

THE CAPABILITY MATURITY MODEL AS A CRIMINAL JUSTICE PROCESS  
IMPROVEMENT PARADIGM

by

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## ABSTRACT AND SUMMARY

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Title: THE CAPABILITY MATURITY MODEL AS A CRIMINAL JUSTICE PROCESS  
IMPROVEMENT PARADIGM

### EXECUTIVE SUMMARY

Background: The administrators, managers, and leaders of criminal justice organizations experience a plethora of processes that impact the strategic, tactical, and operational facets of their respective organizations. Sound processes are central to effectively and efficiently managing criminal justice organizations and for facilitating the optimal operations of the organization. Such management characteristics are necessary to render public services towards the goals of deterring crime and maintaining societal order.

Administering and managing criminal justice organizations involves paradigms that favor process improvement and quality of processes. Existing methods include the Compstat paradigm Total Quality Management, business process management, business process improvement, business process reengineering, standards, legislation, policy, and Six Sigma. However, such paradigms not approach process improvement from the unique perspective of process maturity as a foundational basis. Additionally, no solitary foundational basis exists that uniquely addresses organizational process improvement issues, regarding criminal justice entities, from the perspective of evolutionary process maturation through time.

This research examines the potential of adapting the Capability Maturity Model Integrated (CMMi) as a foundational process improvement framework among criminal justice organizations. Within the CMMi framework, process improvement begins from a state of random, ad hoc processes and culminates in a state of highly optimized

processes. Through time, process maturation occurs through five primary stages sequentially: 1) random, 2) managed, 3) defined/specific, 4) quantitatively managed, and 5) optimized. This research explores the potential of leveraging the CMMi paradigm as a form of organizational process improvement within the criminal justice domain.

Scope of the Study: This research investigated the potential for adapting the Capability Maturity Model (Integrated) (CMMi) within the criminal justice domain. A derivative maturity model framework, the Criminal Justice Maturity Model (CJMM), was crafted using the CMMi concept as its foundational premise. A Likert scale survey was implemented to investigate the perceptions of personnel regarding process improvement initiatives and their work settings. This study was constrained to the criminal justice domains of the states of Alabama and Mississippi. Data processing encompassed demographic descriptions of the survey instrument and the received responses, ANOVA, Chi-Square analysis, and the Cronbach Method. Stratifications involved separating the survey responses into classifications of Alabama versus Mississippi entities, urban versus rural entities, and management versus non-management entities.

Findings and Conclusions: The conclusions of this research failed to show that all five levels of the maturity model framework appear to be separately perceived among the respondents. Therefore, per each individual stage of the maturity model framework, this research failed to show conclusively that the complete maturity model framework is adaptable among administrative settings in the criminal justice domain and that process maturity issues among respondent settings are addressed via a process maturity framework. Because this research failed to show the perceived characteristics of all five maturity levels of the maturity model framework separately, it is concluded that the criminal justice administrative settings of the respondents do not conform completely to the tenets of the CMMi paradigm. Future studies were recommended to pursue additional approaches of this research project. This study represents an initial starting point from which several future endeavors may be initiated.

Key Terms: Administrative Process; Capability Maturity Model; CMM; CMMi; Law Enforcement Organization; Maturity Model; Police Science; Process; Process Improvement; Process Maturity

## ACRONYMS

AL	Alabama
ANOVA	Analysis of Variance
BCSD	Broward County Sheriff's Department
BPI	Business Process Improvement
BPM	Business Process Management
BPR	Business Process Reengineering
CDR	Colorado Department of Revenue
CJMM	Criminal Justice Maturity Model
CMM	Capability Maturity Model
CMMi	Capability Maturity Model Integrated
DMAIC	Define, Measure, Analyze, Improve, and Control
IACP	International Association of Chiefs of Police
IBM	International Business Machines
ISO	International Organization for Standards
LIMS	Laboratory Information Management System
MCSD	Monroe County Sheriff's Department
MS	Mississippi
NYPD	New York Police Department
PETS	Property and Evidence Tracking System
PCMM	People Capability Maturity Model
SBSD	San Bernadino Sheriff's Department
SCAN	Scientific Content Analysis
SGMM	Smart Grid Maturity Model
SD	Standard Deviation
SOP	Standard Operating Procedure
SPD	Sacramento Police Department
TQM	Total Quality Management
TWPD	Tacoma Washington Police Department
USD	U.S. Dollars
VPD	Ventura Police Department
WDNE	Wisconsin Division of Narcotics Enforcement

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This doctoral dissertation would neither have been possible nor exist without the guidance and blessings of Almighty God. Without His assistance, inspiration, and benevolence, completing this research would have been impossible. Micah 6:8 – “He hath shewed thee, O man, what is good; and what doth the Lord require of thee, but to do justly, and to love mercy, and to walk humbly with thy God?”

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## KEY TERMS

Administrative Process

Alabama Law Enforcement

Capability Maturity Model

CMMi

Law Enforcement Organization

Level 1 – Initial

Level 2 – Repeatable

Level 3 – Defined

Level 4 – Managed

Level 5 – Optimizing

Maturity Framework

Maturity Model

Mississippi Law Enforcement

Process

Process Improvement

Process Maturity

## CHAPTER 1

### INTRODUCTION AND METHODOLOGICAL DESCRIPTION

#### 1.1 INTRODUCTION

The administrators, managers, and leaders of criminal justice organizations experience a plethora of administrative and human resources processes that impact the strategic, tactical, and operational facets of their respective organizations. Sound processes are central to effectively and efficiently managing criminal justice organizations and for facilitating the optimal operations of the organization. Such management characteristics are necessary to render public services toward the goals of deterring crime and maintaining societal order.

Law enforcement agencies necessitate sound management paradigms and practices to produce effective and efficient work environments and processes through which they service their respective communities and stakeholders. Within the justice system, examples of such approaches include the implementation of the Compstat paradigm as a management and statistical resource (Henry, 2002:248), the use of business process reengineering to refine processes (Chu, 2001:51), business process improvement using balanced scorecards and process mapping (Wiseman, 2011:4), compliance with International Organization for Standards (ISO) requirements (Stauffer & Bonfanti, 2006:128), and instantiations of Total Quality Management (TQM) as a cumulative approach to quality management (Gaines & Worrall, 2012:137). Additional paradigms include using organizational policy to guide law enforcement practices and processes (McElreath, Doss, Jensen, Wigginton, Kennedy, Winter, Mongue, Bounds, & Estis-Sumerel, 2013:192) and the use of Six-Sigma as a resource through which the efficiency and effectiveness of law enforcement entities are managed and improved (Christian & Drilling, 2010:79).

Administrating and managing criminal justice organizations involves paradigms that favor process improvement and quality of processes. For example, the Compstat paradigm is used among American law enforcement organizations (e.g., New York, Chicago, etc.) to improve managed environments that impact organizational processes (Henry, 2002:273). Examples of Alabamian instantiations of Compstat are found within the Montgomery Police Department and the Tuscaloosa Police Department (Flanagan, 2010:1; Dorriety, 2005:1). An example of the Mississippian instantiation of Compstat is found within the Jackson Police Department (Rayman, 2013:24).

Compstat is a management philosophy and paradigm that originated with the New York Police Department (Henry, 2002:4). It facilitates the use of statistical analysis and management methods to generate organizational improvements in the functioning and managing of law enforcement organizations. Using these methods provides a means of interjecting accountability within the managerial ranks among law enforcement organizations that adopt the Compstat paradigm.

Within the United States, the Police Foundation conducted a national study in which it was determined that Compstat was implemented among approximately one-third of law enforcement organizations that employed over 100 police officers, and an additional 26% were anticipating the implementing of Compstat (Willis, Mastrofski, Weisburd, & Greenspan, 2003:1). Weisburd, Mastrofski, Greenspan, and Willis (2004:6) also examine the national rates from the perspective of small and large law enforcement organizations. These findings are presented within the following table:

Table 1.1 – Compstat Adoption Rates

Department Size	Percent Yes	Percent No, But Planning	Percent No
Small (50-99 Sworn)	11.0	29.3	59.8
Large (100 + Sworn)	32.6	25.6	41.8

Various paradigms exist through which justice system entities may facilitate process improvement endeavors. Law enforcement organizations may adopt the principles of

Total Quality Management (Doss, Guo, & Lee, 2011:178). Additional paradigms include the uses of business process management (BPM) (Fischer, 2007:81), business process reengineering (BPR) (Chu, 2001:27), benchmarking (Lamberth, 2008:13), standards (Gaines & Miller, 2012:171), Six Sigma (Furterer, 2009:80), legislation (Snell & Bohlander, 2012:481), and policy (Cole, Smith, & DeJong, 2013:557).

These paradigms present varying approaches to management and administration among law enforcement organizations and within the justice system. Through the use of such paradigms, the effectiveness and efficiency of operations may be bolstered through the use of statistical analysis, definitive process delineations, management according to the influences of service quality, the use of expressed law to dictate acceptable practices, and methods through which resource allocation is optimized mathematically to facilitate the highest and best use of organizational resources. However, none of these paradigms addresses the notion of improving the maturity of organizational processes, through time via an evolutionary model, to yield a highly efficient and optimized law enforcement process infrastructure. This research investigates the potential of such a paradigm.

## **1.2 REVIEW OF THE EXISTING PARADIGMS**

Benchmarking is a form of quantitatively comparing and contrasting the performance of an organization against its historical performance(s) or against the performances of different organizations (Levy & Valcik, 2012:112). Observations made during benchmarking may be used to generate organizational improvements ranging from operational efficiency to financial management practices (Vasigh, Fleming, & MacKay, 2010:168).

Business process improvement (BPI) is a method of improving and controlling organizational processes through time (Jeston & Nelis, 2008:15). BPI facilitates improvements of efficiency and effectiveness regarding organizational processes (Jeston & Nelis, 2008:12). BPI also contributes toward the optimizing of organizational processes (Jeston & Nelis, 2008:236).

Business process management (BPM) is a method of examining organizational processes from a variety of perspectives to facilitate process improvement and performance improvement among organizations (Weske, 2012:4).

Business process reengineering (BPR) involves the improving of existing organizational processes (Mohapatra, 2013:5). Existing organizational processes may be redesigned to facilitate improvements in efficiency and effectiveness (Mohapatra, 2013:246).

Legislative actions occur among national, tribal, regional, state, county, and local government entities. Among municipalities, the activities of justice system entities and law enforcement organizations must adhere to existing laws (Hess, 2009:117).

Total Quality Management (TQM) represents a management philosophy that facilitates organizational process improvement endeavors via the considering of quality management tenets ranging from the advocacy of empowering personnel to the proactive participating of organizational personnel during organizational activities (Dempsey & Forst, 2012:75).

Policies reflect the acceptable versus unacceptable actions, activities, and endeavors that may occur within an organization (Whitman & Mattord, 2012:91). Each law enforcement organization is unique (Doss, et al., 2011:152). Therefore, law enforcement organizations must craft policies that address the specific characteristics of their unique organizational setting.

The Six Sigma paradigm addresses process improvement by determining and eliminating organizational attributes that contribute toward defectiveness and by controlling process variability (Harry, Mann, De Hodgins, Hulbert, & Lacke, 2011:1). Quantitatively, the Six Sigma method incorporates the use of statistics to examine and control process variability (Harry, et al., 2011:119).

Standards represent some minimum criteria that must be satisfied in order for an entity to be deemed acceptable (Dandy, Walker, Daniell, & Warner, 2008:79). Standards may be either subjective or specifically defined according to some qualitative or quantitative constraints (Montana & Charnov, 2008:161). Because of the uniqueness of state laws

affecting American law enforcement organizations, the standards affecting law enforcement entities may differ (McElreath, et. al., 2013:178).

### **1.3 RATIONALE AND MOTIVATION OF THE RESEARCH STUDY**

The criminal justice literature shows no existing paradigm that uniquely approaches process improvement within the justice domain from a progressive perspective of a process maturity framework. Although the existing paradigms provide an array of different approaches to facilitating process improvement endeavors, none approaches process improvement through an evolutionary perspective of process maturity. None of the paradigms contains a progressive model of maturing processes through time as a foundational concept.

Because of this literary absence regarding evolutionary process improvement among the existing models, a need exists concerning the crafting of such a model. Therefore, a primary aspect of motivation for this study involves the lack of literature devoted to a maturity model framework within the context of criminal justice organizations. Such a model may contribute an additional resource through which the leaders and administrators of law enforcement organizations may improve the efficiency and effectiveness of processes within work settings. Therefore, this research investigates the crafting of an evolutionary process improvement paradigm, incorporating progressive process maturity as a foundational concept, within the context of the criminal justice domain.

Despite the absence of discussions regarding maturity modeling within the criminal justice literature, the literature of other domains contains discussions of previous studies that examined maturity model frameworks. From the perspective of software quality, it was concluded that productivity increases occur after implementing software process improvement involving the maturity model framework (Schalken, Brinkkemper, & Van Vliet, 2006:9). Regarding the basic framework, this study also showed that projects implemented in either level two or level three organizations are generally 20.19% more productive than their level one counterparts (Schalken, et al., 2006:9). Chen, Preston,



and Xia (2010:232) explored staged maturity modeling within the context of information technology leadership. The findings of this study showed that a staged maturity model impacts organizational leadership (Chen, et al., 2010:232). Another study examined a continuous improvement maturity model involving incrementally changing processes, products, and services among organizations (Dabhilkar, Bengtsson, & Bessant, 2007:349). This study showed that organizations with higher process maturity levels exhibited better performances operationally (Dabhilkar, et al., 2007:361).

