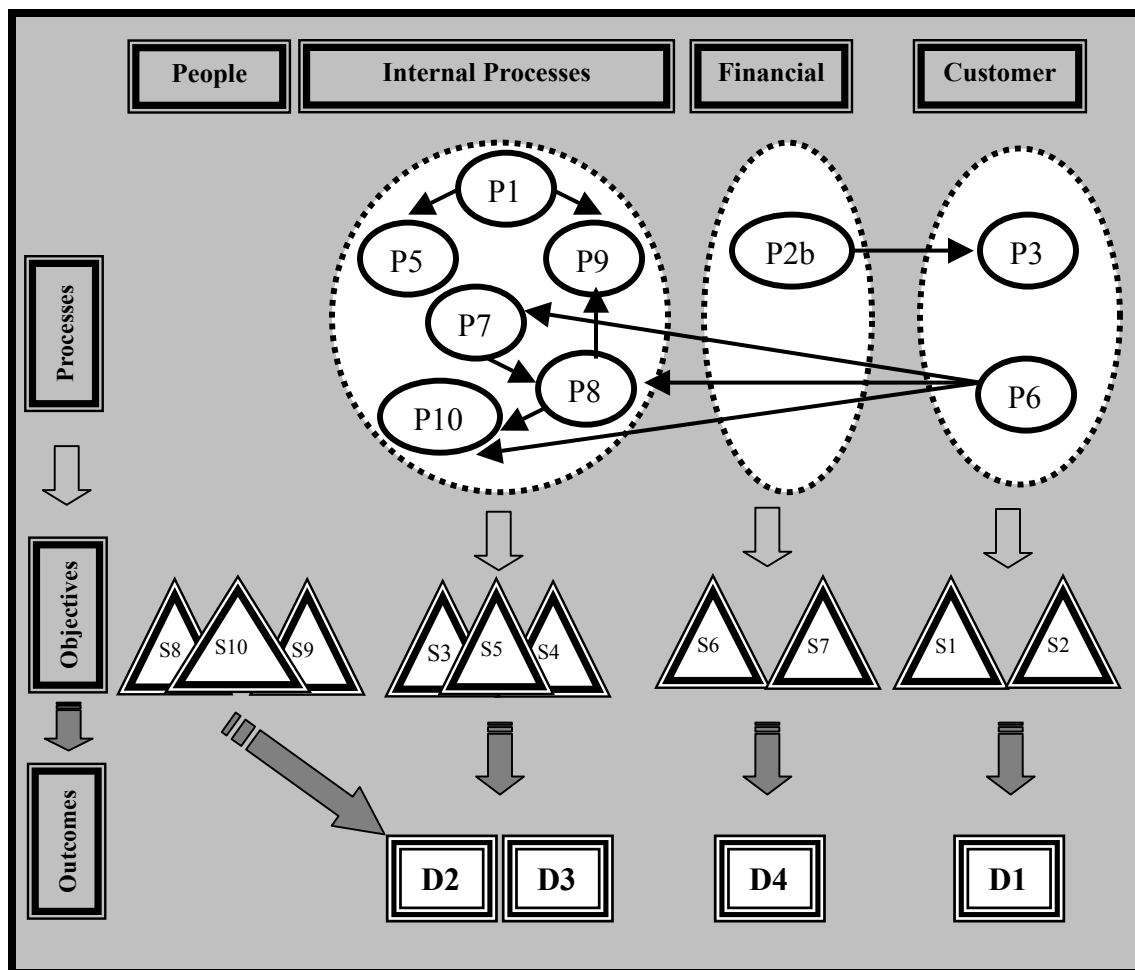


Figure 5.3. Links Among Critical Processes and Strategic Objectives.

The influence of the key success factors upon the critical processes that have been identified in the previous chapter (Table 3.7), is depicted on Figure 5.4. Those factors are the performance drivers (lead indicators) that need to be controlled and measured since they contribute to the improvement of the performance of the critical processes. The black arrows in Figure 5.4 illustrate the cause-and-effect relationships between key factors and critical processes as they have been identified by the key interviewees in the research. The key interviewees were allowed to identify performance factors and causal links based on their experience of causality. As shown in Figure 5.4 the directional arrows are not associated with specific critical processes because one factor may influence more than one process in each strategic theme as was demonstrated in the Chapter III.

Figure 5.4 also includes an exogenous factor (X1), the inclusion of which contributes to the validity of the BSC model. Although this factor influences IPD's critical processes, the degree of that influence cannot be assessed or measured by management in this stage. Further research may be required for the evaluation of this factor and the ability of IPD management to control and measure the influence of this factor. Finally, the links (dashed arrows) between the IPD's key success factors and the strategic objectives that have been identified by the key interviewees are depicted in Figure 5.5.

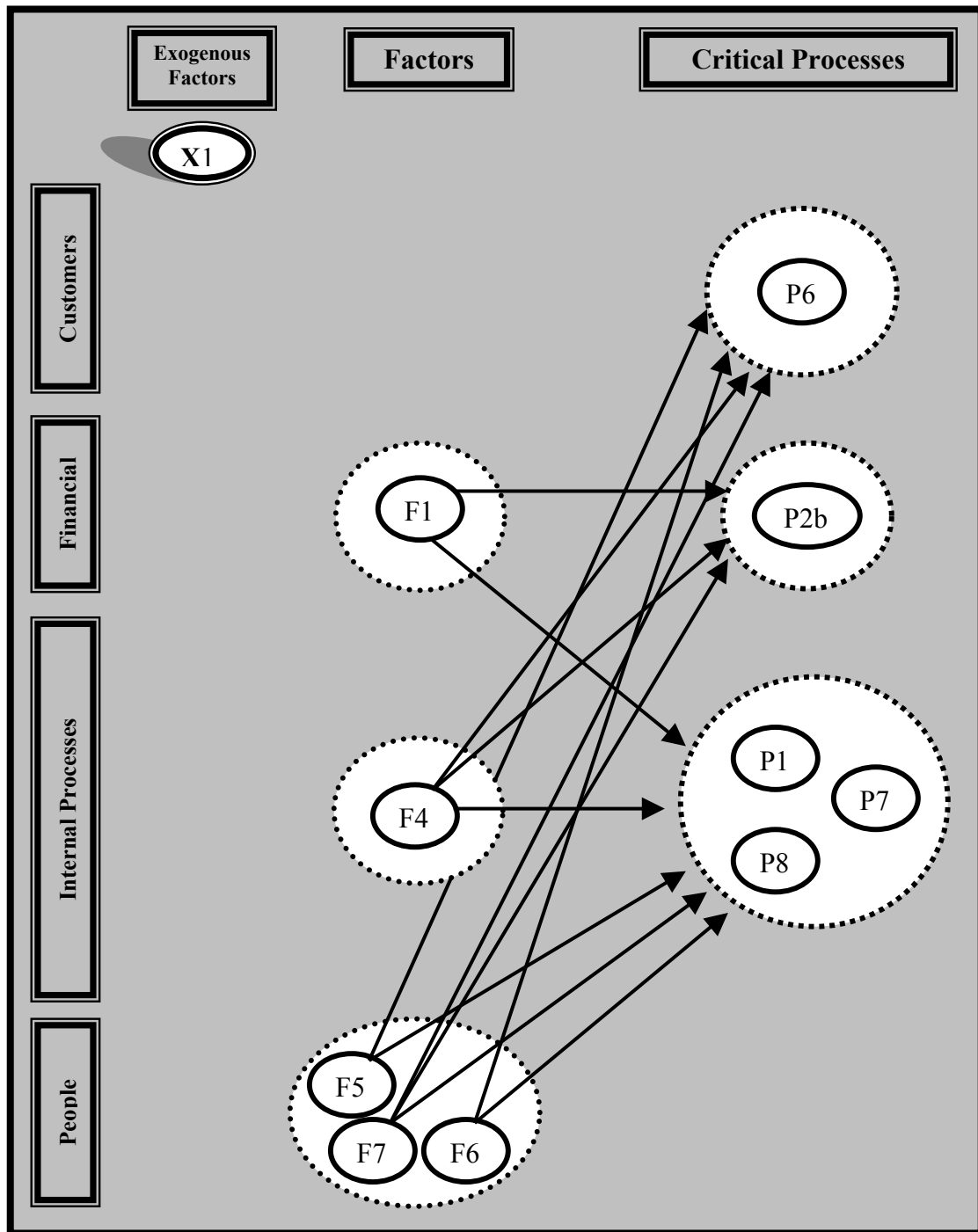


Figure 5.4. Links Among Factors and Critical Processes.

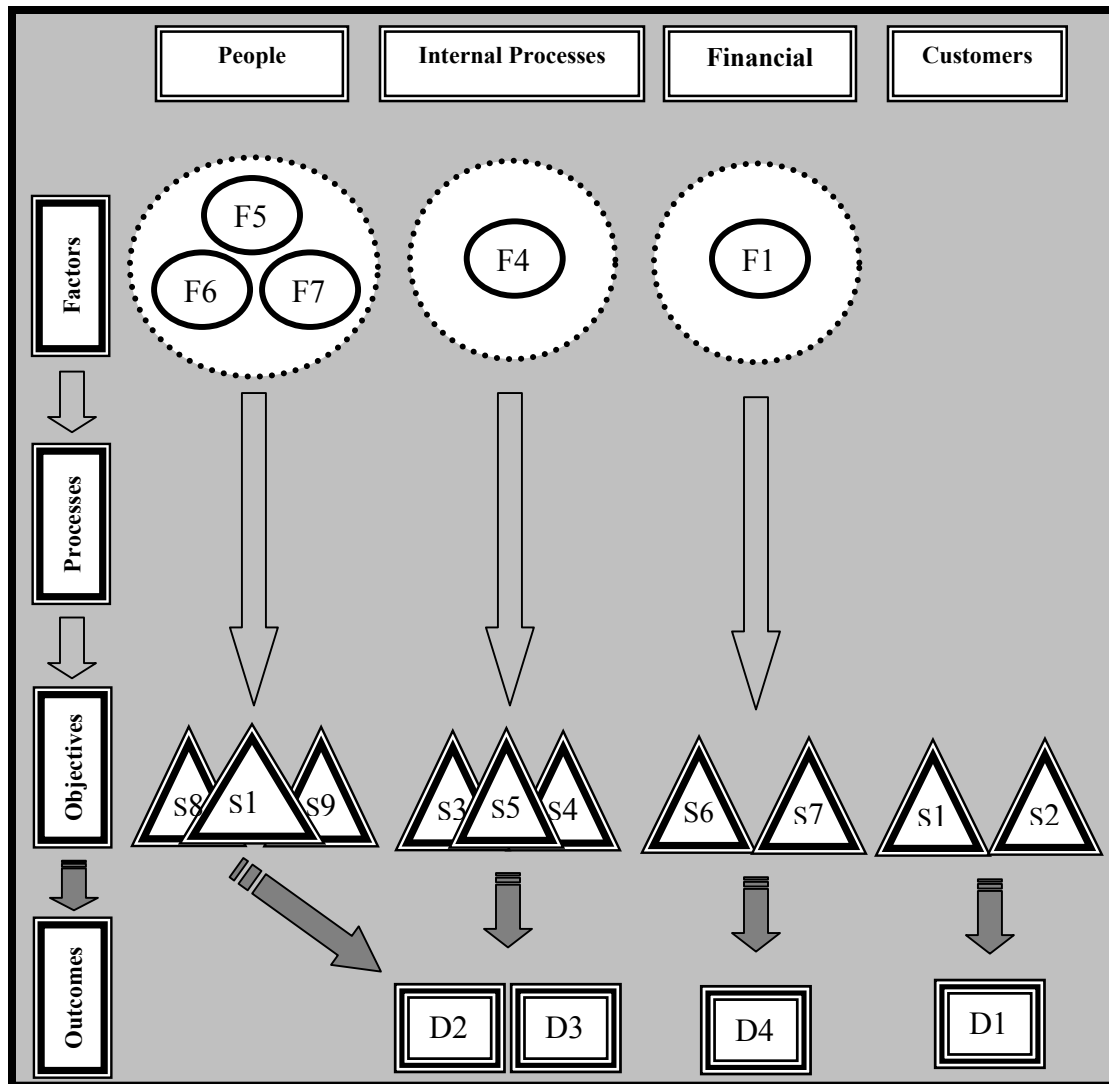


Figure 5.5. Links Between Key Factors and Strategic Objectives.

#### D. PUTTING IT ALL TOGETHER

The conceptual casual framework that describes the IPD's desired outcomes, strategic objectives, critical processes, key success factors and their causal interrelationships is depicted in Figure 5.6. Figure 5.6 comprises the IPD's causal performance model, organized in four strategic themes, that integrates and communicates IPD's strategy and incorporates and describes the causal links of performance for all the critical elements illustrating the IPD's "*story of success*". Those links that are depicted by directional arrows illustrate the cause-and-effect relationships among the elements of

the model for which a set of performance measures should be developed and monitored by management since they contribute to *alignment* and *focus* of IPD's efforts for the mission success.

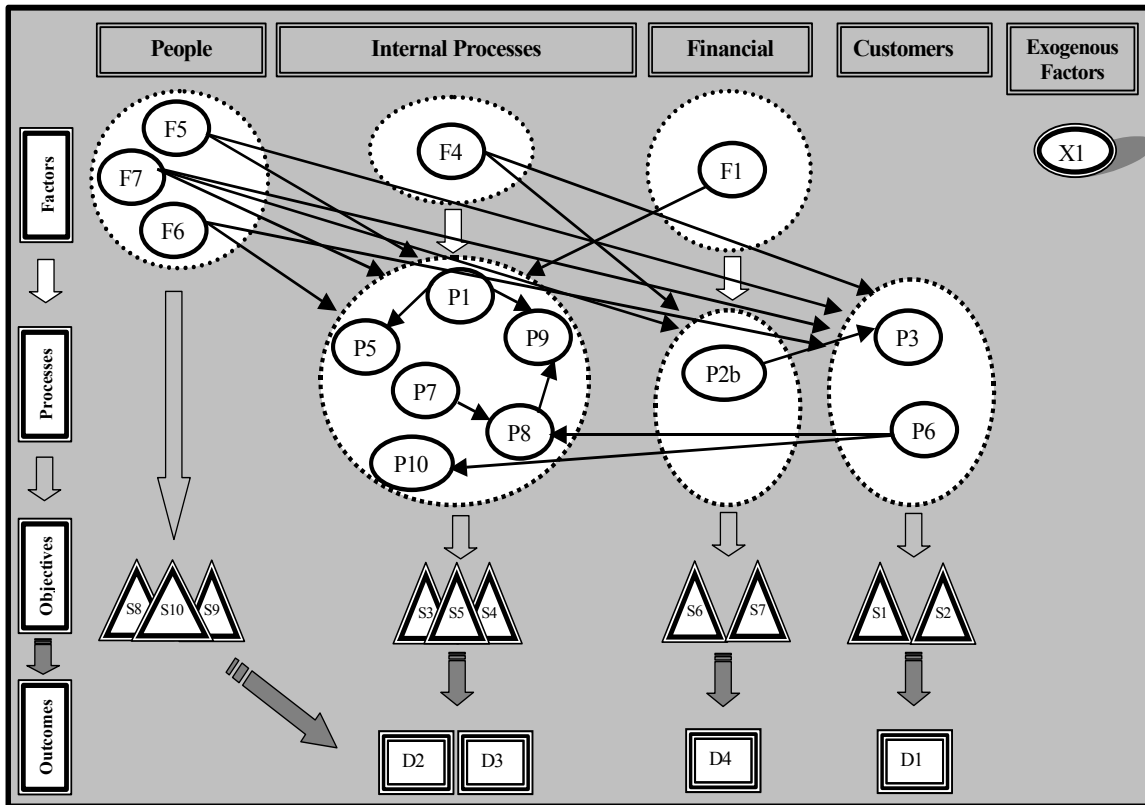


Figure 5.6 Putting All the Links Together.

Taking into account the causal framework depicted in Figure 5.6 the IPD's proposed BSC model is depicted in Figure 5.7. The main difference with the model initially depicted in Figure 5.1 is that it has incorporated one more strategic perspective (people). Even though it was not clearly described by the key interviewees, can be easily inferred by the interviewees' perception about IPD's strategic objectives. In addition, the model does not include the exogenous factor identified in the previous chapter since the degree of its influence cannot be assessed or measured by management at this stage.

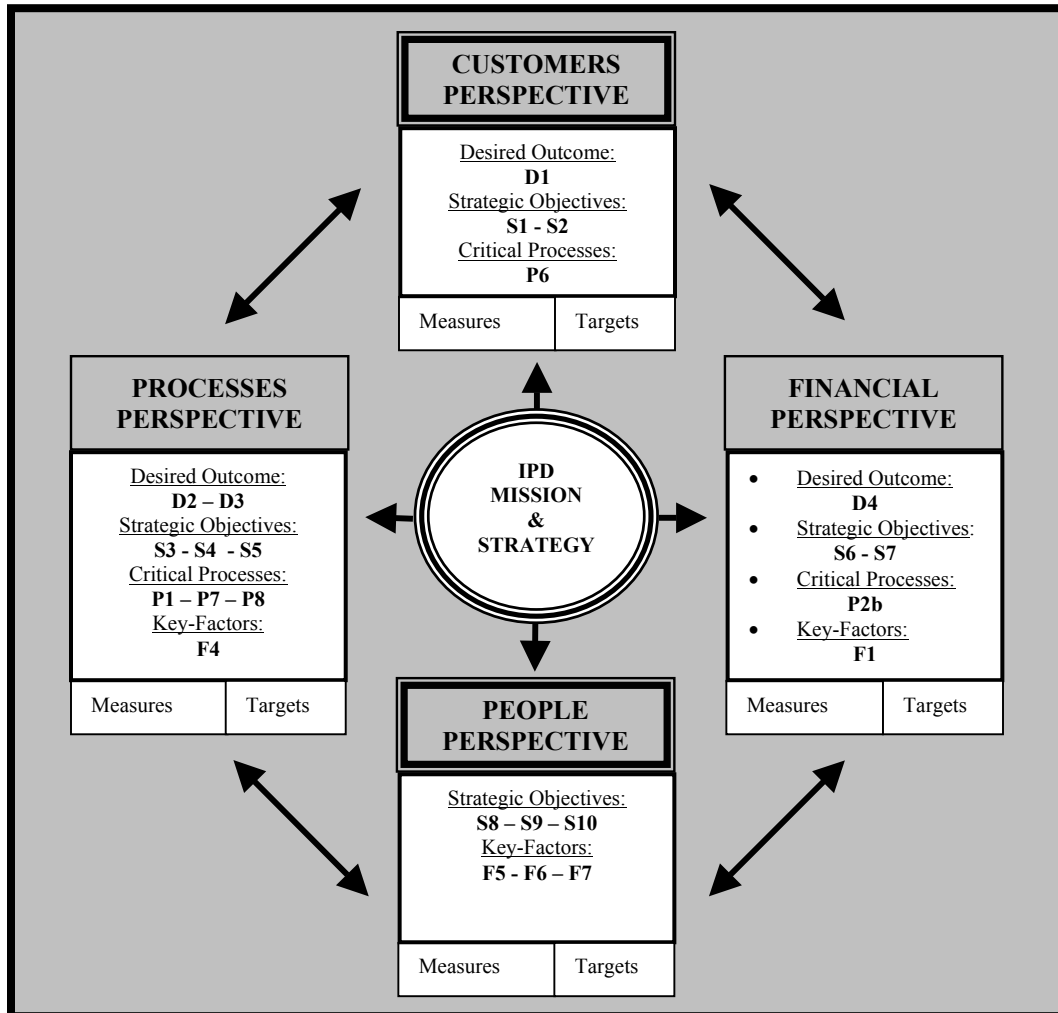


Figure 5.7. IPD's Proposed BSC Framework.

In the next chapter of this study, a set of performance measures will be developed and suggested to be incorporated in the model transforming the model into a potential management control system that facilitates IPD's management focus and control on IPD's overall performance.

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## VI. DEVELOPMENT OF PERFORMANCE MEASURES

### A. SELECTING PERFORMANCE MEASURES

A successful BSC is one that communicates strategy and objectives through an integrated set of measurements that includes both desired outcomes and performance drivers (Kaplan and Norton, 2000). In addition, Kaplan in his work on the BSC emphasizes that: *Choice of appropriate measures is an art that must be practiced in conjunction with the strategic goals* (Kaplan, 1984). However, the development of a proper set of performance metrics has proven to be the most difficult aspect of the BSC process (Balanced Scorecard Institute Website, 2003). As Simons argues, to determine if a measure is suitable to support a performance objective, it must be subject to three tests (Simons, 2000):

- It must align with strategy.
- It must be measured effectively (verifiable, complete, and responsive).
- It must be linked with value.

In addition to those generic principles applicable to all types of organizations, Fitzgerald et al. emphasizes the differences between manufacturing and service organizations in developing performance measures. The business strategy and the archetypal service type in which the specific organization is classified are the key factors in determining the appropriate performance measures for service organizations (Fitzgerald et al., 1993).

Our analysis in Chapter IV revealed that IPD can be classified as a mass service organization. According to Fitzgerald et al. (1993) *mass service* organizations after identifying their strategic objectives should develop a balanced set of performance metrics, measuring both *results* and *determinants*, taking into account the following factors:

- Operating costs are not easily traceable in mass services making it difficult to analyze profitability of individual services.
- While professional services can afford to measure customer satisfaction in different stages of the service process, in mass services the measurements mostly rely on customer surveys.

- While professional services can afford to measure quality and effectiveness of internal processes in different stages of the service process, in mass services the measurements mostly rely on service outputs.
- For measures related to resource utilization mass services tend to rely mostly on development of ratios as more understandable and easily traceable.

Taking into account the above-identified principles that govern the selection of the appropriate performance measures, the author initially developed a set of suggested measures. In a second stage, the key interviewees were asked to adjust and approve the suggested measures. The key interviewees, in their response, agreed on the usefulness and the applicability of the suggested measures. The only concern they expressed was about the influence of the external factor (X1) upon the measurement of the fund availability.

A set of measures, classified in the four strategic themes that were identified and developed in the previous chapter, was developed for IPD. The measures suggested for the IPD's BSC model reflect the uniqueness of the IPD mission and are not considered to be generic in nature. All of them are associated with specific strategic objectives, which in turn are associated with specific outcomes, critical processes, and key factors, reflecting the conceptual cause-and-effect relationships and contributing to *alignment* and *focus*. In ten of the cases, a combination of measures is suggested for specific strategic objectives to better monitor the performance of the specific objective.

The set of metrics suggested include both objective and subjective metrics. Objective metrics can be collected from present operational data that may be already available from the information system in place in IPD. Other objective metrics may be new, for which data are not available and data collection must begin to track them. Subjective metrics can be derived from people's perceptions as in the case of "*customer satisfaction*".

Taking into account the IPD's conditions that were demonstrated in chapter IV, the nature of the metrics, and the definition of the metrics (formula), a method of measurement is suggested for each performance metric, which is expected to facilitate the implementation of the BSC model.

## 1. Customer Perspective Measures

The suggested measures for the IPD's *customer* perspective have been classified in three major categories: Desired outcomes, strategic objectives, and critical processes. In addition, a codification of the measures was made in order to facilitate the reader's understanding of the proposed BSC model. The suggested measures for the *customer* perspective are the following:

| Objective                          | Measure                                                  | Coding | Measurement Method                                                                                                                                                            |
|------------------------------------|----------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Customer needs prompt fulfillment. | a. Percentage of customers satisfied with delivery time. | CDM1a  | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Customer sampling survey.</li> <li>- Benchmarking on past performance.</li> </ul> |
|                                    | b. Percentage of customers satisfied with item quality.  | CDM1b  |                                                                                                                                                                               |

Table 6.1. Desired Outcomes Oriented.

| Objective            | Measure                                                                                                               | Coding | Measurement Method                                                                                                                                                              |
|----------------------|-----------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. On time delivery. | Percentage of cases (procurement, repair, FMS) where contractual delivery date meets actual delivery/acceptance date. | CSM1   | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |
| 2. Increase quality. | a. Percentage of defective products reaches the end user.                                                             | CSM2a  | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |
|                      | b. Percentage of defective shipments.                                                                                 | CSM2b  |                                                                                                                                                                                 |

Table 6.2. Strategic Objectives Oriented.

| Process                         | Objective         | Measure                                                                                                                                                                                       | Coding | Measurement Method                                                                                                                                                              |
|---------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring material deliveries. | On time delivery. | a. Percentage of delayed shipments.                                                                                                                                                           | CPM1a  | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |
|                                 |                   | b. Percentage of materials delivered within the contractual time during a specific period of time in relation to the total number of the materials delivered (monthly, quarterly, or yearly). | CPM1b  |                                                                                                                                                                                 |

Table 6.3. Critical Processes Oriented.