Given the existence of previous maturity modeling research within the literature of domains that are unrelated to criminal justice organizations, this research study seeks to add an additional contribution to the maturity model literature. In this case, this research study adds a criminal justice organizational perspective to the existing body of literature, and complements the previous studies. Thus, an additional aspect of motivation for this study is to continue the line of research in maturity modeling via introducing another perspective regarding law enforcement organizations within the justice system.

Another aspect of motivation for this research involves administrative processes that are related to the financial and economic attributes of law enforcement entities. Examples include payroll and procurement (Siegel & Worrall, 2013:114). Organizations within the justice domain must be mindful of their budgets, and must make financial and economic decisions that are in the best interests of the organization and its stakeholders (Doss, Sumrall, McElreath, & Jones, 2014:97). This notion is relevant within the context of law enforcement organizations because they often strive to achieve both operational efficiency and cost savings (Wakefield & Fleming, 2009:196). Because law enforcement organizations are public entities that derive much of their budgets from taxation, they must be especially careful when expending their financial resources (Doss, et al., 2014:101).

Through using the Capability Maturity Model Integrated (CMMi) to improve processes, organizations may implement best practices effectively, efficiently, and optimally thereby lowering their costs of operations (Ahern, Clouse, & Turner, 2004:45). In order to improve organizational efficiency, law enforcement organizations must continuously seek process improvements (Shane, 2009:2). Therefore, improving processes through progressive levels of maturity may result in efficiency improvements through which

financial costs are decreased within the organization. Through exploring the potential of the CMMi within the law enforcement domain, a potential process improvement framework may be considered through which cost savings may be incited among law enforcement organizations.

The rationale for conducting this study may be contemplated both theoretically and practically. Theoretically, because a gap exists within the literature regarding a CMMi derivative for the justice domain, this study represents a unique, original contribution to the bodies of literature and knowledge. Practically, with respect to the financial aspects of law enforcement organizations, the proposing of a CMMi derivative may originate a framework through which process improvements may generate efficiency improvements and related cost savings among law enforcement organizations.

### **1.3.1 Criminal Justice Processes**

Law enforcement organizations are managed entities that exhibit a variety of administrative functions. For instance, they involve human resources, planning, communication, and payroll functions. Law enforcement agencies necessitate various administrative processes within the context of such organizational functions. A non-exhaustive listing of administrative process examples is given as follows:

- Organizational scans to identify process problems (McElreath, et al., 2013:224).
- Organizational assessments to determine if plans were performed (McElreath, et al., 2013:224).
- Court processes for legal proceedings (McElreath, et al., 2013:337).
- Communications processes for individuals and organizational factions (Hess & Orthmann, 2012:103).
- Decisional processes affecting organizational courses of actions (Hess & Orthmann, 2012:142).
- Processes for resolving disputes (Doss, et al., 2011:72).
- Processes for ordering materials and supplies (Doss, et al., 2011:72).
- Processes for terminating personnel (Doss, et al., 2011:72).

- Processes for hiring organizational personnel (Cronkhite, 2013:170).
- Planning processes to support the long-term, strategic activities of the law enforcement organization (Cronkhite, 2013:117).
- Processes to evaluate personnel performance (Cronkhite, 2013:177).
- Processes to discipline personnel (Cronkhite, 2013:138).
- Processes to promote and reward personnel (Cronkhite, 2013:194).

These processes are representative of various administrative processes that occur among law enforcement organizations. Many other administrative processes occur among law enforcement organizations functionally ranging from evaluation to appraisal (Gul & O'Connell, 2013:13). Regardless of the function, many administrative processes exist throughout law enforcement organizations.

### **1.3.2 The Capability Maturity Model Integrated**

Within the domain of project management, a five-phase maturity model exists through which organizations may embellish progressively their management paradigms to generate highly efficient and optimized process infrastructures. This paradigm is the integrated Capability Maturity Model (CMMi). The CMMi is a process maturity framework resource through which the delineation of organizational process practices is facilitated and through which improved process maturity is accomplished progressively through time (Schwalbe, 2007:341).

Organizations seeking to implement process improvement initiatives, using the CMMi architecture, commence their efforts with respect to the initial stage representing randomness and immature processes. Progressively, organizational processes are improved through time to eventually represent a process environment that exhibits optimized processes. Through the passing of time, processes traverse the five stages of the CMMi model sequentially thereby showing their relative states of maturity throughout the duration of process improvement initiatives.

The progressive stages of the CMMi, through its various levels of maturity ranging from the immature state through the mature state, are given as follows (Myerson, 2007:1):

CMMi Level 1 -- Ad hoc, unstructured, and chaotic processes that often exceed budgetary expectations.

CMMi Level 2 -- Processes may be reactive and managed.

CMMi Level 3 -- Processes may be understandable and expressed within organizational literature and methodologies.

CMMi Level 4 -- Processes are managed quantitatively via measurement and control.

CMMi Level 5 -- Processes exhibit optimization, and continuous improvement is emphasized.

A consideration of the stages comprising the CMMi model yields an interesting aspect regarding the defining and expressing of process characteristics process improvement: through time and the sequential progressing of the individual maturity stages, organizational processes are improved and matured from a state of randomness to a state of strong efficiency.

### **1.3.3 Maturity Model Derivations**

The criminal justice literature did not reveal the crafting and implementing of a CMMi framework within the context of criminal justice entities. Therefore, it is the expected purpose of this research to investigate the employee perceptions of organizational processes, process maturity, and process improvement initiatives of criminal justice organizations. Through such inquiry, this research addresses the shortcomings of the literature regarding the existence and use of a maturity-based, evolutionary approach to process improvement among criminal justice organizations.

A consideration of linking law enforcement organizational environments to the unrelated work settings that have adopted CMMi involves administrative processes. Law enforcement organizations are managed entities that incorporate both the managing of

resources and humans (Gaines & Worrall, 2012:93). Administrative processes, such as processes necessary for hiring personnel, exist among law enforcement organizations (Gaines & Worrall, 2012:289). Another example of administrative processes among law enforcement organizations involves performance reviews and appraisals of personnel (Gul & O'Connell, 2013:53). These example areas are general considerations among most organizations (Sims, 2002:79).

Maturity modeling regarding administrative functions exists among domains that are unrelated to the justice system. For instance, the People Capability Maturity Model (PCMM) is applicable to human resources processes (Cheese, Thomas, & Craig, 2008:197). Although the PCMM has been used in the aerospace and software industries, its use has not been as widespread as the CMMi (Cheese, et al., 2008:197).

Maturity modeling also is applicable within the context of organizational security processes. This perspective involves maturity frameworks that contribute to improving organizational processes ranging from privacy to auditing (Axelrod, Bayuk, & Schutzer, 2009:36). Additionally, the Security Maturity Model is used within the information systems domain regarding the improving of information systems processes (Vacca, 2013:564).

Maturity modeling is also used within the context of organizational quality management processes. Specifically, the Data Quality Maturity Model is used to address processes ranging from the resolving of organizational problems to organizational benchmarking (Loshin, 2011:42).

The preceding examples show derivatives of maturity model frameworks that are unrelated to policing and the justice system. These examples represent maturity models through which organizations may generate process improvement through the progressive maturing of processes. The criminal justice literature showed no specific use of a maturity model framework that is applicable to policing and the justice domain. Given this lack of a maturity model associated with policing and the justice domain, a primary aspect of motivation for this research is derived from the lack of literature regarding applications of maturity modeling within the justice domain. This lack of a maturity model, within the context of the justice domain, is surprising given the types of

derivative models that were defined within the literature. Therefore, this research contributes uniquely to the literature by researching maturity modeling within the context of law enforcement organizations.

Given the existence of CMMi derivatives among domains that unrelated to policing, the crafting of a maturity model derivation is not inconceivable within the context of the justice system. This notion is important given the types of administrative processes that exist among law enforcement organizations. Based on the review of the literature, the following observations are offered regarding administrative processes among law enforcement organizations:

- Law enforcement organizations experience administrative processes when selecting, hiring, disciplining, training, and terminating personnel thereby exhibiting processes that are related to human resources and personnel functions.
- Law enforcement organizations incorporate a variety of organizational security processes regarding organizational safety and security.
- Law enforcement organizations necessitate a myriad of processes regarding the managing of communications and information systems.

The PCMM is representative of a maturity framework that facilitates process improvements among such domains that are unrelated to policing. Therefore, a maturity model framework may be crafted regarding such processes.

Organizations that are unrelated to the law enforcement and justice domains experience processes involving human resources and personnel functions. Various organizational characteristics and perspectives that affect administrative processes are considered within the PCMM. Three such perspectives include geography, human resources, and organizational category.

#### **1.3.4 Geographic Perspective**

The literature shows geography as a variable of interest when researching process maturity model frameworks. Regarding a geographic perspective, Chandra (2008:1033) considers the international instantiating of PCMM within an Infosys corporate environment that spanned Japan, the United States, and Europe. In this instance, the organization progressed through the stages of maturity to achieve the optimized level of process maturity among its regions (Chandra, 2008:1034). Process improvements were observed regarding the knowledge management processes of Infosys via the progressive framework (Srikantaiah, Koenig, & Hawamdeh, 2010:286). Kan (2003:365) also discusses a geographic perspective regarding the basic maturity model framework. In this instance, Kan (2003:365) discusses various differences quantitatively between failures rates of lines of computer code in Japan versus the United States regarding Level 1, the ad hoc level, of the process maturity framework.

These discussions of Kan (2003:365), Chandra (2008:1033), and Srikantaiah, et al., (2010:286) provide the foundations of geographic perspectives regarding the instantiating and studying of maturity models within organizational environments. Therefore, given this existence of a geographical basis for investigating process maturity models among organizations, this research study incorporates the use of geography as a basis for polling Alabama and Mississippi entities.

#### **1.3.5 Job Category Perspective**

Job category is also referenced as a variable of interest in the literature concerning maturity models. Process maturity modeling initiatives involve human management influences ranging from mentoring to tracking functions (Ramesh, 2002:352). Within the context of software quality, Burnstein (2003:91) discerns between the contributions of managers versus developers regarding the achieving of the second level of maturity models. Nandyal (2003:56-57) considers quantitatively the assessment activities that occur between managers versus non-managers regarding the progressing from Level 1 to Level 2 within the PCMM framework. Establishing a cooperative relationship between managers and non-managers is essential for integrating the PCMM within an organization and facilitating progression through the stages of the framework (Nandyal,

2003:76). Managers may also incorporate process maturity modeling as a method of improving organizational risk assessment processes and decisions (Hopkinson, 2011:5).

Implementing a process maturity model requires collaboration between managers and non-managers among organizational settings (Nandyal, 2003:76). Managers may emphasize a transitional approach when implementing process maturity modeling to manage change that occurs within the work setting (Nandyal, 2003:30). Managers may motivate subordinate, non-management personnel to be receptive to organizational changes that result from pursuing the process improvement initiative involving process maturity modeling (Nandyal, 2003:30). Also, the relationship between management and non-management personnel is a salient factor regarding the transition between the first two levels of the maturity model paradigm (Nandyal, 2003:56-57).

These discussions regarding the progression of the stages of maturity models shows a consideration of job category as a variable of interest when investigating maturity model frameworks. Given this notion, this research endeavor investigates the CMMi from the perspective of job category. Specifically, because of the importance of the relationship between managers and non-managers through which progression occurs within the maturity framework, this research examines the perceptions of managers versus non-managers regarding process maturity modeling within law enforcement entities.

### **1.3.6 Urban Versus Rural Perspective**

Urban versus rural perspectives were discovered as a variable of interest within the literature. For instance, urban versus rural perspectives are considerations of the Smart Grid Maturity Model (SGMM) used within the utilities industry (Software Engineering Institute, 2009:4). According to the Software Engineering Institute of Carnegie Mellon University (2009:4), the SGMM version of the maturity model framework facilitates progressively improving utilities processes toward the realizing of smart grids within society. Urban versus rural perspectives, involving process maturity, are also considerations of crafting electronic governance infrastructures within society (Reddick, 2010:505). Reddick (2010:505) uses the nation of New Zealand as the basis of comparing quantitatively urban versus rural perspectives to determine how well governmental bodies have progressively matured processes that are necessary for



instantiating electronic resources for governance purposes. Given these descriptions within the literature, both urban and rural entities were polled during this research.

### **1.3.7 Perspectives of the Research Study**

The preceding literature clearly shows precedents among unrelated domains regarding the variables of interest that may be used to examine process maturity model frameworks. Based on the preceding literature discussion, such precedent involved job category, organizational type, and geography. Based on the contents of the preceding literature discussions and references, this study examines the perspectives of management versus non-management, urban versus rural, and Alabama versus Mississippi personnel regarding process maturity modeling.

### **1.3.8 CMMi Foundation of the Research**

This research examines the potential of adapting the Capability Maturity Model Integrated (CMMi) as a foundational process improvement framework among criminal justice organizations. Within the CMMi framework, process improvement begins from a state of random, ad hoc processes and culminates in a state of highly optimized processes. Through time, process maturation occurs through five primary stages sequentially within the framework: 1) random, 2) managed, 3) defined/specific, 4) quantitatively managed, and 5) optimized. This research explores the potential of leveraging the CMMi paradigm as a form of organizational process improvement within the criminal justice domain.

### **1.3.9 Motivation and Purpose**

One aspect of the motivation for this study is derived from the absence of a process maturity model specifically within the criminal justice domain. The criminal justice literature revealed no derivative administrative process maturity model that is crafted uniquely from the perspective of either the justice domain or law enforcement organizations. This revelation is surprising given the existence of maturity frameworks (PCMM and SGMM) within the literature of domains that are unrelated to criminal justice.

Therefore, motivation for this study is geared toward providing a new contribution to the bodies of literature and knowledge that uniquely investigates process maturity modeling from the perspective of law enforcement organizations within the justice domain.

Another aspect of motivation involves the extending of previous maturity model research. Within the literature of domains that are unrelated to the justice system and policing, previous research exists that examines maturity modeling and process maturity involving the perspectives of geography, job category, and urban versus rural categories. These endeavors are itemized as follows:

- Burnstein (2003:91) – Job category examining managers versus non-managers when progressing to the second maturity level.
- Chandra (2008:1034) – Geographic involving the Infosys example of Japan, the United States, and Europe.
- Kan (2003:365) – Geographic involving computer code lines in the United States and Japan
- Nandyal (2003:56-57) – Job category examining progression between the first and second maturity levels involving managers versus non-managers.
- Reddick (2010:505) – Urban versus rural perspectives of process maturity regarding the crafting of electronic governance resources.
- Software Engineering Institute (2009:4) – Urban versus rural societal aspects involving process maturity toward the crafting of smart grids.
- Srikantiah, et al., (2010:286) -- Geographic involving the Infosys example of Japan, the United States, and Europe.

This study seeks to continue this line of maturity modeling research by examining maturity modeling from the perspective of criminal justice organizations and the CMMi. Thus, an aspect of motivation involves the continuance and furtherance of the line of research involving maturity models while simultaneously extending it into the domain of law enforcement organizations. Therefore, this study examines the perspectives of managers versus non-managers among law enforcement organizations regarding maturity modeling.

Therefore, given these motivations, the purpose of this research is to investigate the CMMi from the perspectives of law enforcement organizations. Specifically, this research investigates personnel perceptions of job category, organizational type, and geography regarding organizational processes and the CMMi framework.

#### **1.4 RESEARCH GOALS AND OBJECTIVES**

The goals of this research are expressed as follows:

1. This research is expected to show that the Capability Maturity Model Integrated project management paradigm can be adapted within unrelated criminal justice administration settings as a process maturity framework.
2. This research is expected to show that existing process improvement paradigms do not address issues of process maturity within criminal justice administration settings using a process maturity framework.
3. This research is expected to show that existing criminal justice administration settings do not conform to the tenets of the Capability Maturity Model integrated paradigm.

The objectives of this research are given as follows:

1. To assess the perceptions of management versus non-management personnel regarding the basic process maturity model framework.
2. To assess the perceptions of management versus non-management personnel regarding the first maturity level of the CMMi.
3. To assess the perceptions of management versus non-management personnel regarding the second maturity level of the CMMi.
4. To assess the perceptions of management versus non-management personnel regarding the third maturity level of the CMMi.
5. To assess the perceptions of management versus non-management personnel regarding the fourth maturity level of the CMMi.

6. To assess the perceptions of management versus non-management personnel regarding the fifth maturity level of the CMMi.
7. To assess the perceptions of management versus non-management personnel regarding the work environment.

## **1.5 RESEARCH QUESTION AND HYPOTHESES**

The research question is offered as follows:

Can the basic framework of the CMMi be adapted to define a managerial process improvement maturity framework within the criminal justice domain?

This study was limited to respondents only in the states of Alabama and Mississippi. Therefore, in order to avoid generalization for the entirety of American policing within the United States, the research question addressed the criminal justice domain that represented the polled organizations that were located only in Alabama and Mississippi. In other words, the criminal justice domain referenced by the research question encompassed polled organizations only within Alabama and Mississippi. Therefore, generalization of this study is inappropriate for policing throughout the nation.

### **1.5.1 Basic CMMi Hypotheses**

This research explored hypothesis statements that are directly related to each of the five progressive CMMi phases within the maturity model framework. These hypothesis statements were stratified with respect to the perspectives of managers versus non-managers, urban versus rural personnel, and Alabama versus Mississippi personnel.

Hypothesis statements must be derived from the stated research objectives (Zikmund, Babin, Carr, & Griffin, 2013:64). Each individual research objective may involve the use of multiple hypothesis statements (Zikmund, et al., 2013:64). Scaling of the survey questions contributed to the generating of hypotheses within this study.

Questions 1 through 5 of the survey data collection instrument were scaled and associated with the general process maturity framework of the CMMi. In general, the hypothesis statements, representing the framework of the CMMi paradigm, are given as follows:

Table 1.2 – Maturity Model Framework Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “organizational evidence of the process maturity model framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “organizational evidence of the process maturity model framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “organizational evidence of the process maturity model framework exists.”	Alabama vs. Mississippi

The survey questions associated with this scale and these hypothesis statements are presented within the following table.

Table 1.3 – Maturity Model Framework Survey Items

Question	Statement	CMMi Level
1	Agency processes are ad hoc, chaotic, or random.	1
2	Agency processes are managed.	2
3	Agency processes are defined/specific.	3
4	Agency processes are quantitatively managed.	4
5	Agency processes are optimized.	5

### 1.5.2 Framework Level Hypotheses

Hypothesis statements were used to investigate each maturity level of the CMMi. These hypothesis statements were examined from the perspective managers versus non-managers.

Questions 6 through 8 of the survey data collection instrument were scaled and associated with the first level of the maturity model framework. In general, the hypothesis statements, representing this level of the maturity model framework, are given as follows:

Table 1.4 – First Maturity Level Hypothesis Statement

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the first level of the process maturity framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the first level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the first level of the process maturity framework exists.”	Alabama vs. Mississippi

The survey questions associated with this scale and these hypothesis statements are presented within the following table.

Table 1.5 – First Maturity Level Survey Items

Question	Statement
6	Agency processes are unpredictable.
7	Agency processes are reactive.
8	Agency processes are uncoordinated.

Questions 9 through 11 of the survey data collection instrument were scaled and associated with the second level of the maturity model framework. In general, the hypothesis statements, representing this level of the maturity model framework, are given as follows:

Table 1.6 – Second Maturity Level Hypothesis Statement

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the second level of the process maturity framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the second level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the second level of the process maturity framework exists.”	Alabama vs. Mississippi

The survey questions associated with this scale and these hypothesis statements are presented within the following table.

Table 1.7 - Second Maturity Level Survey Items

Question	Statement
9	Agency processes are planned.
10	Agency processes are managed.
11	Agency processes are controlled.

Questions 12 through 14 of the survey data collection instrument were scaled and associated with the third level of the maturity model framework. In general, the hypothesis statements, representing this level of the maturity model framework, are given as follows:

Table 1.8 – Third Maturity Level Hypothesis Statement

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the third level of the process maturity framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the third level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the third level of the process maturity framework exists.”	Alabama vs. Mississippi



The survey questions associated with this scale and these hypothesis statements are presented within the following table.

Table 1.9 - Third Maturity Level Survey Items

Question	Statement
12	Agency processes are well-defined.
13	Agency processes are consistent.
14	Agency processes are followed.

Questions 15 through 17 of the survey data collection instrument were scaled and associated with the fourth level of the maturity model framework. In general, the hypothesis statements, representing this level of the maturity model framework, are given as follows:

Table 1.10 – Fourth Maturity Level Hypothesis Statement

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the fourth level of the process maturity framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the fourth level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the fourth level of the process maturity framework exists.”	Alabama vs. Mississippi

The survey questions associated with this scale and these hypothesis statements are presented within the following table.

Table 1.11 - Fourth Maturity Level Survey Items

Question	Statement
15	Agency processes involve quantitative objectives.
16	Agency processes involve metrics analysis.
17	Agency processes involve statistical analysis.

Questions 18 through 20 of the survey data collection instrument were scaled and associated with the fifth level of the maturity model framework. In general, the hypothesis statements, representing this level of the maturity model framework, are given as follows:

Table 1.12 – Fifth Maturity Level Hypothesis Statement

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the fifth level of the process maturity framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the fifth level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the fifth level of the process maturity framework exists.”	Alabama vs. Mississippi

The survey questions associated with this scale and hypothesis are presented within the following table.

Table 1.13 - Fifth Maturity Level Survey Items

Question	Statement
18	Agency processes are improved incrementally.
19	Agency processes are efficient.
20	Agency processes are effective.

### 1.5.3 Work Environment Hypotheses

This research used an array of hypothesis statements to explore facets and perceptions of the managed environment involving the characteristics of processes. These queries considered attributes of the work setting that are affiliated with the perceptions of organizational personnel regarding the characteristics of process management and process improvement paradigms. The queries were disseminated among factions of federal, state, regional, local, and tribal entities representing both rural and urban law enforcement organizations. The examined work settings were constrained to entities within the criminal justice domain. These entities represented organizations within the justice systems of Alabama and Mississippi.

Questions 21 through 23 of the survey data collection instrument were scaled and associated with the work setting. These questions polled perceptions regarding process improvement attributes within the work setting. In general, the hypothesis statements, representing this scaling, are given as follows:

Table 1.14 – Process Improvement Hypothesis Statement

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of process improvement exists among work settings.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of process improvement exists among work settings.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of process improvement exists among work settings.”	Alabama vs. Mississippi

The survey questions associated with this scale and these hypothesis statements are presented within the following table.

Table 1.15 – Work Environment Survey Items

Question	Statement
21	Process maturity is not addressed by current process improvement initiatives.
22	Process improvement is advocated within my agency.
23	Process initiatives are tracked to examine process performance.

Questions 24 through 26 of the survey data collection instrument were scaled and associated with the work setting. These questions polled perceptions regarding process grouping and maturity attributes within the work setting. In general, the hypothesis statements, representing this scaling, are given as follows:

Table 1.16 – Process Organization Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of process organization exists among work settings.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of process organization exists among work settings.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of process organization exists among work settings.”	Alabama vs. Mississippi

The survey questions associated with this scale and these hypothesis statements are presented within the following table.

Table 1.17 – Process Organization Survey Items

Question	Statement
24	Grouping of processes, according to maturity level, would improve the outcomes of our processes.
25	Categorical process grouping is advocated within my agency.
26	Process maturity is a contributor to successful process outputs within my agency.

Questions 27 through 33 of the survey data collection instrument were scaled and associated with the work setting. These questions polled perceptions regarding the volatility of processes within the work setting. In general, the hypothesis statements, representing this scaling, are given as follows:

Table 1.18 – Process Volatility Hypothesis Statement

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of process volatility exists among work settings.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of process volatility exists among work settings.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of process volatility exists among work settings.”	Alabama vs. Mississippi

The survey questions associated with this scale and these hypothesis statements are presented within the following table.

Table 1.19 – Process Volatility Survey Items

Question	Statement
27	Processes are informal within my agency.
28	Agency policies influence processes.
29	Methods of managing processes vary within my agency.
30	Agency processes are inefficient.
31	Agency processes are ineffective.
32	Agency processes change frequently.
33	My agency advocates process training.

## 1.6 RESEARCH VALUE

A gap in the criminal justice literature was discovered regarding the existence of a process maturity model framework within the justice domain. The criminal justice

literature showed no process maturity model framework within the context of law enforcement organizations within the justice system. Although the literature of other domains showed foundational approaches of examining process improvement maturity model frameworks from the perspectives of geography, job category, and urban versus rural perspectives, none of the reviewed studies contained discussions regarding these perspectives within the context of the justice system. Therefore, by using these perspectives among law enforcement organizations as a primary focus, this research study seeks to provide a substantial contribution to the literature and extend the line of maturity modeling research.

The outcomes of this study may benefit law enforcement organizations in the criminal justice domain encompassing Alabama and Mississippi. Through examining the potential of using the CMMi to generate a baseline maturity framework, such entities may gain insight regarding the crafting and implementing of their respective process improvement initiatives. As a result, these entities may generate improvements in organizational efficiency and effectiveness.

This research investigates the potential of whether the basic framework of the CMMi may be used as a baseline process maturity framework within the criminal justice domain. Within the literature, no other study investigates this issue regarding the perceptions of managers versus non-managers in the justice domain. Therefore, this study is a unique endeavor, and contributes an original offering within the body of literature. In turn, this research provides a starting point from which future research endeavors may be potentially spawned thereby contributing to increases in the body of knowledge.

## **1.7 SYNOPSIS OF THE METHODOLOGY**

### **1.7.1 Research Design**

This research incorporates a cross-sectional design involving the use of a Likert-scale survey. This design was selected to address the research question because the cross-sectional approach is used to compare groups that have similar characteristics (Nevid,

2013:331). Within cross-sectional design, the sample must be representative of the considered population (Jacobsen, 2012:108). No time ordering is involved with a cross-sectional design (Bryman & Bell, 2007:55). Through the use of a cross-sectional design, facets of behavior, attitude, and belief may be investigated between groups (Lavrakas, 2008:171). Cross-sectional designs are useful when investigating theoretical models via survey methods (Lavrakas, 2008:171).