## 2. Internal Processes Perspective Measures

The suggested measures for the IPD's *internal processes* perspective have been classified in four major categories: Desired outcomes, strategic objectives, critical processes, and key factors. In addition, a codification of the measures was made in order to facilitate the reading of the proposed BSC model. The suggested measures for the *internal processes* perspective are the following:

| Objective                 | Measure                                                                                                                                                                                                            | Coding | Measurement Method                                                                                                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Regulatory compliance. | a. Percentage of cases submitted for audit on time in relation to the total cases submitted for audit during a specific period of time (monthly, quarterly, or yearly).                                            | IPDM1a | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |
|                           | b. Percentage of cases submitted for audit on time, (without protests for faults or mistakes) in relation to the total cases submitted for audit during a specific period of time (monthly, quarterly, or yearly). | IPDM1b |                                                                                                                                                                                 |
| 2. On time payments.      | a. Percentage of cases where contractual payment date meets actual payment date.                                                                                                                                   | IPDM2a | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |
|                           | b. Percentage of interest paid for payment delays in relation to the total payments (in money value) made in one year.                                                                                             | IPDM2b |                                                                                                                                                                                 |

Table 6.4. Desired Outcomes Oriented.

| <b>Objective</b>                           | <b>Measure</b>                                                                                                                                                                                                                      | <b>Coding</b> | <b>Measurement Method</b>                                                                                         |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------|
| 1. Enhance internal auditing.              | a. Extent to which employees involved in internal auditing meet pre-established standards of training, knowledge and experience in each position.                                                                                   | <b>IPSM1a</b> | - Setting qualification standards.<br>- Employee survey<br>- Employee training.                                   |
|                                            | b. Ratio of daily time spent correcting mistakes in documents submitted to manager for approval (and returned back for corrections) to total daily time spent preparing documents for submitting documents to manager for approval. | <b>IPSM1b</b> | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance. |
| 2. Timely & effective review of documents. | Percentage of cases reviewed effectively the first time within predetermined time targets in relation to the total cases reviewed in a specific period of time (monthly, quarterly, or yearly).                                     | <b>IPSM2</b>  | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance. |
| 3. Increase use of IT.                     | a. Percentage of daily transactions made through the use of IT in relation to the total daily transactions made.                                                                                                                    | <b>IPSM3a</b> | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance. |
|                                            | b. Extent to which employees involved in IPD activities have been trained in using IT transactions.                                                                                                                                 | <b>IPSM3b</b> | - Setting training goals.<br>- Employee survey.<br>- Employee training.<br>- Benchmarking on past performance.    |
|                                            | c. The difference in the investment made for IT between current year and previous year divided by the investment made in previous year.                                                                                             | <b>IPSM3c</b> | -Setting a long-term IT investment plan taking into account market capabilities, prices, and inflation.           |

Table 6.5. Strategic Objectives Oriented.

| <b>Process</b>           | <b>Objective</b>                                             | <b>Measure</b>                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Coding</b>                             | <b>Measurement Method</b>                                                                                                        |
|--------------------------|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| 1. Requisitioning Funds. | <p>a. Timeliness.</p> <p>b. Accuracy &amp; Thoroughness.</p> | <p>Percentage of requisitions issued and submitted within predetermined time target in relation to the total requisitions issued in a specific period of time (monthly, quarterly, or yearly).</p> <p>Percentage of requisitions issued on time, right, the first time (without any further correction) in relation to the requisitions issued in a specific period of time (monthly, quarterly, or yearly).</p> | <p><b>IPPM1a</b></p> <p><b>IPPM1b</b></p> | <p>- Setting objective and attainable goals.</p> <p>- Generating database in IPD.</p> <p>- Benchmarking on past performance.</p> |
| 2. Collecting documents. | Timeliness.                                                  | Percentage of pertinent procurement and repair documents collected within predetermined time in relation to the total pertinent documents collected (monthly, quarterly, or yearly).                                                                                                                                                                                                                             | <b>IPPM2</b>                              | <p>- Setting objective and attainable goals.</p> <p>- Generating database in IPD.</p> <p>- Benchmarking on past performance</p>  |
| 3. Reviewing documents   | Timeliness & Accuracy                                        | Percentage of cases reviewed right, the first time, within predetermined time targets in relation to the total cases reviewed in a specific period of time (monthly, quarterly, or yearly).                                                                                                                                                                                                                      | <b>IPPM3</b>                              | <p>- Setting objective and attainable goals.</p> <p>- Generating database in IPD.</p> <p>- Benchmarking on past performance.</p> |

Table 6.6. Critical Processes Oriented.

| Factor             | Objective                   | Measure                                                                                                                                                                                                                                                                                                                                                      | Coding                                    | Measurement Method                                                                                                                                                                                                                                                                       |
|--------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Communications. | Availability & Reliability. | <p>a. Percentage of times employees were satisfied with the communication systems they used in relation to the total times they made use of the systems for accomplishing their tasks.</p> <p>b. The difference in the investment made for communication systems between current year and previous year divided by the investment made in previous year.</p> | <p><b>IPFM1a</b></p> <p><b>IPFM1b</b></p> | <p>- Setting objective and attainable goals.</p> <p>- Employee survey.</p> <p>- Generating database in IPD.</p> <p>- Benchmarking on past performance.</p> <p>-Setting a long-term investment plan in communications taking into account market capabilities, prices, and inflation.</p> |

Table 6.7. Key Factors Oriented.

### 3. Financial Perspective Measures

The suggested measures for the IPD's *financial* perspective have been classified in four major categories: Desired outcomes, strategic objectives, critical processes, and key factors. In addition, a codification of the measures was also made in order to facilitate the reading of the proposed BSC model. The suggested measures for the *financial* perspective are the following:

| Objective          | Measure                                                                 | Coding      | Measurement Method                                                                                                               |
|--------------------|-------------------------------------------------------------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------|
| 1. Cost reduction. | Savings realized by switching from sole source to competitive strategy. | <b>FDM1</b> | <p>- Setting objective and attainable goals.</p> <p>- Generating database in IPD.</p> <p>- Benchmarking on past performance.</p> |

Table 6.8. Desired Outcomes Oriented.

| <b>Objective</b>               | <b>Measure</b>                                                                                                                                                                                                                                                              | <b>Coding</b> | <b>Measurement Method</b>                                                                                                                                                       |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Full and open competition.  | Ratio of procurement or repair cases made through competition to procurement or repair cases made through sole source (monthly, quarterly, or yearly).                                                                                                                      | <b>FSM1</b>   | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |
| 2. Achieve economies of scale. | a. Ratio of total line items over total procurement cases in current period to line items over cases in previous period (monthly, quarterly, or yearly).<br>b. Percentage of consolidating requirements in relation to the total requirements (monthly, quarterly, yearly). | <b>FSM2</b>   | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD</li> <li>- Benchmarking on past performance.</li> </ul>  |

Table 6.9. Strategic Objectives Oriented.

| <b>Process</b>                         | <b>Objective</b>                              | <b>Measure</b>                                                                               | <b>Coding</b> | <b>Measurement Method</b>                                                                                                                                                       |
|----------------------------------------|-----------------------------------------------|----------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Publicizing solicitation documents. | Increase the number of contractors solicited. | Saving realized by increasing the number of contractors solicited for the same procurements. | <b>FPM1</b>   | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |

Table 6.10. Critical Processes Oriented.

| <b>Factor</b>       | <b>Objective</b>   | <b>Measure</b>                                                                                                                                                                     | <b>Coding</b> | <b>Measurement Method</b>                                                                                                                                                       |
|---------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Available funds. | Fund availability. | Ratio of funds available in hand for procurements or repairs in the beginning of the period to funds actually consumed at the end of the same period (monthly, quarterly, yearly). | <b>FFM1</b>   | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |

Table 6.11. Key Factors Oriented.

#### 4. People Perspective Measures

The suggested measures for the IPD's *people* perspective have been classified in two major categories: Strategic objectives and key factors. In addition, a codification of the measures was also made in order to facilitate the reading of the proposed BSC model. The suggested measures for the *people* perspective are the following:

| <b>Objective</b>                               | <b>Measure</b>                                                                                                                              | <b>Coding</b> | <b>Measurement</b>                                                                                                                                                                          |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Improve employees' skills and capabilities. | Extent to which IPD employees involved in IPD activities meet pre-established qualification standards in each position.                     | <b>PSM1</b>   | <ul style="list-style-type: none"> <li>- Setting qualification standards.</li> <li>- Employee survey.</li> <li>- Employee training.</li> <li>- Benchmarking on past performance.</li> </ul> |
| 2. Improve employees' knowledge.               | Extent to which IPD employees involved in IPD activities meet pre-established knowledge standards of laws and regulations in each position. | <b>PSM2</b>   | <ul style="list-style-type: none"> <li>- Setting qualification standards.</li> <li>- Employee survey.</li> <li>- Employee training.</li> <li>- Benchmarking on past performance.</li> </ul> |

Table 6.12. Strategic Objectives Oriented.

| <b>Factor</b>               | <b>Objective</b>                         | <b>Measure</b>                                                                                                                                                                                                                                                                                                                       | <b>Coding</b>                           | <b>Measurement</b>                                                                                                                                                                                                                                                                                                                                 |
|-----------------------------|------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Employee commitment.     | Improve commitment.                      | Extent to which employees involved in IPD activities feel satisfied and induced in each position.                                                                                                                                                                                                                                    | <b>PFM1</b>                             | <ul style="list-style-type: none"> <li>- Setting satisfaction rate goals</li> <li>- Employee survey.</li> <li>- Benchmarking on past performance.</li> </ul>                                                                                                                                                                                       |
| 2. Employee responsibility. | Improve Responsibility.                  | Extent to which employees involved in IPD activities held accountable for their actions with respect to compliance with laws and regulations.                                                                                                                                                                                        | <b>PFM2</b>                             | <ul style="list-style-type: none"> <li>- IPD management assessment of current management control system.</li> <li>- Employee survey.</li> <li>- IPD management initiatives.</li> <li>- Benchmarking on past performance.</li> </ul>                                                                                                                |
| 3. Access to information.   | Improve access to strategic information. | <p>a. Ratio of the times employees get accurate, timely, and complete information to the total times asked for this information (monthly, quarterly, or yearly).</p> <p>b. The difference in the investment made for information systems between current year and previous year divided by the investment made in previous year.</p> | <p><b>PFM3a</b></p> <p><b>PFM3b</b></p> | <ul style="list-style-type: none"> <li>- Setting access to information goal.</li> <li>- Employee survey.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> <li>-Setting a long-term investment plan in information systems taking into account market capabilities, prices, and inflation rates.</li> </ul> |

Table 6.13. Key Success Factors Oriented.

## **B. CHAPTER SUMMARY**

The first part of this chapter described the principles identified in the literature that should govern the development of performance measures for monitoring organizational performance. An emphasis was put on the principles identified by Fitzgerald et al. (1993) for service organizations taking into account the nature of the IPD's operations.

Based on those principles the author developed a set of performance metrics for IPD tailored to the IPD's strategy, desired outcomes, critical processes, and key factors that were identified in the previous chapters. This set of measures was reviewed and approved by the key interviewees. This course of action contributed to the development of a set of metrics that is both in accordance with the principles identified in the literature and meaningful to the users.

In the last part of this chapter a matching of the suggested measures was made with the IPD's BSC perspectives and the respective individual objectives contributing to the development of a complete BSC model. In addition, next to each of the performance measures a measurement method was also suggested taking into account the IPD environment and the nature of the measures. The complete proposed BSC framework is depicted in Figure 6.1. As shown in Figure 6.1 the number of the suggested metrics in each perspective is in accordance with what has been identified in the BSC literature as a necessary and sufficient number of measures (four to seven measures in each perspective) with the exception of the internal processes perspective (Kaplan and Norton, 1996). In essence, the basis for selecting the appropriate number of metrics is directly related to the ability of individuals to effectively absorb and track discrete items of information, which is a constraint that has been identified by research in behavioral sciences and is related to the limits of short-term memory in the process of perceiving knowledge (Hirsch, 1987). However, as Kaplan and Norton (1996) argue, the number of metrics by itself is not the catalytic factor for the set of performance metrics to become functional. The effective description of the strategy by the measures that have been incorporated into the BSC and the cause-and-effect link among measures are more important factors in the process of selecting the appropriate number of measures. In that sense, the sixteen measures

suggested for the internal processes perspective is not anticipated to adversely influence the functionality of the proposed model since those metrics are assumed to reflect the whole set of cause-and-effect relationships among desired outcomes, critical processes, and key factors. In any case, it remains at the discretion of the IPD's management to eliminate some of those metrics during the implementation process if they prove to be an impediment to the applicability of the model.

Finally, it should be emphasized that before the implementation of the proposed model, IPD management should determine objective and attainable goals associated with each measure, which is a prerequisite for the model to become operational.

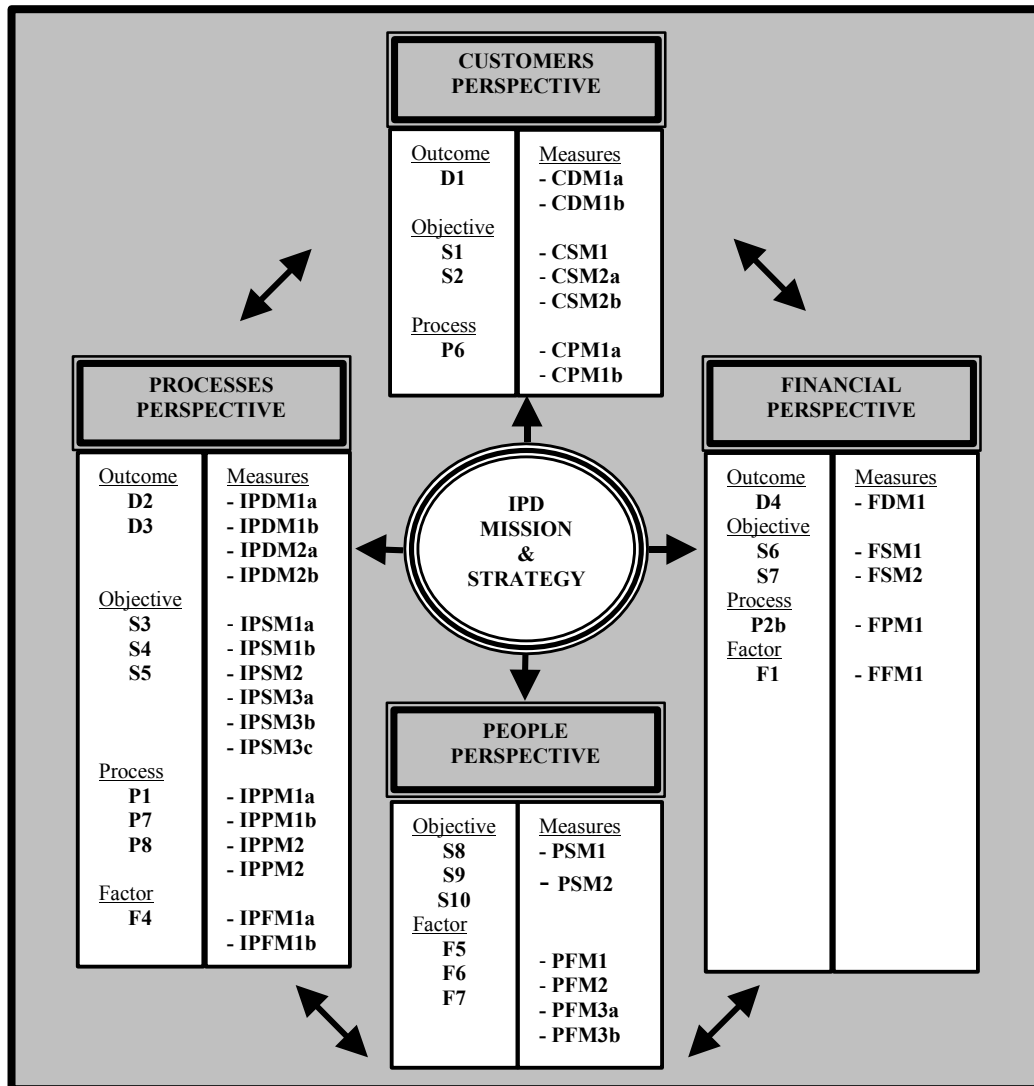


Figure 6.1. IPD's BSC Model Including Performance Metrics.

## **VII. CONCLUSIONS AND RECOMMENDATIONS**

### **A. RESEARCH QUESTIONS**

#### **1. Primary Research Question**

The primary research question “What is the design of a BSC model that applies to IPD” was answered in Chapter V. In a step-by-step analysis of the casual relationships among the elements of the BSC model that were identified in Chapter III, we identified an appropriate BSC model that applies to IPD environment. The proposed BSC framework is depicted in Figure 5.7.

#### **2. Secondary Research Questions**

The first of the secondary questions regarding IPD’s desired outcomes was initially answered in the first part of Chapter III and then analyzed in Chapter IV. However, that initial assessment about IPD’s desired outcomes was further tested against the other key interviewees’ perspective in order to reach consensus given that desired outcomes and strategy are the starting point in the BSC building process.

The secondary questions two through four, about IPD’s strategy, multiple objectives, critical processes, key success factors, and their interrelationships, were answered and analyzed in Chapter III providing the basis for the design of the BSC model.

Finally, the last of the secondary questions regarding the appropriate set of performance measures that need to be incorporated into the BSC model, was answered and analyzed in the preceding chapter contributing to the development of a BSC model that can be used as a management control system. The final BSC framework is depicted in Figure 6.1.

### **B. RECOMMENDATIONS FOR COMMUNICATING THE MODEL**

Of all the concepts needed for successful implementation of performance-based models, effective communication is probably the most important (Kaplan and Norton, 1996, 2000; Procurement Executives’ Association Website, 2003). The analysis in

Chapter IV revealed that although current conditions in IPD do not hinder the effective design of a BSC model there are some areas of concern that may influence its effective implementation.

Taking into account IPD's current conditions that were presented in Chapter IV, the major elements of a communication plan that can be developed to contribute to the effective implementation of the BSC model are:

- IPD top management commitment to the BSC model is required because not only do they have the knowledge to communicate the model but also the authority to mobilize employees' participation and involvement into the process.
- The adoption by the IPD management of leadership style that emphasizes participation, development of employee's initiative and involvement in the decision-making can become a catalytic factor for the successful implementation of the BSC concept.
- Effective communication of the function and the benefits of the model to the HNSC's top management can ensure support for the initiative both in terms of funds and means. It can also facilitate senior management mobilization and adoption of analogous management initiatives that may be required during the implementation process.
- Training and of the employees by IPD management to understand the function and objectives of the BSC and the benefits of launching such an initiative is likely to contribute to a better understanding by the employees of how their actions relate to IPD's overall performance, as well as enhance involvement and commitment during the implementation process.

In addition to these elements, there are actions that need to be undertaken by the IPD management that together with the communication plan can contribute to the effective implementation of the BSC model:

- Developing objective and attainable goals for each of the identified objectives is required both in the short run and in the long run.
- Establishing a data collection system that can be used for benchmarking against past performance and training of IPD's employees involved in the project on its use.
- Accountability for result should be clearly assigned and well understood.
- Seeking and adopting appropriate incentives that are tailored to specific objectives and measures and are suitable for motivating actions towards the specific objectives.

- Constant monitoring of the changes in the internal and external environment and adjustment of the BSC elements as required.
- Sustaining of IT capabilities on a level appropriate to support and enhance the initiative.
- Developing initiatives that contribute to the (1) participation of IPD in the fund approval and need determination process and (2) re-definition of the IPD's mission in order to provide more discretion in the decision making process can in the long run enhance strategic control and transform the BSC model from a management control system to a strategic system.

### **C. RECOMMENDATIONS FOR FURTHER STUDY**

A follow-up study for the implementation of the proposed BSC model would be appropriate. This additional study could statistically test the cause-and-effect relationships among the BSC metrics. As data on the metrics are collected over time, conclusions about leading and lagging relationships would provide insight into the appropriateness of the BSC design.

An additional study could be undertaken for the evaluation of the influence of exogenous factors upon the IPD's operations and the ability of IPD to control those factors and incorporate them into the BSC model.

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## APPENDIX A. PRELIMINARY QUESTIONNAIRE

### A. Respondent Demographics:

1. Name: [REDACTED] (Intentionally covered).
2. Rank: **Commander**
3. Specialty: **Supply Officer**
4. Level of Education (please highlight):
  - a. High School
  - b. College
  - c. Bachelor degree
  - d. **Master's degree**
  - e. Post-graduate/Doctorate
5. Current position: **Hellenic Navy Supply Center,  
International Procurements Department**
6. Number of months in current position: **Nineteen (19)**
7. Phone number: [REDACTED] (Intentionally covered).
8. E-mail: [REDACTED] (Intentionally covered).
9. Please describe briefly your current duties: **Head of the Department**

**Comments:**

---

**End of section "A" of preliminary questionnaire.**

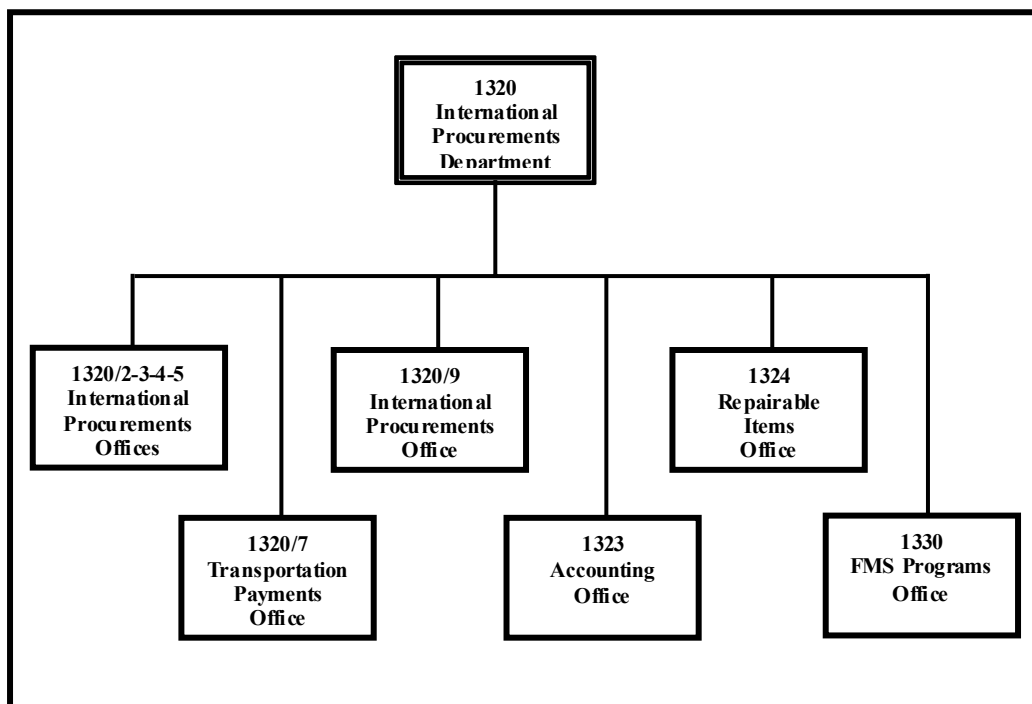
## B. Organizational Profile

1. Please briefly describe the International Procurement Department (IPD) mission:

*“To procure spare parts and minor systems from sources (manufacturers and vendors) outside the country, for fulfilling the Hellenic Navy’s specific needs through the following processes:*

- A. International Competitions*
- B. Sole Source Procurements.*
- C. International Agreements ”*

2. Does the following organizational chart describe the organization structure of the International Procurement Department? (If yes go to the next question. If not please make the necessary adjustments).



Respond: **YES!**

3. Please briefly describe the duties of the offices that are under your Department (IPD) (Attach additional offices if necessary):

**Office 1320/2-3-4-5:**

- i. Title: **INTERNATIONAL PROCUREMENTS OFFICE.**
- ii. Duties (describe briefly):

*This office currently occupies four employees. Each of them, who have the title procurement case operator, has similar duties. They are responsible for undertaking exclusively a procurement case and making the follow-up from the material need generation to the material delivery. Among their important activities is the timely Collecting and effective review and processing of all the pertinent receiving records, invoices and vouchers so that to achieve on time payment of all the accounts due. However, the main differentiation in their duties comes from the*

payment process that is followed with respect to the procurement case total cost. For cases above €45,000 (€1 = \$1.09), they have three alternatives depending on the agreement. One alternative is to make the payment through the respective Naval Attaché Office in Washington, London, Berlin, or Paris. In that case, after completing pertinent document review they should make certain a credit transfer from Greek Central Bank to the respective Naval Attaché account. The respective Naval Attaché office is responsible for the final payment. A second alternative is to make use of a letter of credit (open account) in the name of the contractor to the Central Bank in Greece. In that case, they should make certain that all the pertinent documents are sent to the Central Bank and the Bank makes the payment. Finally, they can make use of a transfer credit from the Central Bank to a specific bank account defined by the contractor. For cases below € 45,000 they can make the contractor's payment either through the "letter of credit" process or by ensuring a transfer credit to a contractor's specific bank account. At the end of the process all of them are responsible for the case closeout and the timely submission of all the procurement documents to the Audit Agency.

**Office 1320/7:**

- i. Title: **TRANSPORTATION PAYMENTS OFFICE.**
- ii. Duties (describe briefly):

*This office is responsible for the timely collecting, review, and processing of all the documents pertinent to either the transportation of items from foreign contractors (procurement orders or repair orders) to Greece or from Greece to foreign contractors (repair orders). After completing the review and processing of all the transportation documents, this office is responsible for making the final payment for the transportation costs and submitting all the payment documents to the Audit Agency.*

**Office 1320/9:**

- i. Title: **INTERNATIONAL PROCUREMENTS OFFICE.**
- ii. Duties (describe briefly):

*This office consists of one employee, who has also the title procurement case operator. However, the main difference is that this office only undertakes procurement cases of total worth less than € 45,000 and for which the payment is agreed to be made through a respective Naval Attaché office in Washington, London, Berlin, or Paris.*

**Office 1323:**

- i. Title: **ACCOUNTING OFFICE.**
- ii. Duties (describe briefly):

*This sub-department is responsible for collecting, reviewing, and processing all the pertinent procurement documents (receiving records, vouchers, invoices) for those procurement cases that are less than € 45,000 total worth and for which the payment is to be made through one of the Naval attaché offices in Washington, London, Berlin, or Paris. After completing the review and processing of all the procurement documents it is responsible for making certain a credit transfer to the respective Naval Attaché office for replacing its available balance. It is also responsible for managing the General and Administration account balance of the Naval Attaché offices in Washington, London, Berlin, or Paris. Finally, it is responsible for the above-mentioned cases' closeout and the timely submission of all the procurement documents to the Audit Agency.*

**Office 1324:**

- i. Title: **REPAIRABLE ITEMS OFFICE.**
- ii. Duties (describe briefly):

*This sub-department is responsible for placing repair orders in foreign manufacturers. The whole process includes, the request for proposals, the receiving of the repair offers, the approval or not of the repair cost, the repair order placement, and the shipment of the repairable items in the respective manufacturer in case of approval. It is also responsible for the timely collection, review, and processing of all the pertinent repair documents (receiving*

records, vouchers, invoices) and the payment of the contractor through one of the above-mentioned payment processes. With the repair case closeout, it is responsible for the timely submission of all the documents to the Audit Agency.