The cross-sectional design was also selected because it facilitates the collecting of data to generate inferences regarding a specific population at a specified point of time (Lavrakas, 2008:172). The cross-sectional design also accommodates the use of survey questionnaires as the data collection instrument (Bryman & Bell, 2007:55). When responding to surveys within cross-sectional designs, responses are generated at approximately the same time (Bryman & Bell, 2007:55).

This study incorporated a cross-sectional design to investigate the perceptions of personnel among law enforcement organizations. The groups used in this research study consisted of personnel representing managers versus non-managers from justice system entities in Alabama and Mississippi.

A Likert scale survey may be employed as the data collection instrument within studies involving a cross sectional design (Gaebelein & Gleason, 2008:160). Likert scales are acceptable tools used for measuring human perceptions via a survey format (Keyes, 2006:251). Therefore, this study uses a Likert-scale survey as the data collection instrument in conjunction with the cross-sectional research design.

This study used a five-point Likert-scale data collection instrument for collecting data regarding personnel perceptions of process improvement characteristics among entities within the criminal justice domain. The possible responses to the Likert scale were 5 = "strongly agree," 4 = "agree," 3 = "no judgment," 2 = "disagree," and 1 = "strongly disagree." The survey queried personnel perceptions associated with process improvement paradigms; process descriptions; the effectiveness and efficiency of processes; and characteristics affiliated with each of the separate levels of the CMMi model. The survey also queried personnel perceptions regarding the attributes of their respective work environments representing organizational processes.



When examining models via the Likert surveys, the scaling of items may occur as a method of generating composites for analysis. These composites are measures of foundational concepts that underlie the examined model (Lewis-Beck, Bryman, & Liao, 2004:998). A composite scale represents an array of entities that may be measured empirically and that represents the “meaning” of the examined model (Lewis-Beck, et al., 2004:998). Scaling represents a method of integrating data within a composite fashion, and is used to examine the intensities and directions of constructs (Lewis-Beck, et al., 2004:998). Scaling may be used in conjunction with hypothesis testing to examine the mapping of data observations versus a specific construct (Lewis-Beck, et al., 2004:998).

This research study used scaling to examine and analyze the Likert survey responses in conjunction with hypothesis testing. Scales were developed that represented the basic process maturity model framework (survey questions 1-5), first maturity level (survey questions 6-8), second maturity level (survey questions 9-11) third maturity level (survey questions 12-14), fourth maturity level (survey questions 15-17), fifth maturity level (survey questions 18-20), and organizational characteristics (survey questions 21-33).

### **1.7.2 Data Collection**

Dissemination of the survey questionnaire data instrument occurred through two methods: surface mail and Internet. Notifications were disseminated among the members of the sample audience informing them of the presence and Internet location of the online survey. In the event that respondents did not facilitate Internet access to complete the survey, respondents could request a physical survey questionnaire and return it to this researcher via postal service. This method provided an alternative means through which data were collected via postal service. For the postal option, mailings included within the notification packages were a letter of introduction, a copy of the survey data collection instrument, and a self-addressed, stamped-envelope (for returning the completed survey to this researcher).

Notices of the presence of the online survey instrument were disseminated through surface mail. This notice was accompanied by an introductory letter detailing the purpose of the study and its Internet location. A statement regarding the confidentiality

of responses, privacy of respondents, and security of the host environment was contained within this notice. This confidentiality, privacy, and security were of high concern. Responses were stored within electronic files that necessitated password access and within computer systems that necessitated password access. All electronic equipment was kept locked in an office environment.

The survey instrument consisted of three separate sections: 1) queries of the personnel perceptions of both the previous and existing process improvement paradigms among respondent environments, 2) queries of personnel perceptions of attributes that contribute toward a successful crafting and adapting of the CMMi among criminal justice organizational settings, and 3) queries regarding respondent demographics.

The language of the survey instrument involved phrasing to avoid ambiguity and to incorporate simplicity among its queries as a method of avoiding any confusion among respondents. Additionally, the survey was designed to require little time for completion thereby diminishing the potential of participative abandonment among respondents.

The online survey questionnaire facilitated access at any hour of any weekday thereby maximizing the opportunities for respondents to complete the posed queries. The physical postal materials facilitated a response manually.

The survey period encompassed 30 days. Therefore, respondents completed the survey at their leisure during the allotted time. After closure of the survey, the collected data sets were recorded and processed electronically. Outcomes of the survey and of the research were made available upon the completion of this study.

### **1.7.3 Target Population and Sample**

The target population and sample consisted of criminal justice entities within the states of Alabama and Mississippi. The states of Alabama and Mississippi were selected because they are adjacent geographically and have similar attributes regarding various facets of their justice systems and police organizations. For instance, Alabama incarcerates approximately 650 individuals per 100,000 individuals whereas Mississippi

incarcerates approximately 702 individuals per 100,000 individuals (Clear, Cole, & Reisig, 2013:466). Law enforcement officer training in both Alabama and Mississippi contains at least 400 hours (Dolata, 2012:11). Within both Alabama and Mississippi, probation officers are classified as “peace officers” and are empowered with the full powers of search warrants and arrests (Mays & Winfree, 2009:94).

This researcher contacted the public safety entities of both Alabama and Mississippi to obtain listings of justice system organizations from which to comprise the respondent population. This researcher was directed to consult the government publications of both states to identify potential respondents. The listing of Mississippi entities was obtained from data contained within the *Official and Statistical Register of the State of Mississippi*. A sample page from this item is contained within the appendix of this document. The listing of Alabama entities was obtained from data contained within the *Alabama Criminal Justice Directory*. A sample page from this item is contained within the appendix of this document. These samples show listings for members of the judiciary and law enforcement segments of the justice system.

The Alabama and Mississippi entities comprised a population superset of 1,415 potential respondent entities. Justice system entities and law enforcement organizations are public service organizations (Scaramella, Cox, & McCamey, 2011:234). Therefore, the mailing addresses, identities of organizational leaders, and contact information of such entities are obtainable by members of the general public per the 1966 Freedom of Information Act (Brown & Garson, 2013:19). Hence, any member of the public may freely access this information.

The collecting of data involved the use of a Likert-scale survey instrument. Specifically, the survey was targeted towards personnel that are involved with developing, managing, or implementing organizational administrative processes among their respective organizations. Examples of such job titles include sheriff, chief deputy, police chief, assistant chief, constable, jailor, clerk, and patrol officer.

According to Cooper and Schindler (2008:385), sample size involves a consideration of variation regarding the attributes of the population and the relevant estimate of precision.

Anderson, Sweeney, and Williams (2012:351) corroborate this notion, and offer the following formula as a basic method of generating sample size:

$$n = \frac{(Z_{\sigma/2})^2 p^*(1 - p^*)}{E^2}$$

Anderson, et al., (2012:351) indicate that the  $p^*$  variable often necessitates a starting guess, and that an appropriate value is 0.50. Substituting values yields the following mathematics:

$$n = \frac{(1.96)^2(0.50)(1 - 0.50)}{(0.05)^2}$$

$$n = 384.16$$

Because the population is finite, additional calculations are necessary (Anderson, et al., 2012:351). Therefore, the following mathematical calculations are performed:

$$n_c = \frac{n_a}{\left(\frac{n_a - 1}{N}\right) + 1.0}$$

$$n_c = \frac{384.16}{\left(\frac{384.16}{1,415}\right) + 1.0}$$

$$n_c = 302.1$$

When rounded, the minimum acceptable sample size was 303 entities. This outcome involves a confidence interval of 5 points and a confidence level of 95%.

Determining the quantity of queried respondents was accomplished via the use of skip intervals representative of random sampling. According to Cooper and Schindler (2008:389), skip intervals are determined through the following formula:

$$\text{skip interval} = \frac{\text{population size}}{\text{sample size}}$$

Substituting values within the formula yields the following mathematical calculations:

$$\text{skip interval} = \frac{1,415}{303} = 4.66$$

The skip interval was rounded to the value of 4.0. Selecting every fourth entity from the population provided a sample of 353 potential respondents from the population. However, a greater amount of contact with the members of the sample tends to improve response rates (Cui, 2003:1). Essentially, contacting a greater quantity of the sample will improve the rate of response (Cui, 2003:1). Therefore, this study implemented a skip interval of 3.0 thereby identifying a set of 472 possible respondents. This quantity of entities (472) surpasses the mandatory sample size (303) that is necessary for the sample to reflect the characteristics of the population. This reflection of the population is a requirement of the cross-sectional design (Jacobsen, 2012:108).

#### **1.7.4 Analytical Methods and Data Processing**

This study incorporated a quantitative approach consisting of the ANOVA method, Omega Squared method, Chi-Squared method, Cronbach method, and descriptive statistics regarding the collected data.

The use of the ANOVA method facilitated the investigation of managerial versus non-managerial perspectives. Within the ANOVA method analysis, regarding these groupings, variables were expressed as follows:

- An independent variable represented job category with the dependent variable consisting of management and non-management personnel groups.

- An independent variable represented geographic location with the dependent variable consisting of Alabama and Mississippi personnel groups.
- An independent variable represented organizational type with the dependent variable consisting of urban and rural personnel groups.

This research uses the two-tailed, one-way ANOVA method. This method is appropriate when one independent variable exists during an investigation (Coladarci, Cobb, Minium, & Clarke, 2011:319). For each of the three implemented types of tests involved within this research, the respective independent variables were: 1) job category, 2) organizational type, and 3) geographic location. A two-tailed test was incorporated within the context of this ANOVA approach. The two-tailed test is applicable within most statistical testing, and implies that a null hypothesis can be rejected upwardly or downwardly by deviation (Dytham, 2011:280).

The use of the ANOVA technique was selected because it determines whether the means of examined groups are equal in conjunction with hypothesis testing (Cooper & Schindler, 2010:122). The ANOVA concept involves a consideration of treatment variation versus random variation within the context of the examined distribution (Lind, Marchal, & Wathen, 2008:415). The means of the queried groups were examined with respect to both concepts when considering equality within the context of hypothesis testing. Based on the writings of Lind, et al., (2008:415), these notions are expressed mathematically as follows:

$$F = \frac{\textit{Treatment Variation}}{\textit{Random Variation}}$$

Lind, et al., (2008:415) indicate that the numerator represents an examination of differences regarding the sample means to generate the estimation of variance within the population whereas the denominator represents an examination of sample variation to generate the estimation of variance with respect to the population.

Within the ANOVA method, the use of the p-value also facilitates hypothesis testing to determine whether  $H_0$  may be rejected (Petrie & Watson, 2013:105). If the p-value is less than the specified alpha value, which is usually 0.05, then  $H_0$  is rejected (Petrie & Watson, 2013:105). If the p-value is greater than the specified alpha value, which is usually 0.05, then  $H_0$  cannot be rejected (Petrie & Watson, 2013:105).

The use of ANOVA necessitates a consideration of effect size. The effect size represents the variance proportion of the dependent variable that is explainable by the independent variable (Nolan & Heinzen, 2012:318). Effect size shows how large an observed effect is regardless of the sample size (Urdan, 2010:62). The Omega-squared formula for calculating effect size is given as follows (Coolidge, 2013:283):

$$\omega^2 = \frac{SS_B - (k - 1)(MS_W)}{SS_T + MS_W}$$

The variable terms for this effect size equation are given as (Coolidge, 2013:283):

$\omega^2$  -- effect size.

$SS_B$  – sum of squares between groups.

$SS_T$  – overall sum of squares.

$MS_W$  – mean square within groups.

$k$  – number of levels of the independent variable.

Effect size involves the following interpretations (Privitera, 2013:456):

Small effect size occurs when  $d < 0.2$

Medium effect size occurs when  $0.2 < d < 0.8$

Large effect size occurs when  $d \geq 0.8$

Regarding the mean responses of survey questions 1 through 33, the ANOVA method was used to investigate if there was a statistically significant difference on the perceptions of management personnel versus non-management personnel, urban versus rural personnel, and Alabama versus Mississippi personnel.

Regarding management personnel versus non-management personnel, in general, for each of the survey questions necessitating hypothesis testing via the one-way ANOVA method, the null and alternative hypotheses are:

H<sub>0</sub>: there was no statistically significant difference on the mean responses of the considered question between the examined groups.

H<sub>a</sub>: there was a statistically significant difference on the mean responses of the considered question between the examined groups.

Regarding the examined groups, in general, for any p-value that is less than 0.05 ( $p < 0.05$ ), the test rejects the null hypothesis (H<sub>0</sub>) in favor of the alternative hypothesis (H<sub>a</sub>) (Siegel, 2012:275).

The stratification of survey responses involved the following grouping: perceptions of managerial versus non-managerial personnel; perceptions of urban versus rural personnel; and perceptions of Alabama versus Mississippi personnel. The ANOVA method was applied to these groupings.

The Chi-Squared method was used to determine whether bias may influence the study through examining the distribution of the disseminated survey notices versus the reported distribution observed from the returned surveys. The Chi-Squared method involves examining expected values versus observed values to determine whether a statistically significant difference exists when performing hypothesis testing (Lind, et al., 2008:415).

Mathematically, the Chi-squared method is expressed as follows (Healey, 2012:275):

$$\chi^2 = \sum \frac{(f_o - f_e)^2}{f_e}$$



Variable terms are described as follows (Healey, 2012:275):

$f_o$  represents the observed values

$f_e$  represents the expected values

$X^2$  represents the Chi-square outcome value

Using the Chi-Squared method, the examination of bias within this study was accomplished by examining the expected distribution of survey recipients versus the observed distribution of the received responses. The basis of this examination used respondent locations, Alabama or Mississippi, as the geographic attributes.

### 1.7.5 Reliability and Validity

The Cronbach method was used to examine the reliability of the research study. This method was selected because its use examines internal consistency regarding the survey sample (Cooper & Schindler, 2008:293). This method of measuring internal consistency involves a consideration of the homogeneity of the items within the data collection instrument regarding whether they represent foundational constructs (Cooper & Schindler, 2008:293). Mathematically, these notions are expressed as follows (Gravetter & Forzano, 2012:479):

$$\alpha = \left( \frac{n}{n-1} \right) \left( \frac{SD^2 - \sum variance}{SD^2} \right)$$

Within this equation, the following terms are applicable (Gravetter & Forzano, 2012:479):

$\alpha$  -- represents the Cronbach value

$n$  -- represents the quantity of items examined

$SD$  -- represents the standard deviation of items examined

$\sum variance$  -- represents the summation of the variances of items examined.

This formula represents the mathematical basis of the Cronbach calculations used within this research.

The Cronbach method is appropriate for Likert-scale data collection instruments containing five choices among the possible question responses (Gravetter & Forzano, 2009:461). The Cronbach method reveals an estimate of the interrelationship regarding the survey questionnaire items (Hayes, 2009:46). Values associated with the Cronbach Alpha range between 0 and 1, and higher values represent a stronger reliability level (Gravetter & Forzano, 2009:461). Any Cronbach Alpha outcomes that surpass the value of 0.80 are deemed as acceptable (Gupta, 2008:10). Further, Bryman and Bell (2007:164) indicate that Cronbach Alpha values that exceed the value of 0.80 are representative of acceptability. Regarding acceptability, the Cronbach value of 0.70 is also deemed as acceptable (Tappen, 2011:131). The Cronbach value of 0.60 may be deemed as questionable; the value of 0.5 may be deemed as poor; and any values less than 0.5 are deemed as poor (George & Mallory, 2003:231).

For each of the subscales for the survey questionnaire, Cronbach's coefficient alpha was used to determine the internal consistency of items within each subscale in the study to gauge its reliability. Cronbach's alpha is believed to indirectly indicate the degree to which a set of items consistently measure a single latent (i.e., the subscale).

The following attributes were incorporated to embellish the validity and reliability of this study:

Reliability – Cronbach analysis is a common method of examining reliability (Urdan, 2010:178). The reliability of this study was examined through the use of the Cronbach method.

Sampling method – Larger sample sizes contribute toward enhanced validity (Langbein, 2012:33). Every third item was randomly selected from the identified population to generate a sample of potential respondents.

Stratification – Stratification involves the grouping of respondents into homogenous groups for analytical purposes (Babbie, 2013:308). Stratification consisted of segregating responses into categories of managers versus non-managers, urban versus rural entities, and Alabama versus Mississippi entities.

Response Measurement – Data collection instruments provide a method of improving response measurement by providing a basis of obtaining numerical data (White & McBurney, 2012:169). Within this study, the survey questionnaire data collection instrument incorporated a Likert-scale to collect responses.

Automation – Automated methods using computers exhibit standard conditions for questioning (Stangor, 2011:236). This research endeavor incorporated electronic data collection and electronic data processing.

Composite Scales – Because scales are comprised of multiple indicators of a certain “phenomenon,” they improve both the validity and reliability that could be exhibited to a greater level than if the response indicators were analyzed individually (Lewis-Beck, et al., 2004:998).

Electronic data collection consisted of presenting the survey questionnaire data collection instrument via the Internet. All of the electronic responses were recorded and stored using a spreadsheet format. Electronic data processing consisted of performing all mathematical calculations involving Chi-Square analysis, Cronbach analysis, ANOVA method, and effect size analysis.

## **1.8 ETHICS**

This research study abided with the ethical principles and guidelines of the University of South Africa. Survey recipients were informed of the following:

- That the research was a component of doctoral research;
- A brief purpose of the research study and its potential benefit;

- Participation was voluntary;
- Recipients were able to opt out of the research at any point in time;
- All responses and collected data were confidential;
- All responses and collected data were used only for the purposes of the study;
- Completing the survey implied consent;
- Responses and participation were anonymous;
- Results would be made available upon the completion of the research study;
- A brief period of time was necessary for completing the survey;
- All data sets would be destroyed upon the completion of the research study;
- Exclusion criteria;
- Contact information for the researcher;
- No personal data were to be collected; and
- Limitations of personal risk and harm during the course of the research.

The appendix materials contain a copy of the informational material that was disseminated among the respondents. The appendix materials also contain screen captures of the online survey data collection instrument and its associated informational materials. The appendix materials contain a copy of the introductory letter that was contained within the mailings.

## **1.9 CONSIDERATION OF SOUTH AFRICAN POLICING**

This study considers and examines process improvement within police environments from an administrative perspective. Regardless of nationality, police agencies have some types of administrative processes that impact the functioning of the police organization. Common examples may include personnel processes (e.g., hiring new officers), processes involved with prisoner processing (e.g., inmate in-processing and out-processing), processes that occur when responding to public calls for assistance (e.g., dispatching of responding officers), and processes involving methods of crime analysis.

Given this listing, this research study may also be considered within the context of South African policing. Boba (2005:27) indicates that South African police organizations use formal crime analysis methods. One such method involves the use of statement analysis to examine attributes and perceptions of truthfulness when interrogating suspects. Statement analysis involves a paralleling of a method of three stages involving administering, evaluating, and interrogating (Leo, 2008:100). According to Leo (2008:99), South African policing uses the Scientific Content Analysis (SCAN) method of analysis. Thus, this study may be beneficial from the perspective of processes involved with the SCAN method implemented within South African Policing.

More contexts of South African policing involve training and standardization with respect to crime analysis methods. According to Boba (2005:27), across nations, police organizations employing formal crime analysis methods involve considerations of standardization with recognition by managerial factions of law enforcement organizations. Gallagher (2002:2) indicates that organizational training involves a consideration of whether a process is effective. Further, Gallagher (2002:3) indicates that the CMMi framework contributes towards the crafting and maturing of organizational processes that may become standards. Given these notions, this study may be beneficial for South African police organizations with respect to processes involving the administrative and managerial facets of police training and standards necessary for implementing crime analysis methods.

## **1.10 DOCUMENTATION OUTLINE**

### **1.10.1 Chapter 1**

Chapter 1 of this document consists of introductory materials and methodological constructs. Within this chapter, the problem statement, highlights of the methodology, project management, literature synopsis, validity, reliability, and ethics are discussed. This chapter provides a foundation for the research study.

### **1.10.2 Chapter 2**

Chapter 2 of this document consists of a review of the relevant literature regarding process management, process improvement, and process maturity among criminal justice entities. Therefore, this chapter discusses topics of traditional process management and improvement paradigms that have pervaded criminal justice organizations. These discussions review the uses of TQM, BPR, BPI, BPM, Six Sigma, benchmarking, legislation, policy, and Compstat among criminal justice organizations. This chapter reviews relevant literature associated with derivations of the CMM to demonstrate its adaptability among numerous application domains. This chapter shows the absence of a solitary foundational basis that uniquely addresses organizational process improvement issues, regarding criminal justice entities, from the perspective of evolutionary process maturation through time.

### **1.10.3 Chapter 3**

Chapter 3 of this document discusses the findings of the research study concerning the demographics of the population and sample. The characteristics of the collected data are presented within this chapter. Additional discussions include the findings of ancillary data processing.

### **1.10.4 Chapter 4**

Chapter 4 of this document consists of discussions regarding the findings of the research study concerning managerial versus non-managerial perspectives. This chapter contains discussions of the survey responses and a demographic synopsis of the collected data used to support the hypothesis testing of the perceptions of managers versus non-managers. This chapter includes discussions of the hypothesis testing methods and outcomes that are associated with the ANOVA method data processing of data representing the perceptions of managers versus non-managers.

### **1.10.5 Chapter 5**

Chapter 5 of this document consists of discussions regarding the findings of the research study concerning urban versus rural perspectives. This chapter contains discussions of the survey responses and a demographic synopsis of the collected data used to support the hypothesis testing of the perceptions of urban versus rural personnel. This chapter includes discussions of the hypothesis testing methods and outcomes that are associated with the ANOVA method data processing of data representing the perceptions of urban versus rural personnel.

### **1.10.6 Chapter 6**

Chapter 6 of this document consists of discussions regarding the findings of the research study concerning Alabama versus Mississippi perspectives. This chapter contains discussions of the survey responses and a demographic synopsis of the collected data used to support the hypothesis testing of the perceptions of Alabama versus Mississippi personnel. This chapter includes discussions of the hypothesis testing methods and outcomes that are associated with the ANOVA method data processing of data representing the perceptions of Alabama versus Mississippi personnel.

### **1.10.7 Chapter 7**

Chapter 7 of this document presents a research summary, conclusions, and recommendations. This chapter provides a summary overview of the study. The conclusions and recommendations of this study are contained within this chapter.

### **1.10.8 Appendix Materials**

The appendix materials of this document contain supporting items (i.e., survey questionnaire data collection instrument, mailing informational letter, and excerpts from state publications) that were used during this research study.

## 1.11 CHAPTER SUMMARY

This chapter presented the aggregate details of the research study. This chapter provided a foundation of terminology through which the succeeding chapters may be better understood. This chapter introduced the problem domain, primary concepts within the problem domain, the primary research question, and the hypotheses. Additionally, this chapter contains methodological descriptions of the processes and procedures that governed the conducting of the research endeavors discussed within this document.

This chapter described the Likert-scale survey that was used to investigate the potential of adapting a maturity model framework, within the criminal justice domain, as a resource through which organizational processes may be progressively matured through time. Characteristics of the population and sample are identified within this chapter including the stratification of survey instrument questionnaire responses into the categories of managers versus non-managers.

This chapter specified the use of the ANOVA and effect size methods as quantitative tools through which data processing occurred regarding the hypothesis statements. This chapter specified the use of the Chi-Square Method as a resource for examining the potential effects of bias. This chapter specified the use of the Cronbach method as a form of judging internal consistency and reliability regarding this research endeavor.

Within this research endeavor, attributes of validity consisted of random sampling, stratification of received responses, use of the Cronbach method as a reliability tool, Likert-scale response measurement, and the automated collecting of survey instrument questionnaire responses.

This chapter delineated the methods through which the validity of this research endeavor was bolstered. These methods included sampling method, stratification, reliability, response measurement, and electronic automation.



## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 INTRODUCTORY DESCRIPTION OF THE LITERATURE

The literature represents an amalgamation of writings representing multiple domains. These domains include criminal justice, police science, project management, quality management, software engineering, management, public administration, and business administration. These domains represent considerations of management methods that may influence the process environments of criminal justice entities.

This chapter presents the literature of these management paradigms by initially examining the attributes of processes, and then examining paradigms through which process improvement is facilitated organizationally. The initial sections of this literature review highlight traditional paradigms of process improvement among organizations. This array of paradigms includes Total Quality Management (TQM), business process management (BPM), business process reengineering (BPR), business process improvement (BPI), benchmarking, standards, Six Sigma, legislation, policy, and Compstat. Based upon the descriptions of these paradigms given within the literature, none approach process improvement from the perspective of a maturity framework as a foundational basis of betterment. Therefore, the lack of a progressive maturity model framework, within a justice system context, was discovered within the literature.

The literature showed a model that does approach process improvement from the perspective of a maturity framework. This paradigm is the Capability Maturity Model Integrated (CMMi) framework that facilitates a progressive maturing of organizational processes through time. The literature shows various derivatives of this model that are applied among domains that are unrelated to criminal justice and police science. However, the review of the literature showed an absence of a CMMi derivative maturity model from the perspectives of the criminal justice or police science domains.

Based on the contents of the literature, a synthesis of the CMMi discussions is used to generate and propose a derivative framework for the justice domain. The derivative herein is referred to as the Criminal Justice Maturity Model (CJMM).

Literature discussions include process management, processes within the justice system and law enforcement organizations, process improvement, process maturity modeling, quality management regarding organizational processes, and process environments among organizations. The literature also represents methods through which law enforcement organizations and justice entities implement process management and improvement. The considered literature is assessed to generate a proposed maturity model that may embellish the process improvement initiatives of organizations within the criminal justice domain.

## **2.2 DEFINING PROCESSES**

Siegel (2012:536) indicates that processes are activities that transform input resources into output resources. The term process is also defined as an integrated body of events that contribute toward the achieving of objectives with specificity (Hansen, Mowen, & Guan, 2009:168). Harmon (2007:198) defines the term process as constrained activities regarding events to produce some forms of outputs. Lewis (2000:68) defines the term process as an input or output that is affiliated with business activities.

Reviewing these definitions yields commonness among the individual themes. These observations are noted as follows:

- Processes have a catalyst that instigates their beginning.
- Processes have some defined ending.
- Processes exist for a reason (i.e., a goal or objective may be achieved).
- Processes have a series of steps that must occur in a specific order sequentially (i.e., sequential activities).
- Processes have inputs.