**Office 1330:**

- i. Title: **FMS PROGRAMS OFFICE.**
- ii. Duties (describe briefly):

*This sub-department is responsible for procuring or repairing items through the use of the US FMS programs. Regarding FMS procurements, it is responsible for placing orders, tracking order status, collecting, reviewing, and processing procurement documents, and making the proposal for the payment through the Naval Attaché office in Washington. Regarding FMS repairs, it is responsible for the shipment of the repairable items in the respective manufacturer, the receiving of the repair offer, the approval or not of the repair cost, and the repair order placement in case of approval. It is also responsible for the timely collection, review, and processing of all the pertinent repair documents (receiving records, vouchers, invoices) and the proposal for the payment of the contractor through the Naval Attaché office in Washington. With the repair and procurement cases closeout, it is responsible for the timely submission of all the documents to the Audit Agency.*

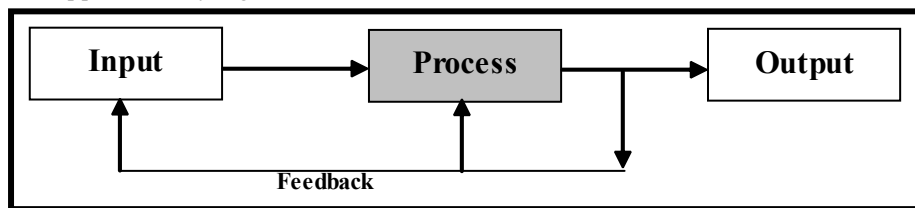
4. Based on the organizational structure you could define IPD as (Please highlight):
  - a. A company
  - b. An autonomous business unit (SBU)
  - c. A Single process Department
  - d. **A multi-process Department**
  - e. Other

Comments: \_\_\_\_\_

5. What is the total annual Budget associated with IPD?

|                           |                                     |                          |                          |                          |                          |
|---------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Less Than<br>\$10 Million | <b>\$10-50<br/>Million</b>          | \$50-100<br>Million      | \$101-250<br>Million     | \$251-500<br>Million     | Over 500<br>Million      |
| <input type="checkbox"/>  | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

6. Please take into account the following generic Input-Process-Output model, which applies in every organization:



- 7a. (Output). Given the IPD mission what are the actual outcome/s for the Department to be successful in its operations in terms of financial objectives, cost control, regulation compliance, customer satisfaction, or reputation? (Describe the outcomes in any order):

- *Achieve customer needs prompt fulfillment.*
  - *Ensure regulation compliance.*
  - *On time payment of all the financial obligations for procurements, repairs and transportation costs.*
- a. *Reduction of procurement, repair, and transportation costs.*

- 7b. (Process). Please clearly describe in any order the ten most important processes/ functions, in each office for achieving the outcomes described in the previous question: (Please simply describe the processes/ functions without comments assuming the importance in terms of cost control, time consuming, regulatory compliance, customer need satisfaction, and departmental overall objectives):

**Office 1320/2-3-4-5**

i. Title: **INTERNATIONAL PROCUREMENTS OFFICE.**

ii. Important functions/activities/processes:

- *Requisitioning funds from Inventory Provision & Control Directorate.*
- *Placing Procurement orders.*
- *Transferring funds to Attaches and banks.*
- *Collecting procurement documents.*
- *Reviewing procurement documents.*
- *Making payment proposal.*
- *Submitting procurement documents for audit.*
- *Monitoring material deliveries.*
- *Preparing solicitation Document.*
- *Solicitation Document Publication.*
- *Monitoring negotiations.*
- *Issuing Contract award.*

**Office 1320/7**

i. Title: **TRANSPORTATION PAYMENTS OFFICE.**

ii. Important functions/activities/processes:

- *Requisitioning funds from Inventory Provision & Control Directorate.*
- *Making payments to freight forwarders.*
- *Collecting transportation documents.*
- *Reviewing transportation documents.*
- *Submitting payment documents for audit.*
- *Monitoring material deliveries.*

**Office 1320/9**

i. Title: **INTERNATIONAL PROCUREMENTS OFFICE.**

ii. Important functions/activities/processes:

- *Placing orders.*
- *Monitoring material deliveries.*

**Office 1323**

i. Title: **ACCOUNTING OFFICE.**

ii. Important functions/activities/processes:

- *Requisitioning funds from Inventory Provision & Control Directorate.*
- *Transferring funds to Naval Attaches.*
- *Collecting procurement documents.*
- *Reviewing procurement documents.*
- *Submitting payment documents for audit.*
- *Issuing Contract award for FMS programs.*
- *Monitoring naval attaches' account balances.*

**Office 1324**

i. Title: **REPAIRABLE ITEMS OFFICE**

ii. Important functions/activities/processes:

- *Requisitioning funds from Inventory Provision & Control Directorate.*
- *Transferring funds to respective banks.*
- *Repair cost approval.*
- *Collecting documents.*
- *Reviewing documents.*

- *Solicitation Document preparation.*
- *Issuing Contract award.*
- *Making payment proposal.*
- *Submitting payment documents for audit.*
- *Requesting quotations for repairs.*
- *Ordering item shipment to the repair sites.*

**Office 1330**

i. Title: **FMS PROGRAMS OFFICE**

ii. Important functions/activities/processes:

- *Requisitioning process management.*
  - *Placing Procurement Orders.*
  - *Placing Repair Orders.*
  - *FMS cases follow-up.*
  - *Handling the Discrepancy reporting System.*
- *Tracking order status. (Procurement or repair).*
- *Informing departments about requisitioning status.*
- *Budget Control of FMS cases (Making payment proposal).*
- *Monitoring the repairable process via the FMS channel.*
- *Executing the repairable process via the FMS channel.*
- *Keeping informed the item Managers for any revision/change in the FMS process.*
- *Monitoring material deliveries?*

7c. (Inputs). Please briefly describe the inputs IPD uses in order to accomplish its processes described in previous question (e.g. funds, other resources, people, customer needs generation, directives):

- *Available Funds (Approved by the Inventory Provision & Control Directorate).*
- *Public laws, Acquisition Regulation, and Directives.*
- *Human Resources*
- *Information Technology.*

8. For measuring your organization's performance in relation to the desired outcomes to what extent are performance measures used:

|                          |                          |                          |                                     |                          |                    |
|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------|
| Not<br>At<br>All         |                          |                          |                                     |                          | A<br>Great<br>Deal |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                    |

9. For measuring your organization's performance in relation to the desired outcomes to what extent are pre-established goals used:

|                          |                          |                          |                                     |                          |                    |
|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|--------------------|
| Not<br>At<br>All         |                          |                          |                                     |                          | A<br>Great<br>Deal |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |                    |

Comments: \_\_\_\_\_

End of section "B" of preliminary questionnaire.

### C. Organizational Perspective

1. Given the mission and structure of your organization you could describe IPD as (please highlight more than one if necessary):

- a. **Customer satisfaction oriented**
- b. **Regulation compliance oriented**
- c. **Cost control oriented**
- d. Process improvement oriented
- e. Employee satisfaction oriented
- f. Other (please define)

Comments \_\_\_\_\_

2. Based on your experience, to what extent do the current official regulations and IPD job description guidebook clearly describe the procedures that should be followed in every day functions/processes and activities.

|                          |                          |                          |                          |                                     |
|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|
| Not<br>At<br>All         | Entirely                 |                          |                          |                                     |
| _____                    |                          |                          |                          |                                     |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> |

3. Based on your experience, to what extent are the department personnel aware of the procedures they should follow in every day activities:

|                          |                          |                          |                                     |                          |
|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| Not<br>At<br>All         | Entirely                 |                          |                                     |                          |
| _____                    |                          |                          |                                     |                          |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

4. Given the procedures and processes, to what extent can the department personnel be considered to be qualified for carrying out its duties:

|                          |                          |                          |                                     |                          |
|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| Not<br>At<br>All         | Entirely                 |                          |                                     |                          |
| _____                    |                          |                          |                                     |                          |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

5. Based on your experience, to what extent do the department personnel develop initiatives in everyday activities:

|                          |                                     |                          |                          |                          |
|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| Not<br>At<br>All         | Entirely                            |                          |                          |                          |
| _____                    |                                     |                          |                          |                          |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

6. Given the management environment, to what extent do the department personnel participate in the decision making process:

|                          |                                     |                          |                          |                          |
|--------------------------|-------------------------------------|--------------------------|--------------------------|--------------------------|
| Not<br>At<br>All         | Entirely                            |                          |                          |                          |
| _____                    |                                     |                          |                          |                          |
| <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

7. Given the management environment, to what extent are financial incentives used for motivating the department employees' performance:

8. Given the management environment, to what extent are non-financial incentives used for motivating the department employees' performance:

|                          |                          |                          |                                     |                          |
|--------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| Not<br>At<br>All         |                          |                          |                                     | Entirely                 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

9. If you were asked to describe how you allocate your working time for performing your management duties you could say that:

- I approximately use. **85%** of my working time diagnostically to review and control internal processes and department personnel performance.
- I approximately use. **4%** of my working time interactively with department personnel in order to face new challenges and uncertainties.
- I approximately use. **4%** of my working time alone thinking about future challenges and seeking innovative ways to face them.
- I approximately use. **2%** of my working time diagnostically with the top management for reviewing and controlling people and internal processes.
- I approximately use. **5%** of my working time interactively with top level management for discussing ways of facing new challenges.
- I approximately use **0** % of my working time differently (please define).

**Comments:** \_\_\_\_\_

10. Based on your experience, you could describe IPD in terms of Effectiveness:

|                            |                          |                          |                                     |                          |
|----------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| Not<br>Effective<br>At all |                          |                          |                                     | Quite<br>effective       |
| <input type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

11. Based on your experience, you could describe IPD in terms of Efficiency

|                            |                          |                          |                                     |                          |
|----------------------------|--------------------------|--------------------------|-------------------------------------|--------------------------|
| Not<br>Efficient<br>At all |                          |                          |                                     | Quite<br>efficient       |
| <input type="checkbox"/>   | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

12. Can you identify one or two key-employees in IPD that could participate in the research, taking into account his/her position, experience, and knowledge? (If more than two please define).

- Name: **Lieutenant Commander** [REDACTED] (Intentionally covered).  
Position: **Head of FMS Programs Office.**
- Name: **Lieutenant** [REDACTED] (Intentionally covered).  
Position: **1320/4 Office.**

**Comments:** \_\_\_\_\_

**End of preliminary questionnaire.**

**Thank you very much for your participation!  
Your contribution is quite important to this research!**

## **APPENDIX B. FIRST QUESTIONNAIRE**

### **FIRST QUESTIONNAIRE**

|                                                               |            |
|---------------------------------------------------------------|------------|
| <b>IPD MANAGER RESPONSE (FOUR PAGES).....</b>                 | <b>94</b>  |
| <b>HEAD OF FMS PROGRAMS OFFICE RESPONSE (FOUR PAGES).....</b> | <b>98</b>  |
| <b>CONTRACT MANAGER RESPONSE (FOUR PAGES).....</b>            | <b>103</b> |

## A. Respondent Demographics:

1. Name: [REDACTED] (Intentionally covered).
  2. Rank: **Commander**
  3. Specialty: **Supply Officer**
  4. Level of Education (please highlight):
    - a. High School
    - b. College
    - c. Bachelor degree
    - d. Master's degree**
    - e. Post-graduate/Doctorate
  5. Current position: **Hellenic Navy Supply Center,  
International Procurements Department**
  6. Number of months in current position: **Nineteen (19)**
  7. Phone number: [REDACTED] (Intentionally covered).
  8. E-mail: [REDACTED] (Intentionally covered).
  9. Please describe briefly your current duties: **Head of the Department**
- Comments:**
- 

## B. Mission and Strategy

I. According to the preliminary questionnaire the Mission of the International Procurement Department (IPD) is the following:  
**'To procure spare parts and minor systems from sources (manufacturers and vendors) outside the country, for fulfilling the Hellenic Navy's specific needs through the following methods:**

- A. International Competitions.**
- B. Sole Source Procurements.**
- C. International Agreements '**

1. Do you agree with the above statement? Please define YES or NO: YES
  - i. If **YES** go to the next statement.
  - ii. If **NO** please comment and then continue: \_\_\_\_\_

II. Additionally, these are the IPD's Desired Outcomes:

- **Customer needs prompt fulfillment.**
- **Ensure regulation compliance.**
- **On time payment of all the financial obligations for procurements, repairs and transportation costs.**
- **Reduction of procurement, repair, and transportation costs.**

1. Do you agree with the above statement? Please define YES or NO: YES

i. If **YES** go to the next questions.

ii. If **NO** please comment and then continue: \_\_\_\_\_

III. IPD **Strategic Objectives:**

1. Given the IPD mission and Desired Outcomes please answer the following:

a. Who do you think that is your customer? (Please highlight more than one if necessary):

- The items' end-user (ultimate customer).
- **The agency that submits the need requirement to IPD.**
- **The Audit Agency.**
- Other (please define).

2. Given the IPD Mission and Desired Outcomes please answer the following:

a. To better look to the previously identified customer(s) you need to (Please highlight more than one if necessary):

- **Lower the time the items reach the end user.**
- Ensure to the maximum extent possible the items' functionality.
- **Achieve the best possible item quality.**
- Reduce acquisition and repair costs.
- Achieve timely and effective review of all the payment documents.
- Other (please define).

b. To better ensure regulation compliance you need to (Please highlight more than one if necessary):

- **Enhance internal auditing process.**
- **Ensure employee Knowledge of regulations.**
- **Increase employees' skills and capabilities.**
- Other (Please define).

c. To achieve on time payment of all the financial obligations you need to (Please highlight more than one if necessary):

- **Achieve timely and effective review of all the payment documents.**
- Enhance internal auditing processes.
- **Increase use of Information Technology.**
- Increase employees' skills and capabilities.
- Other (Please define).

d. To achieve reduction of procurement, repair, and transportation costs you need to: (Please highlight more than one if necessary):

- **Achieve full and open competition to the maximum extent possible.**
- **Achieve economies of scale.**
- Other (Please define).