- Processes have outputs.
- Processes are transformative with respect to inputs being used to generate outputs.
- Processes are associated with organizational activities.
- Processes contribute toward organizational value.

These observed characteristics are affiliated with processes regardless of domain considerations. They describe business processes just as they describe processes within the criminal justice domain. Further, beyond these initial observations, processes must add value to their organizations.

### **2.3 PROCESSES IN THE CRIMINAL JUSTICE DOMAIN**

Administrating and managing criminal justice organizations involves paradigms that favor process improvement and quality of processes. For example, in conjunction with the quality circle concept, the Compstat paradigm is used among some law enforcement organizations to improve the quality of processes and the quality of work environments that impact organizational processes (Henry, 2002:163).

Additional approaches include business process management (BPM), business process improvement (BPI), business process re-engineering (BPR), Six-Sigma, legislation, Total Quality Management (TQM), and International Organization for Standards (ISO) requirements. Through the use of such paradigms, the effectiveness and efficiency of operations may be bolstered through the use of statistical analysis, definitive process delineations, management according to the influences of service quality, the use of expressed law to dictate acceptable practices, and methods through which resource allocation is optimized mathematically to facilitate the highest and best use of organizational resources. Such concepts contribute toward improving organizational process value.

However, such paradigms do not approach process improvement from the unique perspective of an organizational process maturity framework as a foundational basis.

Given this notion, this chapter reviews salient writings that consider criminal justice processes, and highlights the potential of process maturity modeling as a valid method of architecting a framework for process improvement within the criminal justice domain.

### **2.3.1 Considerations of Criminal Justice Processes**

Processes are applicable within the domain of law enforcement organizations and within the justice system. Numerous processes impact law enforcement organizations and policing activities. Law enforcement processes encompass grievances; litigation; managerial decisions; personnel hiring or discharge; searching of crime scenes; arresting of suspects; searches and seizures of property; personnel performance reviews; conducting investigations; maintaining the integrity of the chain of custody regarding evidence; and many other organizational and individual functions and actions (Dempsey & Forst, 2012:68-74).

Within the context of criminal justice, the managing of processes impacts organizations either positively or negatively. Establishing defined processes may avoid problematic situations whereas disregarding such processes may instigate problematic situations. These notions are described within the writings of Novak and Turner (2005:1). According to Novak and Turner (2005:1), the King County, Washington law enforcement agencies, which consisted of 42 jurisdictions that operated unique justice resources (e.g., courts, jail houses, etc.) independently and that incurred costs of approximately USD \$67 million annually. Operating concurrent law enforcement agencies and justice systems is burdensome for the taxpayers of the locale, incites repetitiveness, and may interject confusion within the justice system and among processes. Such complexity may hamper the effectiveness and efficiency of law enforcement organizations and justice systems.

The complexity of the King County, Washington situation is problematic. Novak and Turner (2005:1) describe a scenario in which managed improvements of law enforcement processes and the processes of the justice system could have improved overall efficiency and effectiveness of the justice system. This scenario is given as follows (Novak & Turner, 2005:1):

“The case of ‘Billy Bob Thornside’ is even more complex. Billy Bob is convicted in the City of Maple Valley for DUI; it is his fifth conviction. He is sentenced to one year of secured detention, but he also has cases pending in King County's Northeast District Court and in the municipal court in Bellevue. Because of the high cost of detaining someone at the King County Jail, Maple Valley has a contract with the Yakima County jail, where they pay only \$50 per day and no booking fee. So Billy Bob is sent over the mountains to Yakima, approximately 130 miles away. When Bellevue is ready to bring Billy Bob back for his pending case, it must first locate him and then issue a warrant and transport order; he must be transported from Yakima to Bellevue for arraignment, motion hearings, trial dates and postponements, and sentencing. As for Billy Bob's case in the Northeast District, due to difficulties communicating between the court system, prosecutors, and law enforcement, Billy Bob is sitting in the Yakima County Jail on the day of his Northeast District court date, and becomes a no-show. The court dismisses the case, citing the speedy trial rule, because the defendant was in local custody and was not made available for his trial (Novak & Turner, 2005:1).”

This example shows that transporting the prisoner among multiple locations necessitates additional incarceration booking fees and the use of additional human resources that could have been assigned elsewhere. Because the prisoner is absent from anticipated court dates, charges are dropped and cases are dismissed (Novak & Turner, 2005:1). These observations highlight the disorganizations of the justice system and law enforcement agencies and their associated processes. This scenario also exhibits an ineffectiveness and inefficiency of the cumulative process environment because of the absenteeism demonstrated during anticipated court proceedings. Such inefficiencies are also demonstrated through the resource allocation requirements affiliated with multiple prisoner transitions and human resources assignments within the justice system.

When considered from the aforementioned definitions and observations, regarding the basic concept of a process, given within the preceding section, the King County,

Washington scenario detracts from the creation of organizational value. This consideration of value deduction is represented by an adverse impact within the justice systems and among the considered law enforcement organizations regarding the exhibited processes. Such detracted value is manifested through the inefficiencies of prisoner transportation, absenteeism regarding court proceedings, and human resource allocation associated with processing prisoners.

The King County, Washington scenario may be considered from the perspective of process maturity modeling. Maturity modeling encompasses a sequential, evolutionary approach to the crafting and maturing of processes among organizational settings. This approach progresses through a series of five separate stages. These stages commence with an initial stage that is representative of ad hoc process and culminates in a stage that is representative of highly optimized processes.

Specifically, based on descriptions given by the IBM Corporation, these stages are contained within the integrated Capability Maturity Model (CMMi) as follows (Myerson, 2007:1):

Table 2.1 – Stages of the CMMi

Stage	Description
Level 1	Ad hoc, unstructured, and chaotic processes that often exceed budgetary expectations.
Level 2	Processes may be reactive, and are managed. Processes also involve planning, performing, measuring, and controlling.
Level 3	Processes may be delineated through the use of various modalities (e.g., procedural steps).
Level 4	Processes are managed quantitatively via measurement and control.
Level 5	Processes exhibit optimization, and continuous improvement is emphasized.

Other perspectives of these stages exist from the views of different domains. Examples include human resources, acquisitions, and information systems. From the context of human resources, one such perspective is given within Table 2.2.

Table 2.2 – Human Resources Perspectives of the CMMi

Stage	Description
Level 1	Little to no attributes of optimized human resources processes (Kennett & Baker, 2010:86).
Level 2	Attributes of managed processes, such as coordinating and communicating (Kennett & Baker, 2010:86).
Level 3	Attributes of process definition, such as developing careers and planning for workforce development (Kennett & Baker, 2010:86).
Level 4	Attributes of repeatable activities, such as managing for performance expectations (Kennett & Baker, 2010:86).
Level 5	Attributes of optimal processes, such as improving organizational capabilities continuously (Kennett & Baker, 2010:86).

Obtaining necessary resources is a vital concern of any organization. Among organizations, various processes exist through which resources are gained. The CMMi may be considered within this context. Within Table 2.3, based on the writings of Gallagher, Phillips, Richter, and Shrum, (2011:33), the perspective of acquisitions management is presented.

Table 2.3 – Acquisitions Management Perspective of the CMMi

Stage	Description
Level 1	Process chaos and randomness exists within the organization setting.
Level 2	Process foundations and planning activities exist for organizations to acquire necessary resources.
Level 3	Process definitions exist for project management regarding supply

	acquisitions.
Level 4	Process control exists via the use of statistical analysis and appropriate quantitative methods.
Level 5	Continuous improvement exists organizationally.

The CMMi has its origins in the software industry in conjunction with the Software Engineering Institute of Carnegie-Mellon University (Kan, 2003:39). Software engineering and information systems projects of varying purposes, types, times, and scopes incorporate a variety of different processes. The following table shows an information systems project management perspective of the CMMi.

Table 2.4 – Information Systems Project Management Perspective of the CMMi

Stage	Description
Level 1	Unpredictability of processes, such as costing and scheduling (Kan, 2003:39)
Level 2	Involves repetition associated with processes, such as managing subcontracts (Kan, 2003:39).
Level 3	The delineating and coordinating of processes occurs within the organization (Kan, 2003:39).
Level 4	Processes exhibit quality control through use of quantitative methods (Kan, 2003:39).
Level 5	Optimal processes exist organizationally with a reduced quantity of defects (Kan, 2003:39).

Examining and comparing the preceding tables yields some commonness regarding the CMMi framework and process attributes regardless of the considered domain perspective. These concepts are itemized as follows:



- Level 1 -- Organizations initially exhibit randomness among processes and process environments.
- Level 2 – Specification of foundational process attributes occurs to generate process repetition and management among organizational settings.
- Level 3 – Process definition contributes toward coordinating processes within organizational settings.
- Level 4 – Quantitative methods, such as statistical analysis, are used to embellish process quality.
- Level 5 – An optimized state of processes is exhibited within the organization.

Another aspect of commonness involves a consideration of the progressive stages of the respective CMMi framework perspectives. Within the individual frameworks, processes and their respective environments exhibit characteristics of randomness and unpredictability thereby reflecting the concepts expressed within Level 1 of the CMMi framework. Each successive stage shows progressive improvement. For instance, before the defining of processes occurs in Level 3, processes must be repeatable. Repeatability facilitates the opportunity to observe processes in order to identify and define their characteristics. Progression to Level 4 indicates the existence of an identified, defined, and repeatable process that is then influenced by quantitative analysis to improve the quality of the process. Improving the quality of the process embellishes both its efficiency and effectiveness thereby diminishing resource wastefulness. When this state of process maturity is achieved, the expectations of Level 5 are satisfied. However, this state is not static. Continuous improvement must permeate processes and their environments.

These notions may be considered from the perspective of the preceding King County, Washington scenario. The processes exhibited by the justice systems and law enforcement organizations were inefficient and often ineffective given the periodic potential of a prisoner to be absent from scheduled court proceedings. Such processes are characteristic of the initial stage of the CMMi process maturity improvement model

framework because of such impediments and the unpredictability of the process environment.

This scenario represents a situation in which chaotic processes existed within the organizational setting. Although an initial CMMi phase is represented within the scenario, it represents an opportunity for implementing the CMMi as a method of facilitating a process improvement paradigm, using an evolutionary process maturity framework, among the law enforcement organizations and the systems of justice. Through the use of such a model, process improvements may possibly be generated within the considered justice systems and among the considered law enforcement agencies.

## **2.4 TOTAL QUALITY MANAGEMENT**

### **2.4.1 Defining Total Quality Management**

All law enforcement organizations, their personnel, and the members of their served public have some interaction with the characteristics of quality each day (Doss, et al., 2012:50). The notion of quality is both a ubiquitous and subjective concept, and it is perceived differently from the unique perspectives of both individuals and organizations (Doss, et al., 2012:50). Perceptions of quality are ambiguous and are subject to the interpretations of the beholding entities that experience some perceived aspect of quality thereby contributing to the forming of individual opinions of a quality service or product (Doss, et al., 2012:50). Regardless, quality involves the conforming of a service or product to some common expectations that exist within the production or service domain or among the consumers of the products or services (Gitman & McDaniel, 2009:20).

Generating a product or service that conforms to such expectations of quality may be influenced by Total Quality Management (TQM) philosophies that permeate organizational components (Gitman & McDaniel, 2009:273). According to Hubbard (2003:28), TQM is defined as the envisioning of a desire future state in which all personnel have some commitment to improvement and issues of quality. Rawlins (2008:6) indicates that TQM involves creating an unequivocal dedication to improvement within an organizational setting. Walesh (2000:173) defines TQM as the philosophical

principles of an organizational setting that exhibits continuous improvement. Walesh (2000:173) expounds upon this notion by stating that TQM also combines managerial practices, improvement activities, organizational resources, and technologies to generate organizational improvement.

Many other definitions of TQM exist ranging from application domains in accounting settings to manufacturing environments (Maher, Stickney, & Weil, 2012:112-113). However, regardless of the definition or perspective, Kerzner (2009:186) observes that TQM is not explicitly defined. This notion is corroborated by notions indicating that no consensus exists with respect to a universal specification of TQM that encompasses all of its potential application domains (Padhi & Palo, 2005:21). Despite the numerous definitions and lack of consensus regarding a universal definition, TQM is a management philosophy that incorporates holistically an emphasis toward the bettering of goods and services as well as continuously improving the organizational setting (Padhi & Palo, 2005:21). This approach involves the involvement of all organizational personnel towards a goal of effectively and continuously satisfying the needs of consumers (Padhi & Palo, 2005:21).

Cumulatively, these literature references show that TQM is a philosophical approach to continuously improving all facets of an organization and its processes without any prescriptive methodologies that may be applied universally among organizations. However, because no universal definition of TQM exists, it may be perceived and implemented differently among organizations to satisfy their unique needs. Given this notion, the TQM approach that is suitable for one organization may be unnecessary for a different organization. Because TQM represents a philosophical approach to continuous quality improvement within an organizational setting, an expressed delineation of a solitary TQM implementation method does not exist. Therefore, organizations must determine their respective goals, objectives, approaches, plans, and activities that are necessary for implementing the TQM philosophy.