### C. Strategy and Critical Processes

In the following table (**Table 1**) the IPD most important internal processes that identified in the preliminary questionnaire are listed. Please look into these processes and answer the following:

1. Given the **IPD mission** and the previously identified **strategic objectives**, which of these processes you think that **directly contribute (critical processes)** to the achievement of the **desired outcomes** (e.g improvement in one of the critical processes is expected to contribute directly to the achievement of the desired outcomes). (Please put a **criticality indicator (X)** next to the **important processes**)
2. If possible please put an **indicator of the chronological order (1=first, 2=second)** next to the identified important processes from the previous question (In case of processes that executed at the same time please use the same number):

**Table 1**

| IPD important Processes                                                        | Critical Process Indicator (X) | Chronological Order Indicator (1=first, 2=second...) | Comments |
|--------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------|----------|
| Requisitioning funds from Inventory Provision & Control Directorate.           | X                              | 1                                                    |          |
| Preparing Solicitation Document.                                               |                                |                                                      |          |
| Publicizing Solicitation Document.                                             | X                              | 2                                                    |          |
| Monitoring negotiations.                                                       |                                |                                                      |          |
| Issuing Contract award.                                                        | X                              | 3                                                    |          |
| Placing Procurement orders.                                                    | X                              | 4                                                    |          |
| Transferring funds to Naval Attaches and banks.                                | X                              | 5                                                    |          |
| Collecting procurement documents.                                              | X                              | 7                                                    |          |
| Reviewing procurement documents.                                               | X                              | 8                                                    |          |
| Making payment proposal.                                                       | X                              | 9                                                    |          |
| Submitting procurement and repair documents for audit.                         | X                              | 10                                                   |          |
| Monitoring material deliveries.                                                | X                              | 6                                                    |          |
| Making payments to freight forwarders.                                         | X                              | 9                                                    |          |
| Collecting transportation documents.                                           | X                              | 7                                                    |          |
| Reviewing transportation documents.                                            | X                              | 8                                                    |          |
| Issuing Contract award for FMS programs.                                       |                                |                                                      |          |
| Monitoring Naval Attaches' account balances.                                   |                                |                                                      |          |
| Approving repair cost.                                                         |                                |                                                      |          |
| Ordering item shipment to the repair sites.                                    |                                |                                                      |          |
| Placing FMS Procurement Orders.                                                |                                |                                                      |          |
| Placing FMS Repair Orders.                                                     |                                |                                                      |          |
| Tracking status of FMS cases (follow-up).                                      |                                |                                                      |          |
| Handling the FMS discrepancy reporting System.                                 |                                |                                                      |          |
| Informing departments about requisitioning status.                             |                                |                                                      |          |
| Controlling Budget of FMS cases (Making payment proposal).                     |                                |                                                      |          |
| Monitoring the repairable process via the FMS channel.                         |                                |                                                      |          |
| Executing the repairable process via the FMS channel.                          |                                |                                                      |          |
| Keeping informed the item Managers for any revision/change in the FMS process. |                                |                                                      |          |
| <b>Other (please define)</b>                                                   |                                |                                                      |          |

## D. Strategy and Key-Factors

In **Table 2** below the factors that may influence the IPD internal processes are listed. Please take into account these factors and answer the following:

1. Given the **mission**, **strategic objectives**, and **important processes**, which of the following factors you think that are most important (**key-success factors**) in determining whether IPD meets its objectives or achieves good performance (Please put a **key-success factor indicator (K)** next to the important factors):

**Table 2**

| Important Factors                   | Key-success factor Indicator (K) | Measurable factor Indicator (M) | Comments |
|-------------------------------------|----------------------------------|---------------------------------|----------|
| Available funds.                    | K                                | M                               |          |
| Available means.                    |                                  |                                 |          |
| Information Technology.             | K                                |                                 |          |
| Leadership.                         |                                  |                                 |          |
| Empowerment.                        | K                                |                                 |          |
| Communications.                     | K                                |                                 |          |
| Employee turnover.                  |                                  | M                               |          |
| Employee commitment.                | K                                |                                 |          |
| Employee responsibility.            | K                                |                                 |          |
| Employee qualifications             |                                  |                                 |          |
| Employee satisfaction               |                                  |                                 |          |
| Access to information.              | K                                |                                 |          |
| Employee satisfaction.              |                                  |                                 |          |
| <u>Exogenous factors</u> . (Define) | K                                |                                 |          |
| <b>Procurement Policy Changes</b>   |                                  |                                 |          |
| <b>Other (please define).</b>       |                                  |                                 |          |

2. Which of the above-identified **key-factors** you think that they can be controlled and measured? (Go back to **table 2** and put a **measurable factor indicator (M)** next to those **key-factors** that you think that can be controlled and measured).
3. Are the above-identified **key-factors** linked in any way with the previously identified important processes? (e.g. Does an improvement in one area lead to improvement in other areas? If so, can you match them):

| IMPROVEMENT IN:         | COULD IMPROVE: |
|-------------------------|----------------|
| Available Funds         | 1              |
| Information Technology  | 5-6-8-9        |
| Empowerment             | 9              |
| Communications          | 2-7            |
| Employee Commitment     | 3-7-8-9-10     |
| Employee Responsibility | 3-7-10         |
| Access to Information   | 6-8            |
| Other                   |                |

Comments \_\_\_\_\_

End of first questionnaire.  
Thank you very much for your participation!  
Your contribution is quite important to this research!

### A. Respondent Demographics:

1. Name: [REDACTED] (Intentionally covered).
2. Rank: **Lt. Commander**
3. Specialty: **Supply Officer**
4. Level of Education (please highlight):
  - a. High School
  - b. College
  - c. Bachelor degree
  - d. **Master's degree**
  - e. Post-graduate/Doctorate
5. Current position: **Hellenic Navy Supply Center, FMS Programs Office.**
6. Number of months in current position: **Thirty (30)**
7. Phone number: [REDACTED] (Intentionally covered).
8. E-mail: [REDACTED] (Intentionally covered).
9. Please describe briefly your current duties: **Head of FMS Programs Office.**

**Comments:** *As Head of FMS Programs Office I am responsible for organizing, monitoring, and auditing procurements and repairs of items via the FMS Programs channel. Additionally, my duties include involvement in budgetary matters (review, and proposal) related to the FMS Cases.*

## B. Mission and Strategy

I. According to the preliminary questionnaire the **Mission** of the International Procurement Department (IPD) is the following:

**'To procure spare parts and minor systems from sources (manufacturers and vendors) outside the country, for fulfilling the Hellenic Navy's specific needs through the following methods:**

- A. International Competitions.**
- B. Sole Source Procurements.**
- C. International Agreements '**

1. Do you agree with the above statement? Please define YES or NO: ...**YES**...

- i. If**YES** go to the next statement.
- ii. If**NO** please comment and then continue: \_\_\_\_\_

II. Additionally, these are the IPD's **Desired Outcomes**:

- **Customer needs prompt fulfillment.**
- **Ensure regulation compliance.**
- **On time payment of all the financial obligations for procurements, repairs and transportation costs.**
- **Reduction of procurement, repair, and transportation costs.**

1. Do you agree with the above statement? Please define YES or NO: ...**YES**...

- i. If**YES** go to the next questions.
- ii. If**NO** please comment and then continue: \_\_\_\_\_

III. IPD **Strategic Objectives**:

1. Given the IPD **mission** and **Desired Outcomes** please answer the following:

a. Who do you think that is your customer? (Please highlight more than one if necessary):

- **The items' end-user (ultimate customer).**
- **The agency that submits the need requirement to IPD.**
- The Audit Agency.
- Other (please define).

2. Given the IPD **Mission** and **Desired Outcomes** please answer the following:

a. To better look to the previously identified customer(s) you need to (Please highlight more than one if necessary):

- **Lower the time the items reach the end user.**
- Ensure to the maximum extent possible the items' functionality.
- **Achieve the best possible item quality.**
- Reduce acquisition and repair costs.
- **Achieve timely and effective review of all the payment documents.**
- Other (please define).

b. To better ensure regulation compliance you need to (Please highlight more than one if necessary):

- **Enhance internal auditing process.**
- Ensure employee Knowledge of regulations.
- **Increase employees' skills and capabilities.**
- Other (Please define).

c. To achieve on time payment of all the financial obligations you need to (Please highlight more than one if necessary):

- **Achieve timely and effective review of all the payment documents.**
- Enhance internal auditing processes.
- Increase use of Information Technology.
- **Increase employees' skills and capabilities.**
- Other (Please define).

d. To achieve reduction of procurement, repair, and transportation costs you need to: (Please highlight more than one if necessary):

- **Achieve full and open competition to the maximum extent possible.**
- **Achieve economies of scale.**
- Other (Please define).

### **C. Strategy and Critical Processes**

In the following table (**Table 1**) the IPD most important internal processes that identified in the preliminary questionnaire are listed. Please look into these processes and answer the following:

1. Given the **IPD mission** and the previously identified **strategic objectives**, which of these processes you think that **directly contribute** (**critical processes**) to the achievement of the **desired outcomes** (e.g. improvement in one of the critical processes is expected to contribute directly to the achievement of the desired outcomes). (Please put a **criticality indicator (X)** next to the **important processes**)

2. If possible please put an **indicator of the chronological order (1=first, 2=second)** next to the identified important processes from the previous question (In case of processes that executed at the same time please use the same number):

**Table 1**

| IPD important Processes                                                        | Critical Process Indicator (X) | Chronological Order Indicator (1=first, 2=second...) | Comments (Process Code) |
|--------------------------------------------------------------------------------|--------------------------------|------------------------------------------------------|-------------------------|
| Requisitioning funds from Inventory Provision & Control Directorate.           | X                              | 1                                                    |                         |
| Preparing Solicitation Document.                                               | X                              | 2                                                    |                         |
| Publicizing Solicitation Document.                                             |                                |                                                      |                         |
| Monitoring negotiations.                                                       |                                |                                                      |                         |
| Issuing Contract award.                                                        | X                              | 3                                                    |                         |
| Placing Procurement orders.                                                    | X                              | 4                                                    |                         |
| Transferring funds to Naval Attaches and banks.                                | X                              | 5                                                    |                         |
| Collecting procurement documents.                                              | X                              | 6                                                    |                         |
| Reviewing procurement documents.                                               | X                              | 6                                                    |                         |
| Making payment proposal.                                                       | X                              | 10                                                   |                         |
| Submitting procurement and repair documents for audit.                         | X                              | 7                                                    |                         |
| Monitoring material deliveries.                                                | X                              | 6                                                    |                         |
| Making payments to freight forwarders.                                         | X                              | 9                                                    |                         |
| Collecting transportation documents.                                           | X                              | 8                                                    |                         |
| Reviewing transportation documents.                                            | X                              | 8                                                    |                         |
| Issuing Contract award for FMS programs.                                       | X                              | 1A                                                   |                         |
| Monitoring Naval Attaches' account balances.                                   | X                              | 10                                                   |                         |
| Approving repair cost.                                                         |                                |                                                      |                         |
| Ordering item shipment to the repair sites.                                    |                                |                                                      |                         |
| Placing FMS Procurement Orders.                                                | X                              | 2A                                                   |                         |
| Placing FMS Repair Orders.                                                     | X                              | 2A                                                   |                         |
| Tracking status of FMS cases (follow-up).                                      |                                |                                                      |                         |
| Handling the FMS discrepancy reporting System.                                 |                                |                                                      |                         |
| Informing departments about requisitioning status.                             |                                |                                                      |                         |
| Controlling Budget of FMS cases (Making payment proposal).                     | X                              | 4A                                                   |                         |
| Monitoring the repairable process via the FMS channel.                         | X                              | 3A                                                   |                         |
| Executing the repairable process via the FMS channel.                          |                                |                                                      |                         |
| Keeping informed the item Managers for any revision/change in the FMS process. |                                |                                                      |                         |
| <b>Other (please define)</b>                                                   |                                |                                                      |                         |

## D. Strategy and Key-Factors

In **Table 2** below the factors that may influence the IPD internal processes are listed. Please take into account these factors and answer the following:

1. Given the **mission**, **strategic objectives**, and **important processes**, which of the following factors you think that are most important (**key-success factors**) in determining whether IPD meets its objectives or achieves good performance (Please put a **key-success factor indicator (K)** next to the important factors):

**Table 2**

| <b>Important Factors</b>                                                                          | <b>Key-success factor Indicator (K)</b> | <b>Measurable factor Indicator (M)</b> | <b>Comments</b> |
|---------------------------------------------------------------------------------------------------|-----------------------------------------|----------------------------------------|-----------------|
| Available funds.                                                                                  | <b>K</b>                                | <b>M</b>                               |                 |
| Available means.                                                                                  |                                         |                                        |                 |
| Information Technology.                                                                           |                                         |                                        |                 |
| Leadership.                                                                                       |                                         |                                        |                 |
| Empowerment.                                                                                      |                                         |                                        |                 |
| Communications.                                                                                   | <b>K</b>                                |                                        |                 |
| Employee turnover.                                                                                | <b>K</b>                                | <b>M</b>                               |                 |
| Employee commitment.                                                                              | <b>K</b>                                | <b>M</b>                               |                 |
| Employee responsibility.                                                                          | <b>K</b>                                |                                        |                 |
| Employee qualifications                                                                           |                                         |                                        |                 |
| Employee satisfaction                                                                             | <b>K</b>                                |                                        |                 |
| Access to information.                                                                            | <b>K</b>                                | <b>M</b>                               |                 |
| <u>Exogenous factors:</u><br><b>Emergency Procurements</b><br><b>Procurement Policy by (HNGS)</b> | <b>K</b><br><b>K</b>                    |                                        |                 |
| <b>Other (please define).</b>                                                                     |                                         |                                        |                 |

2. Which of the above-identified **key-factors** you think that they can be controlled and measured? (Go back to **table 2** and put a **measurable factor indicator (M)** next to those **key-factors** that you think that can be controlled and measured).