## 2.4.2 Total Quality Management Concept

The concept of TQM originated in the early twentieth century among production and manufacturing environments. The origins of TQM are found within the applications of statistical analysis among product control environments (Mukherjee, 2006:229). It demonstrated significant development and refinement during the period following World War II, especially within the nation of Japan (Mukherjee, 2006:229). Although the primary concepts of TQM originated within the United States, they were not readily and immediately accepted and implemented among American industries (Gergen, 2010:41). However, during the 1950s, it gained popularity and acceptable use among Japanese companies (Gergen, 2010:41). Within the nation of Japan, the application of TQM heralded significant product and service improvements that benefitted national competitiveness throughout much of the remainder of the twentieth century (Gergen, 2010:41).

Various individuals contributed to the crafting of the foundational concepts of TQM. Examples of these contributors and their foundational concepts include the following TQM approaches:

- Philip Crosby – This approach involves the quantifying and measuring of quality metrics, and incorporates the notion that quality is a duty of all organizational personnel (Morfaw, 2009:19). This approach also incorporates a sequential set of five stages in which organizations gain an awareness of new activities and their implementations across the enterprise (Curtis, Hefley, & Miller, 2010:70). These stages facilitated the adapting of new practices organizationally (Curtis, et al., 2010:70).
- Edward Deming – This approach involves the improvement of the organizational management function. It incorporates the notion that problems of organizational quality result from managerial inefficiency (Morfaw, 2009:18).

- Peter Drucker – This approach involves the controlling of quantitative and qualitative organizational characteristics as a measure of judging organizational performance through time (Cohen, 2010:58).
- Armand Fiegenbaum – This approach involves the notion that organizational control of total quality is essential to acquire market share and organizational positioning. It incorporates the notion that the involvement of management, leadership, and personnel is essential to establish quality throughout the entirety of an organization (Besterfield, Besterfield-Michna, Besterfield, Besterfield-Sacre, Urdhwareshe, & Urdhwareshe, 2010:4).
- Kaoru Ishikawa – This approach involves the use of quality circles in which work groups, including supervisors, are used to define and solve issues of quality among work settings (Besterfield, et al., 2010:4).
- Joseph Juran – This approach involves the integrating of plans, controls, and improvements among all organizational levels to generate investment returns and quality outcomes (Besterfield, et al., 2010:4).
- Genichi Taguchi – This approach involves the integrating of costs, targets, and variations to generate organizational quality improvements using experimental design (Besterfield, et al., 2010:5).
- Frederick Taylor – This approach involves the application of scientific analysis to generate production improvements among human personnel (Mattison, 2005:245).

The modern instantiations of TQM amalgamate the contributions of such individuals thereby demonstrating a robust array of tenets and best practices that influence the generating of quality services and products among a variety of industries and service

organizations (Weiers, 2011:763-765). There is no solitary application of TQM that encompasses all organizations; instead, it is a management philosophy that influences the management paradigms of individual organizations with respect to the uniqueness of circumstances and situations (Hackman & Wageman, 1995:309-342).

Given these concepts, TQM represents a strategic management philosophy that influences the long-term perceptions of organizational quality through time and that permeates all facets of an organization. Cumulatively, an examination of the preceding literature references shows that TQM exhibits the following philosophical characteristics:

- Analytical – TQM involves continuous improvements that may be measured quantitatively through time.
- Process – TQM involves continuous process improvement through time among all facets of an organization, but does not prescribe specific methods for improving processes.
- Cultural – Corporate culture must be indoctrinated with philosophies of continuous improvement throughout the entirety of an organization.
- Customer – TQM contributes toward the influencing of total customer satisfaction with respect to any interaction with organizational services or the experiencing of organizational products.
- Management – All TQM initiatives must be managed well to improve the chances of organizational successfulness through time.

The foundational concepts of TQM are representative of a dynamic philosophy that may be leveraged for strategic organizational benefit and improvement through time (Morfaw, 2009:128). Organizations may select the TQM paradigm (or combination of paradigms)

that encompass quality improvement with respect to some strategic goal(s) and vision that are sought by the organization (Morfaw, 2009:55). Although TQM contributes to organizational improvement, its basic philosophical premise does not necessarily approach improving organizations incrementally from the perspectives of any evolutionary process maturity frameworks or architectures through time (Doss, 2004:54).

Despite this lack of an emphasis regarding the maturity of processes within its foundational philosophies, process improvement is a consideration of the TQM paradigm (McCollum, 2004:42). Further, the Crosby TQM philosophy contributed toward the crafting of process maturity modeling, within the software industry, from which the Capability Maturity Model (CMM) was derived (Laplante, 2007:148). Given these notions, the CMM represents the applied characteristics of TQM regarding the managing of processes (O'Regan, 2002:129).

#### **2.4.3 Total Quality Management and the Criminal Justice Domain**

Quality concepts are a concern for any policing organization with respect to its ability to function organizationally, render public service, and successfully pursue its strategic vision through time (Doss, et al., 2012:50). Within the justice system and among law enforcement organizations, the notion of quality permeates managerial, administrative, and field entities (Doss, et al., 2012:51). Considerations of quality also affect the financial resources and monetary decisions that exist with the justice domain, including capital investment decisions (Doss, Sumrall, & Jones, 2012:62).

The use of TQM represents a resourceful approach to improving organizational efficiency and effectiveness ranging from decisions and activities involving financial matters to those involving defect reductions among services (McKinney, 2004:423). Within policing, the use of TQM (and other quality paradigms) emphasizes the satisfying of public market demand, quality of service, motivating personnel, and solving problems (Carter, 2012:1). Further, among law enforcement organizations, the application of TQM philosophies serves as a medium through which community policing may be implemented, and facilitates attempts to improve the qualities of policing services (Gaines & Worrall, 2012:139). The application of TQM principles improves the ability of

law enforcement organizations to analyze perceptions of the citizenry regarding whether law enforcement services are perceived as being adequate (Gaines & Worrall, 2012:139).

Such notions are observed among Floridian law enforcement entities and within the justice system of Florida. Murphey (2008:1) indicates that Floridian law enforcement entities that implement TQM exhibit higher ratings in categories of professional expertise, public interaction, internal stability, and citizen and officer empowerment. The specifying and implementing of TQM principles also serve as precursors for any Floridian initiatives involving community-oriented policing or problem-oriented policing (Murphey, 2008:1).

Similar TQM initiatives occurred among other law enforcement organizations within the United States. Dempsey and Forst (2012:75) describe a shared instantiation of TQM involving the leaders of the Broken Arrow, Oklahoma Police Department (BAPD). According to Dempsey and Forst (2012:75), this application of TQM incorporated personnel feedback within organizational decisions, and it resulted in productivity increases of arrests, citations for traffic violations, field reports, and rates of clearance for solving crimes.

Although these implementations of the TQM philosophies were designed to improve law enforcement agencies and justice systems, the foundational concept of TQM did not incorporate an approach involving the maturity of specific processes through time. However, they are indicative of process management initiatives with respect to improving the efficiency and effectiveness of their respective organizations. The TQM concept lacks specificity regarding the prescription of any formal methodology that organizations may incorporate to generate improvements of processes and process effects throughout the enterprise. Thus, it represents a philosophical approach to yielding process improvement through time.

Through the use of maturity modeling as an improvement initiative guided by TQM philosophies, law enforcement organizations and entities within the justice system gain an opportunity to facilitate process improvement paradigms that focus upon sequential, evolutionary process maturity through time.



## **2.5 BUSINESS PROCESS MANAGEMENT**

### **2.5.1 Defining Business Process Management**

Business process management (BPM) is defined as a managerial paradigm for managing and improving organizational processes throughout the duration of life cycles and for delineating graphically the stages of these processes (Gillot, 2008:25). According to Doss (2004:29), BPM is a methodical process improvement paradigm that is beneficial regarding processes associated with organizations ranging from customer service to strategy. The BPM concept is a paradigm through which the identifying, designing, executing, documenting, measuring, monitoring, and controlling of processes occurs strategically as a method of pursuing long-term endeavors (Zur-Muehlen & Su, 2011:763).

Although various definitions exist, Markovic (2009:14) indicates that there exists no consensus regarding a universal definition of business process management.

### **2.5.2 Business Process Management Concept**

A consideration of the preceding definitions yields some commonness and central observations regarding the premise of BPM. These observations are given as follows:

- BPM must be systematic;
- BPM must be structured;
- BPM transcends organizational boundaries;
- BPM contributes to the analytical identification of processes;
- BPM contributes to the defining and expressing of processes;
- BPM contributes to the improving of processes; and
- BPM contributes to the pursuit of organizational strategy;

These observations represent the notion that BPM transcends both management functions and organizational designs to facilitate process improvement. However, commensurate with management philosophies, there exists no specific delineation of BPM methods that are universally appropriate among organizations that implement process improvement paradigms. All organizations are unique, and must implement unique instantiations of BPM within their work settings. Because BPM is a philosophical approach to process improvement, it does not dictate specific actions that are applicable among all potential domains of application. Therefore, the application of BPM that is appropriate for one organization may be inappropriate for a different organization.

Although specificity does not exist regarding the methods through which BPM may be executed among organizations, some general approaches exist through which organizations may find guidance when crafting their unique BPM initiatives. Multiple approaches exist regarding the instantiating of process management among organizations. Such approaches are highlighted by the following characteristics:

*Full-Process Approach:* This approach accommodates the reporting of all personnel to the owners of processes that are accountable for outcomes (Burlton, 2001:70). This approach facilitates efficient and effective interactions among organizational factions via the mutual provisions of completed services and goods (Burlton, 2001:71). The tracking of processes, the tracking of humans, and the soliciting and disseminating of feedback are accomplished readily within this approach (Burlton, 2001:71).

*Hybrid Approach:* This approach involves the residing of daily control operationally with managers, and process improvement is the responsibility of the designated owners of processes (Burlton, 2001:71). This type of scenario exhibits personnel that possess multi-disciplinary responsibilities that are associated with altering the personnel behaviors within an organization (Burlton, 2001:71).

*Forum Approach:* This perspective incorporates communication and facilitates discussions among managerial factions regarding process

improvements and process outcomes (Burlton, 2001:71). Within this paradigm, all management personnel must present and analyze at least one process thereby ensuring that process evaluation occurs within the organization (Burlton, 2001:71). Further, management personnel become responsible for processes, and their reviews are judged according to their performances regarding improvement and participation within forums (Burlton, 2001:71). Therefore, accountability becomes interjected among management factions within this BPM approach.

These approaches demonstrate methods that may be used to improve the design, efficiency, and effectiveness of processes among organizations. However they do not necessarily address the concepts of process maturity versus process management. These notions are reflected within the reviewed literature through differentiations between the concepts of process maturity and process management. For instance, Pullicino (2003:34) indicates that process management attributes may be representative of varying levels of maturity among organizational processes. Examples of factors that affect the maturity of managed processes include an ignorance of process characteristics and the integrating of processes within the organizational infrastructure (Pullicino, 2003:34). Although a process may be either mature or immature, all processes must be managed within organizations to improve efficiency and effectiveness (Pullicino, 2003:34). Given these notions, process maturity represents the state of existence of a process (as judged by some criteria) whereas process management involves a consideration of the functions that may be applied against the process.

Synthesizing these readings offers an interesting consideration: BPM approaches do not instigate organizational improvements from the perspective of an evolutionary framework that incorporates process maturity as its foundational basis. Although BPM is a management philosophy that incites organizational change and involves process ownership among personnel, its organizational instantiations are situational given the uniqueness of work settings. No universal BPM construct exists that may accommodate all potential application domains using a basis of process maturity. Therefore, BPM paradigms may benefit from a consideration of incorporating evolutionary process

maturity as a foundational concept of improving organizational efficiency and effectiveness.

### **2.5.3 Business Process Management in the Criminal Justice Domain**

The use of BPM paradigms and philosophies is not foreign to the justice domain and among law enforcement organizations. One perspective considers the process management aspects of change management regarding the redesigning of reporting systems involving traffic accidents (Greasley, 2004:635). This implementation involved a final goal of improving the utilization of traffic personnel (Greasley, 2004:635).

The BPM paradigm may be considered from the perspective of policing to facilitate border security. Within this context, BPM represents a method through which process improvement occurs among activities that are associated with border policing. Examples of such processes are associated with analyzing historical data for audit activities, analyzing records concerning individuals making trades, and for the purpose of investigating criminality (McLinden, Fanta, Widdowson, & Doyle, 2011:8).

Regarding BPM, Salg (2012:1) describes a case involving the recording of telephone calls to improve the efficiency of policing activities that were related to organizational processes through the use of public safety answering points (PSAPs). According to Salg (2012:1), this approach was necessitated because of governmental reductions and the necessity of justifying organizational resources. Salg (2012:1) denotes the benefits of this approach as follows:

“ . . . identify the reasons for calls, recognize emerging trends and evaluate the call taker’s performance. Speech analytics solutions transcribe recorded calls into text data for mining and automatic evaluation by business intelligence systems. Speech analytics can be used for compliance (script adherence), call classification (through voice and emotion detection) and general investigations (Salg, 2012:1).”

Further, this case also incorporates considerations of organizational efficiency and effectiveness with respect to the characteristics of personnel. According to Salg (2012:1), the incorporating of automated resources to determine the optimal combination of human resources, work assignment, and training generates efficiency improvements among personnel. This accomplishment resulted from evaluating the acumen of personnel through the use of reporting to monitor quality (Salg, 2012:1).