3. Are the above-identified **key-factors** linked in any way with the previously identified important processes? (e.g. Does an improvement in one area lead to improvement in other areas? If so, can you match them):

| <b>IMPROVEMENT IN:</b>  | <b>COULD IMPROVE:</b>          |
|-------------------------|--------------------------------|
| Available funds         | 1,5,6,7,10,13,16, 20,21        |
| Communications          | 2,6,7,10,12,14,17,20,21,26     |
| Access to information   | 2,8,12,14,17,25,26             |
| Employee responsibility | 2,5,6,8,9,10,12,14,15,17,20,21 |
| Employee Turnover       | 2,6,9,10,11,12,15,17, 26       |
| Employee commitment     | 2,6,9,10,11,12,15,17, 26       |
| <b>Other</b>            |                                |

**Comments** \_\_\_\_\_

**End of first questionnaire.**

**Thank you very much for your participation!**  
**Your contribution is quite important to this research!**

## A. Respondent Demographics:

1. Name: [REDACTED] (Intentionally covered).
  2. Rank: **Lieutenant**
  3. Specialty: **Supply Officer**
  4. Level of Education (please highlight):
    - a. High School
    - b. College
    - c. **Bachelor degree**
    - d. Master's degree
    - e. Post-graduate/Doctorate
  5. Current position: **Hellenic Navy Supply Center,  
International Procurements Department**
  6. Number of months in current position: **Nine (9)**
  7. Phone number: [REDACTED] (Intentionally covered).
  8. E-mail: [REDACTED] (Intentionally covered).
  9. Please describe briefly your current duties: **Contract Manager**
- Comments:** \_\_\_\_\_

## B. Mission and Strategy

I. According to the preliminary questionnaire the **Mission** of the International Procurement Department (IPD) is the following:  
**'To procure spare parts and minor systems from sources (manufacturers and vendors) outside the country, for fulfilling the Hellenic Navy's specific needs through the following methods:**

- A. International Competitions.**
- B. Sole Source Procurements.**
- C. International Agreements '**

1. Do you agree with the above statement? Please define YES or NO: **YES**
  - i. If **YES** go to the next statement.
  - ii. If **NO** please comment and then continue: \_\_\_\_\_
- II. Additionally, these are the IPD's **Desired Outcomes**:
  - **Customer needs prompt fulfillment.**
  - **Ensure regulation compliance.**
  - **On time payment of all the financial obligations for procurements, repairs and transportation costs.**
  - **Reduction of procurement, repair, and transportation costs.**
1. Do you agree with the above statement? Please define YES or NO: **YES**
  - i. If **YES** go to the next questions.
  - ii. If **NO** please comment and then continue: \_\_\_\_\_

### III. IPD Strategic Objectives:

1. Given the IPD mission and Desired Outcomes please answer the following:

a. Who do you think that is your customer? (Please highlight more than one if necessary):

- The items' end-user (ultimate customer).
- **The agency that submits the need requirement to IPD.**
- **The Audit Agency.**
- Other (please define).

2. Given the IPD Mission and Desired Outcomes please answer the following:

a. To better look to the previously identified customer(s) you need to (Please highlight more than one if necessary):

- **Lower the time the items reach the end user.**
- Ensure to the maximum extent possible the items' functionality.
- **Achieve the best possible item quality.**
- Reduce acquisition and repair costs.
- Achieve timely and effective review of all the payment documents.
- Other (please define).

b. To better ensure regulation compliance you need to (Please highlight more than one if necessary):

- **Enhance internal auditing process.**
- **Ensure employee Knowledge of regulations.**
- **Increase employees' skills and capabilities.**
- Other (Please define).

c. To achieve on time payment of all the financial obligations you need to (Please highlight more than one if necessary):

- **Achieve timely and effective review of all the payment documents.**
- Enhance internal auditing processes.
- **Increase use of Information Technology.**
- Increase employees' skills and capabilities.
- Other (Please define).

d. To achieve reduction of procurement, repair, and transportation costs you need to: (Please highlight more than one if necessary):

- **Achieve full and open competition to the maximum extent possible.**
- **Achieve economies of scale.**
- Other (Please define).

## C. Strategy and Critical Processes

In the following table (**Table 1**) the IPD most important internal processes that identified in the preliminary questionnaire are listed. Please look into these processes and answer the following:

2. If possible please put an **indicator of the chronological order (1=first, 2=second)** next to the identified important processes from the previous question (In case of processes that executed at the same time please use the same number):

**Table 1**

| <b>IPD important Processes</b>                                                 | <b>Critical Process Indicator (X)</b> | <b>Chronological Order Indicator (1=first, 2=second...)</b> | <b>Comments (Process Code)</b> |
|--------------------------------------------------------------------------------|---------------------------------------|-------------------------------------------------------------|--------------------------------|
| Requisitioning funds from Inventory Provision & Control Directorate.           | X                                     | 1                                                           |                                |
| Preparing Solicitation Document.                                               | X                                     | 2                                                           |                                |
| Publicizing Solicitation Document.                                             |                                       |                                                             |                                |
| Monitoring negotiations.                                                       |                                       |                                                             |                                |
| Issuing Contract award.                                                        | X                                     | 3                                                           |                                |
| Placing Procurement orders.                                                    | X                                     | 4                                                           |                                |
| Transferring funds to Naval Attaches and banks.                                | X                                     | 5                                                           |                                |
| Collecting procurement documents.                                              | X                                     | 6                                                           |                                |
| Reviewing procurement documents.                                               | X                                     | 6                                                           |                                |
| Making payment proposal.                                                       | X                                     | 10                                                          |                                |
| Submitting procurement and repair documents for audit.                         | X                                     | 7                                                           |                                |
| Monitoring material deliveries.                                                | X                                     | 6                                                           |                                |
| Making payments to freight forwarders.                                         | X                                     | 9                                                           |                                |
| Collecting transportation documents.                                           | X                                     | 8                                                           |                                |
| Reviewing transportation documents.                                            | X                                     | 8                                                           |                                |
| Issuing Contract award for FMS programs.                                       | X                                     | 1A                                                          |                                |
| Monitoring Naval Attaches' account balances.                                   | X                                     | 10                                                          |                                |
| Approving repair cost.                                                         |                                       |                                                             |                                |
| Ordering item shipment to the repair sites.                                    |                                       |                                                             |                                |
| Placing FMS Procurement Orders.                                                | X                                     | 2A                                                          |                                |
| Placing FMS Repair Orders.                                                     | X                                     | 2A                                                          |                                |
| Tracking status of FMS cases (follow-up).                                      |                                       |                                                             |                                |
| Handling the FMS discrepancy reporting System.                                 |                                       |                                                             |                                |
| Informing departments about requisitioning status.                             |                                       |                                                             |                                |
| Controlling Budget of FMS cases (Making payment proposal).                     | X                                     | 4A                                                          |                                |
| Monitoring the repairable process via the FMS channel.                         | X                                     | 3A                                                          |                                |
| Executing the repairable process via the FMS channel.                          |                                       |                                                             |                                |
| Keeping informed the item Managers for any revision/change in the FMS process. |                                       |                                                             |                                |
| <b>Other (please define)</b>                                                   |                                       |                                                             |                                |

## D. Strategy and Key-Factors

In **Table 2** below the factors that may influence the IPD internal processes are listed. Please take into account these factors and answer the following:

- Given the **mission**, **strategic objectives**, and **important processes**, which of the following factors you think that are most important (**key-success factors**) in determining whether IPD meets its objectives or achieves good performance (Please put a **key-success factor indicator (K)** next to the important factors):

**Table 2**

| Important Factors                                       | Key-success factor Indicator (K) | Measurable factor Indicator (M) | Comments |
|---------------------------------------------------------|----------------------------------|---------------------------------|----------|
| Available funds.                                        | K                                | M                               |          |
| Available means.                                        |                                  |                                 |          |
| Information Technology.                                 |                                  |                                 |          |
| Leadership.                                             |                                  |                                 |          |
| Empowerment.                                            |                                  |                                 |          |
| Communications.                                         | K                                |                                 |          |
| Employee turnover.                                      | K                                | M                               |          |
| Employee commitment.                                    | K                                | M                               |          |
| Employee responsibility.                                | K                                |                                 |          |
| Employee qualifications                                 |                                  |                                 |          |
| Employee satisfaction                                   | K                                |                                 |          |
| Access to information.                                  | K                                | M                               |          |
| <u>Exogenous factors:</u> <b>Emergency Procurements</b> | K                                |                                 |          |
| <b>Procurement Policy by (HNGS)</b>                     | K                                |                                 |          |
| <b>Other (please define).</b>                           |                                  |                                 |          |

- Which of the above-identified **key-factors** you think that they can be controlled and measured? (Go back to **table 2** and put a **measurable factor indicator (M)** next to those **key-factors** that you think that can be controlled and measured).
- Are the above-identified **key-factors** linked in any way with the previously identified important processes? (e.g. Does an improvement in one area lead to improvement in other areas? If so, can you match them):

| IMPROVEMENT IN:         | COULD IMPROVE:                 |
|-------------------------|--------------------------------|
| Available funds         | 1,5,6,7,10,13,16, 20,21        |
| Communications          | 2,6,7,10,12,14,17,20,21,26     |
| Access to information   | 2,8,12,14,17,25,26             |
| Employee responsibility | 2,5,6,8,9,10,12,14,15,17,20,21 |
| Employee Turnover       | 2,6,9,10,11,12,15,17, 26       |
| Employee commitment     | 2,6,9,10,11,12,15,17, 26       |
| <b>Other</b>            |                                |

Comments \_\_\_\_\_

**End of first questionnaire.**

**Thank you very much for your participation!  
Your contribution is quite important to this research!**

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## APPENDIX C. SECOND QUESTIONNAIRE

Below there is a set of performance measures that is suggested to be incorporated in the IPD's BSC model. The metrics are classified in the four strategic themes (Customers, Internal Processes, Financial, and People) that comprise the IPD's BSC framework. Each metric is tailored to a specific objective that is associated with a desired outcome, strategic objective, critical process, or key-factor. In some of the cases a combination of metrics is suggested for better monitoring performance against a specific objective. Finally, next to each set of measures a generic measurement method that has been identified in literature is suggested for facilitating the implementation of the model.

Please taking into account IPD's conditions, the interrelationships among desired outcomes, strategic objectives, critical processes, and key-factors have a look on the metrics and answer the questions at the end of each set of measures.

### A. Customer Perspective Measures

#### 1. Desired Outcomes Oriented:

| Objective                          | Measure                                                  | Coding | Measurement Method                                                                                                                                                           |
|------------------------------------|----------------------------------------------------------|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Customer needs prompt fulfillment. | a. Percentage of customers satisfied with delivery time. | CDM1a  | <ul style="list-style-type: none"> <li>- Setting objective and attainable goal.</li> <li>- Customer sampling survey.</li> <li>- Benchmarking on past performance.</li> </ul> |
|                                    | b. Percentage of customers satisfied with item quality.  | CDM1b  |                                                                                                                                                                              |

#### 2. Strategic Objectives Oriented:

| Objective            | Measure                                                                                                               | Coding | Measurement Method                                                                                                                                                              |
|----------------------|-----------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. On time delivery. | Percentage of cases (procurement, repair, FMS) where contractual delivery date meets actual delivery/acceptance date. | CSM1   | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |
| 2. Increase quality. | a. Percentage of defective products reaches the end user.                                                             | CSM2a  | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |
|                      | b. Percentage of defective shipments.                                                                                 | CSM2b  |                                                                                                                                                                                 |

#### 3. Critical Processes Oriented:

| Process                         | Objective         | Measure                                                                                                                                                                           | Coding | Measurement Method                                                                                                                                                              |
|---------------------------------|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Monitoring material deliveries. | On time delivery. | a. Percentage of delayed shipments.                                                                                                                                               | CPM1a  | <ul style="list-style-type: none"> <li>- Setting objective and attainable goals.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul> |
|                                 |                   | b. Percentage of materials delivered on contractual time in a specific period of time in relation to the total number of the materials delivered (monthly, quarterly, or yearly). | CPM1b  |                                                                                                                                                                                 |

Do you agree with the above-suggested measures? Please define YES or NO: **YES**

If **YES** go to the next set of measures.

If **NO** please make the necessary adjustments, deletions, or additions.

**Additional comments:** VERY GOOD!

## B. Internal Processes Perspective Measures

### 1. Desired Outcomes Oriented:

| Objective                 | Measure                                                                                                                                                                                                                                                                                                                                                                                                                    | Coding                                    | Measurement Method                                                                                                               |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|
| 1. Regulation compliance. | <p>a. Percentage of cases submitted for audit within predetermined time target in relation to the total cases submitted for audit in a specific period of time (monthly, quarterly, or yearly).</p> <p>b. Percentage of cases submitted for audit on time, right, the first time (without protests for faults or mistakes) in relation to the total cases submitted for audit on time (monthly, quarterly, or yearly).</p> | <p><b>IPDM1a</b></p> <p><b>IPDM1b</b></p> | <p>- Setting objective and attainable goals.</p> <p>- Generating database in IPD.</p> <p>- Benchmarking on past performance.</p> |
| 2. On time payments.      | <p>a. Percentage of cases where contractual payment date meets actual payment date.</p> <p>b. Percentage of payment interest paid for payment delays in relation to the total payments (in money value) made in one year.</p>                                                                                                                                                                                              | <p><b>IPDM2a</b></p> <p><b>IPDM2b</b></p> | <p>- Setting objective and attainable goals.</p> <p>- Generating database in IPD.</p> <p>- Benchmarking on past performance.</p> |

### 2. Strategic Objectives Oriented:

| Objective                                  | Measure                                                                                                                                                                                                                                                                                                                                                                                                     | Coding                                                         | Measurement Method                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Enhance internal auditing.              | <p>a. Extent to which employees involved in internal auditing meet pre-established standards of training, knowledge and experience in each position.</p> <p>b. Ratio of daily time spent for correcting mistakes in documents submitted to manager for approval (and returned back for corrections) to total daily time spent for preparing documents for submitting documents to manager for approval.</p> | <p><b>IPSM1a</b></p> <p><b>IPSM1b</b></p>                      | <p>- Setting qualification standards.</p> <p>- Employee survey.</p> <p>- Employee training.</p> <p>- Setting objective and attainable goals.</p> <p>- Generating database in IPD.</p> <p>- Benchmarking on past performance.</p>                                                                                                                                                 |
| 2. Timely & effective review of documents. | Percentage of cases reviewed effectively the first time within predetermined time targets in relation to the total cases reviewed in a specific period of time (monthly, quarterly, or yearly).                                                                                                                                                                                                             | <b>IPSM2</b>                                                   | <p>- Setting objective and attainable goals.</p> <p>- Generating database in IPD.</p> <p>- Benchmarking on past performance.</p>                                                                                                                                                                                                                                                 |
| 3. Increase use of IT.                     | <p>a. Percentage of daily transactions made through the use of IT in relation to the total daily transactions made.</p> <p>b. Extent to which employees involved in IPD activities have been trained in using IT transactions.</p> <p>c. The difference in the investment made for IT between current year and previous year divided by the investment made in previous year.</p>                           | <p><b>IPSM3a</b></p> <p><b>IPSM3b</b></p> <p><b>IPSM3c</b></p> | <p>- Setting objective and attainable goals.</p> <p>- Generating database in IPD</p> <p>- Benchmarking on past performance.</p> <p>- Setting training goals.</p> <p>- Employee survey.</p> <p>- Employee training.</p> <p>- Benchmarking on past performance.</p> <p>-Setting a long-term IT investment plan taking into account market capabilities, prices, and inflation.</p> |

### 3. Critical Processes Oriented:

| Process                  | Objective                   | Measure                                                                                                                                                                                                | Coding | Measurement Method                                                                                                |
|--------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------|
| 1. Requisitioning Funds. | a. Timeliness.              | Percentage of requisitions issued and submitted within predetermined time target in relation to the total requisitions issued in a specific period of time (monthly, quarterly, or yearly).            | IPPM1a | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance. |
|                          | b. Accuracy & Thoroughness. | Percentage of requisitions issued on time, right, the first time (without any further correction) in relation to the requisitions issued in a specific period of time (monthly, quarterly, or yearly). | IPPM1b |                                                                                                                   |
| 2. Collecting documents. | Timeliness.                 | Percentage of pertinent procurement and repair documents collected within predetermined time in relation to the total pertinent documents collected (monthly, quarterly, or yearly).                   | IPPM2  | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance  |
| 3. Reviewing documents   | Timeliness & Accuracy       | Percentage of cases reviewed right, the first time, within predetermined time targets in relation to the total cases reviewed in a specific period of time (monthly, quarterly, or yearly).            | IPPM3  | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance. |

#### 4. Key-Factors Oriented:

| <b>Factor</b>      | <b>Objective</b>                  | <b>Measure</b>                                                                                                                                                                                                                                                                                                                                            | <b>Coding</b>                                                      | <b>Measurement Method</b>                                                                                                                                                                                                                                             |
|--------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Communications. | Availability<br>&<br>Reliability. | a. Percentage of times employees were satisfied with the communication systems they made use in relation to the total times they made use of the systems for accomplishing their tasks.<br><br>b. The difference in the investment made for communication systems between current year and previous year divided by the investment made in previous year. | <b>IPFM1a</b><br><br><br><br><br><br><br><br><br><br><b>IPFM1b</b> | - Setting objective and attainable goals.<br>- Employee survey.<br>- Generating database in IPD.<br>- Benchmarking on past performance.<br><br>-Setting a long-term investment plan in communications taking into account market capabilities, prices, and inflation. |

Do you agree with the above-suggested measures? Please define YES or NO: **YES**

If **YES** go to the next set of measures.

If **NO** please make the necessary adjustments, deletions, or additions.

**Additional comments:** VERY GOOD! However, possible problems may occur in case of serious budget reductions, for unknown or unpredictable cases (War, Olympic Games, etc). In that case, it is rather difficult to requisition funds, based on a model. A contingency plan might be helpful.

### C. Financial Perspective Measures

#### 1. Desired Outcomes Oriented:

| Objective          | Measure                                                                 | Coding      | Measurement Method                                                                                                |
|--------------------|-------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------|
| 1. Cost reduction. | Savings realized by switching from sole source to competitive strategy. | <b>FDM1</b> | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance. |

#### 2. Strategic Objectives Oriented:

| Objective                      | Measure                                                                                                                                                                                                                                                                     | Coding      | Measurement Method                                                                                                |
|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------|
| 1. Full and open competition.  | Ratio of procurement or repair cases made through competition to procurement or repair cases made through sole source (monthly, quarterly, or yearly).                                                                                                                      | <b>FSM1</b> | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance. |
| 2. Achieve economies of scale. | a. Ratio of total line items over total procurement cases in current period to line items over cases in previous period (monthly, quarterly, or yearly).<br>b. Percentage of consolidating requirements in relation to the total requirements (monthly, quarterly, yearly). | <b>FSM2</b> | - Setting objective and attainable goals.<br>- Generating database in IPD<br>- Benchmarking on past performance.  |

#### 3. Critical Processes Oriented:

| Process                                | Objective                                     | Measure                                                                                       | Coding      | Measurement Method                                                                                                |
|----------------------------------------|-----------------------------------------------|-----------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------|
| 1. Publicizing solicitation documents. | Increase the number of contractors solicited. | Savings realized by increasing the number of contractors solicited for the same procurements. | <b>FPM1</b> | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance. |

#### 4. Key-Factors Oriented

| Factor              | Objective          | Measure                                                                                                                                                                            | Coding      | Measurement Method                                                                                                |
|---------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|-------------------------------------------------------------------------------------------------------------------|
| 1. Available funds. | Fund availability. | Ratio of funds available in hand for procurements or repairs in the beginning of the period to funds actually consumed at the end of the same period (monthly, quarterly, yearly). | <b>FFM1</b> | - Setting objective and attainable goals.<br>- Generating database in IPD.<br>- Benchmarking on past performance. |

Do you agree with the above-suggested measures? Please define YES or NO: **YES**

If **YES** go to the next set of measures.

If **NO** please make the necessary adjustments, deletions, or additions.

**Additional comments:** VERY GOOD!

## D. People Perspective Measures

### 1. Strategic Objectives Oriented:

| Objective                                      | Measure                                                                                                                                     | Coding | Measurement Method                                                                                                                                                                          |
|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Improve employees' skills and capabilities. | Extent to which IPD employees involved in IPD activities meet pre-established qualification standards in each position.                     | PSM1   | <ul style="list-style-type: none"> <li>- Setting qualification standards.</li> <li>- Employee survey.</li> <li>- Employee training.</li> <li>- Benchmarking on past performance.</li> </ul> |
| 2. Improve employees' knowledge.               | Extent to which IPD employees involved in IPD activities meet pre-established knowledge standards of laws and regulations in each position. | PSM2   | <ul style="list-style-type: none"> <li>- Setting qualification standards.</li> <li>- Employee survey.</li> <li>- Employee training.</li> <li>- Benchmarking on past performance.</li> </ul> |

### 2. Key-Success Factors Oriented:

| Factor                      | Objective                                | Measure                                                                                                                                                       | Coding | Measurement Method                                                                                                                                                                                                                  |
|-----------------------------|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1. Employee commitment.     | Improve commitment.                      | Extent to which employees involved in IPD activities feel satisfied and induced in each position.                                                             | PFM1   | <ul style="list-style-type: none"> <li>- Setting satisfaction rate goals</li> <li>- Employee survey.</li> <li>- Employee intrinsic incentives.</li> <li>- Benchmarking on past performance.</li> </ul>                              |
| 2. Employee responsibility. | Improve Responsibility.                  | Extent to which employees involved in IPD activities held accountable for their actions with respect to compliance with laws and regulations.                 | PFM2   | <ul style="list-style-type: none"> <li>- IPD management assessment of current management control system.</li> <li>- Employee survey.</li> <li>- IPD management initiatives.</li> <li>- Benchmarking on past performance.</li> </ul> |
| 3. Access to information.   | Improve access to strategic information. | a. Ratio of the times employees get accurate, timely, and complete information to the total times asked for this information (monthly, quarterly, or yearly). | PFM3a  | <ul style="list-style-type: none"> <li>- Setting access to information goal.</li> <li>- Employee survey.</li> <li>- Generating database in IPD.</li> <li>- Benchmarking on past performance.</li> </ul>                             |
|                             |                                          | b. The difference in the investment made for information systems between current year and previous year divided by the investment made in previous year.      | PFM3b  | <ul style="list-style-type: none"> <li>-Setting a long-term investment plan in information systems taking into account market capabilities, prices, and inflation rates.</li> </ul>                                                 |

Do you agree with the above-suggested measures? Please define YES or NO: **YES**

If **NO** please make the necessary adjustments, deletions, or additions.

**Additional comments:** VERY GOOD!

**End of second questionnaire.**

**Thank you very much for your participation!**  
**Your contribution is quite important to this research!**

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## LIST OF REFERENCES

- Abernethy, Margaret A., Horne, Malcolm, Lillis, Anne M., Malina, Mary and Selto, Frank, *Building Casual Performance Models from Qualitative Data*, 2002.
- Babbie, Earl R. and Huitt, Robert E., *The Practice of Social Research*, Belmont, California, 1983.
- Department of Energy Website, “Balanced Scorecard Homepage”, [<http://www.pr.doe.gov/>], January 2003.
- Euske, K. J., Frause, Norm, Peck, Tom, Rosenstiel and Schreck, Bruce Steve, *Service Process Measurement: Breaking the Code*, CAM-I, 1998.
- Fitzgerald, Lin, Johnston, Robert, Brignall, Stan, Silvestro, Rhian and Voss, Christopher, *Performance Measurement in Service Business*, CIMA, 1993.
- Hellenic Navy General Staff, *Official Web Page*, [<http://www.hellenicnavy.gr/>], January 2003.
- International Procurement Department, *Memorandum of Operations*, August 1991.
- Kaplan, Robert S. and Norton, David P., *Putting the Balanced Scorecard to Work*, Harvard Business Review, September – October, 1993, Harvard Press, 1993.
- Kaplan, Robert S. and Norton, David P., *The Balanced Scorecard*, Harvard Business School Press, 1996.
- Kaplan, Robert S. and Norton, David P., *The Strategy-Focused Organization*, Harvard Business School Press, 2000.
- Lawler, Edward E., *From the Ground Up*, Jossey-Bass Publishers, San Francisco, 1996.
- Lynch, Richard L. and Cross, Kelvin F., *Measure Up*, Blackwell Business, 1995.
- Neely, Andy and Walters, Angela, *Performance Measurement and Management: Research and Action*, Boston, USA, July 2002.
- Procurement Executives’ Association, *Guide to a Balanced Scorecard Performance Management Methodology*, [<http://oamweb.osec.doc.gov/bsc/guide.htm>], January 2003.
- Schneiderman, A., *Why Balanced Scorecard Fail*, Journal of Strategic Performance Measurement, January 1999.
- Simons, Robert, *Performance Measurement & Control Systems for Implementing Strategy*, Prentice Hall, 2000.

The Balanced Scorecard Institute Website, [<http://www.balancedscorecard.org/>], January 2003.

Tsiakiris, Georgios, *Examination of the Readiness of Two Units of the Hellenic Navy to Implement Activity Based Cost Management (ABCM)*, December 2000.

U.S. Printing Office, *The Government Performance and Results Act of 1993*, (103<sup>rd</sup> Congress of the United States of America), 1993.

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