The characteristics of this approach are commensurate with the aforementioned descriptions of Burlton (2001:70-71) regarding BPM approaches organizationally. It exhibits characteristics of the full-process approach described by Burlton (2001:70-71) because of the immediate ability to evaluate the individual performances of call-takers thereby providing feedback that could be used to modify the human performances and behaviors of personnel. It also exhibits characteristics of the hybrid approach described by Burlton (2001:70-71) because of the ability to control operational aspects of the activities and processes of taking calls. Each of these activities contributes toward organizational improvements of efficiency and effectiveness.

These cases also represent a significant reduction in the average time required to report information throughout the organizational infrastructure and through the appropriate chains-of-command. Through using BPM activities designed to generate reports quickly, the required time to report information is decreased. This decreased time reflects improved efficiency within the reporting process while maintaining and improving the overall effectiveness of the reporting mechanism.

Cumulatively, synthesizing these examples shows the benefits of integrating BPM philosophies among organizational settings. Improvements in organizational efficiency and effectiveness may be derived from the use of BPM. The use of BPM transcends human and organizational boundaries, and interjects accountability within the contexts of process improvement and process ownership. Within the context of policing, BPM may be used to improve the ability of police agencies to identify hot spots of criminal activity. The use of BPM provides a foundation for improving the ability of human police personnel to render decisions regarding the allocating of police organizational resources to counter criminal activities.

Despite these benefits, the primary approaches of BPM do not incorporate any basis of process maturity modeling as a foundational concept. Therefore, the maturity modeling of processes is not accommodated as a basic concept of BPM paradigms and their related management philosophies. Given this notion, opportunity exists through which process maturity modeling may be crafted to complement the existing BPM paradigms among law enforcement organizations and justice systems.

## **2.6 BUSINESS PROCESS REENGINEERING**

### **2.6.1 Defining Business Process Reengineering**

Business process reengineering (BPR) is defined as the analyzing and redesigning of organizational processes both internally and externally to incite improvements regarding organizational performance (Radhakrishnan & Balasubramanian, 2008:9). Langer (2008:10) indicates that BPR is defined as the crafting of a new process to accommodate any changes of requirements organizationally or to incite improvements regarding existing processes. According to Muller (2002:94), BPR is the conceptualizing and optimizing of existing processes via the use of technologies with respect to troublesome issues affecting the organization.

### **2.6.2 Business Process Reengineering Concept**

A review of the basic BPR definitions yields the notion that the BPR premise involves the deconstructing of work methods and processes, and then reconstructing them to generate improvements in effectiveness and efficiency among organizations. Sottini (2009:88) indicates that BPR involves improvements among a variety of areas, including costs, service, and time. Additionally, Sottini (2009:88) presents the following items as supportive mechanisms for implementing BPR organizationally:

1. Identification of the desired, long-term state of existence for the organization and its associated, long-term endeavors (Sottini, 2009:88).
2. Identify the specific process that is a candidate for redesign (Sottini, 2009:88).
3. Process quantification (Sottini, 2009:88).
4. Determine which resources may be leveraged organizationally to incite change and craft processes (Sottini, 2009:88).
5. Prototyping of new processes (Sottini, 2009:88).
6. Adapting of the construct organizationally (Sottini, 2009:88).

The first step of this paradigm involves visionary organizational conceptualization. Within this step, strategic thinking is an essential aspect of the improvement initiative regarding the long-term outcomes, future condition, and the future existence of the organization. The second step requires specificity regarding the focus of the process improvement initiative. Basically, the organization knows with exactness which processes must be changed through time. Once this determination is made, tools and resources may be designated and allocated to pursue the desired process change organizationally. Inciting this change involves the crafting of process prototypes dynamically. Once a prototype is established, the organizational environment must accommodate the process changes and their effects.

This paradigm is representative of methodical, systematic approaches to conducting BPR activities. Certainly, other paradigms of conducting BPR initiatives exist. Another method is delineated by McNulty and Ferlie (2002:26-29). The primary tenets of this method are itemized as follows:

1. Commence the BPR initiative with an objective mindset regarding the desired improvements (McNulty & Ferlie, 2002:26).
2. Advocate process and organizational changes holistically (McNulty & Ferlie, 2002:27).
3. Gain the supportiveness of the highest levels of organizational management and leadership regarding the improvement initiative (McNulty & Ferlie, 2002:28).
4. Designate specific personnel as agents of change and express their requirements and responsibilities (McNulty & Ferlie, 2002:29).
5. Incorporate the redesigning of the intended process or processes (McNulty & Ferlie, 2002:29).

Synthesizing these methods provides a perspective of differences among their basic tenets. Although this approach differs from the two preceding BPR approaches, it results in the fashioning of changed processes organizationally through time. Unlike the methods described by Sottini (2009:88), the approach described by McNulty and Ferlie (2002:29) incorporates the supportiveness of organizational leadership and management among the highest levels of the organization. Obtaining the supportiveness of managerial and leadership factions shows a unified approach to implementing changes among processes throughout the enterprise using a top-down paradigm. The method described by McNulty and Ferlie (2002:29) also differs from the other BPR methods because it incorporates considerations of accountability among personnel whom are responsible for crafting redesigned or new processes. Therefore, specific roles, responsibilities, and expectations are associated with personnel regarding the changing of processes throughout the organization.

Synthesizing further this array of writings shows that multiple BPR paradigms exist that exhibit various similarities. However, these BPR paradigms are not identical.



Organizations may select from multiple BPR paradigms when considering process reengineering improvement initiatives. The selecting of any BPR paradigm is situational, and represents the best interests of organizations uniquely regarding their improvement requirements. Although BPR contributes toward the improving of organizational processes through time, its basic premise does not accommodate a foundation of improving processes via an evolutionary process maturity framework. Progression through the stages any of the examined BPR paradigms does not necessarily improve the maturity of processes despite the activities of process reengineering. Although improvements of processes may be attained, such improvements may not be based upon process maturity within BPR methodologies.

### **2.6.3 Business Process Reengineering in the Criminal Justice Domain**

An example of BPR involved the justice system of Maricopa County, Arizona. This use of reengineering considered issues associated with optimizing the security of court environment versus the availability of limited resources (Reinkensmeyer, 2011:87). In this instance, the justice system implemented a collaborative BPR approach. This approach was advantageous because it facilitated the identification of susceptibilities within the system and duplicative service mechanisms (Reinkensmeyer, 2011:89). Further, it involved cooperation among peer court entities, enforcement organizations, and any entity that has a stake in the successfulness of the organization (Reinkensmeyer, 2011:91).

This Arizona reengineering initiative demonstrated improvements organizationally. It facilitated annual personnel cost savings of approximately \$700,000 annually (Reinkensmeyer, 2011:90). The BPR initiative also instigated changes that redeployed personnel to enhance the security of areas that were determined to have weaknesses or that were inundated with service requests (Reinkensmeyer, 2011:90).

Another instance of implementing BPR involved the Colorado Department of Revenue (CDR). The CDR has the responsibilities of issuing both vehicular and individual driving licensures, and ensuring that law is enforced concerning these responsibilities (Bhattacharjee, 2000:3). This instance of BPR involved the upgrading of electronic

information systems that were used for motor vehicle registration (Bhattacharjee, 2000:3). It also involved a team-based approach to examine existing processes as an initial activity within the reengineering effort (Bhattacharjee, 2000:3).

Reengineering also is applicable within the contexts of drug enforcement agencies. Within the Wisconsin Division of Narcotics Enforcement (WDNE), one situation involved the reengineering of multiple processes to improve the efficiency of report generation within the organization (Park & Bhaskar, 1994:6). The reengineering effort eliminated various activities that were associated with the entering of data within the reporting system (Park & Bhaskar, 1994:6). It also eliminated personnel involving a statistics position, a secretarial position, and a typist (Park & Bhaskar, 1994:6).

A synthesis of these case examples shows instances of varying BPR applications within the criminal justice domain. Justice systems and law enforcement organizations may benefit from implementing BPR as a form of process improvement. Through the leveraging of BPR paradigms strategically, organizations may improve their overall efficiency and effectiveness through time. However, the reviewed BPR paradigms and approaches do not have any consideration of process maturity as a foundational basis. The BPR concept encompasses waste reduction and improved organizational efficiency whereas maturity modeling frameworks represent a progressive, evolutionary approach to process improvement among organizations. Despite its methodical approach to improving organizational processes and generating improvements through time, BPR paradigms do not accommodate a progressive process maturity framework that incorporates the maturity of processes as its foundational premise.

## **2.7 BUSINESS PROCESS IMPROVEMENT**

### **2.7.1 Defining Business Process Improvement**

Business process improvement (BPI) represents a methodical paradigm for assisting organizations in advancing their process alignment and operations of processes to satisfy the expectations of customers (Doss & Kamery, 2006:143). Wysocki (2012:611) indicates that BPI uses software resources to generate improvements among processes.

Doss (2004:19) indicates that BPI is form of process improvement in which organizational processes are subject to improvement via streamlined operations. Page indicates that BPI is the examining and improving of processes systematically among organizational environments (Page, 2010:1).

### **2.7.2 Business Process Improvement Concept**

Doss and Kamery (2006:143) indicate that a primary goal of BPI is to generate improvements of processes through optimizing input resources without compromising the quality of process outcomes. According to Page (2010:2), the use of BPI improves the ability of organizations to remain competitive, to increase customer responsiveness, and to increase personnel productivity while improving the overall investment returns associated with the improvement initiative.

Derived from the discussions of Page (2010:2), the following methodology is a baseline for implementing BPI initiatives among organizations:

1. Developing a process inventory;
2. Establishing a foundation;
3. Delineating a process mapping;
4. Estimations of cost and time;
5. Verification of process mapping;
6. Application of improvement methods;
7. Crafting of metrics, tools, and internal control mechanisms;
8. Testing and corrections;
9. Change implementation; and
10. Facilitation of continuous improvement.

The first step involves a consideration of specifying process listings within the affected domain in which the process improvement occurs. This initial stage incorporates an examination of the processes that exist within an organization, and yields a determination regarding whether any forms of process improvement are necessary

(Page, 2010:9). If process improvement is deemed necessary, a prioritization of processes occurs to specify which processes may be altered initially (Page, 2010:9).

The second step involves the crafting of a foundational basis that underlies organizational process improvement and its affiliated changes organizationally. This step necessitates the establishing of improvement scope to specify the boundaries of organizational change through time, and these constraints are expressed when defining the scopes, organizational reaches, and constraints of the designated initiative (Page, 2010:9).

The third step involves actions of process mapping. Within this step, determinations and expressions of organizational interactions, regarding the considered process, are specified. According to Page (2010:10), the benefit of this stage is an organizational understanding regarding the functioning of processes and the exchanges that must occur among organizational factions and components. The primary result of this step generates a basic understanding of the examined process organizationally.

The fourth step involves analytical measurements of cost and time. These measurements integrate a financial consideration involving the considered process improvement initiative (Page, 2010:10). This notion is corroborated by Doss, et al., (2012:48) regarding the examining of organizational efficiency and effectiveness attributes that impact the financial decisions of organizations. Further, through such measurements, organizations gain a stronger perspective of the amount of work that is necessary to craft organizational processes (Page, 2010:11).

The fifth step incorporates some consideration of validation and quality. Within this step, care is taken to ensure that the recorded and expressed analyses and observations are truly reflective of the actual process examined within the organization. According to Page (2010:11), the primary outcome of this step is the providing and validating of the foundational goals of improving process and reducing the chances of experiencing impediments.

The sixth step accommodates the implementing of the desired process improvement initiative. Once the validation of the prescribed baseline is accomplished, the instigating

of process improvement commences organizationally (Page, 2010:11). This step incorporates a variety of activities ranging from departmental and organizational controlling and coordinating to metrics analysis regarding the process improvement initiative.

The seventh step represents quantitative analysis to embellish the managing of the process improvement initiative. Metrics analysis may accommodate examinations of financial and economic attributes to personnel and resource management characteristics (Page, 2010:11).

The eighth step involves considerations of quality regarding the process improvement initiative. If defects are manifested, then they may be corrected to facilitate a successful outcome from the process improvement initiative. According to Page (2010:14), process testing yields a perspective of organizational performance regarding the attaining of organizational goals.

The ninth step involves the implementing of change organizationally. This change implementation is neither linear nor static; instead, it encompasses multiple activities that prepare organizations for the impending process change. According to Page (2010:14), four tracks represent this stage: 1) change management; 2) testing; 3) communication; and 4) training.

Change management involves the identifying of potential impacts regarding the appropriate organizational factions necessary during the facilitation of organizational change (Page, 2010:14). The activities of testing yield confirmations that both the process and its associated resources must perform appropriately and as anticipated (Page, 2010:14). Communicating facilitates the dissemination of information regarding change throughout the organization (Page, 2010:14). Training ensures that personnel are provided with the necessary knowledge and skills affiliated with the impending change organizationally (Page, 2010:14).

The tenth step accommodates continuous improvement regarding the incited process change organizationally. This step emphasizes the vitalization of mindsets concerning the importance of continuous improvement within the organization (Page, 2010:15).

Continuous improvement involves multiple phases that include evaluation, testing, assessing, and executing iteratively (Page, 2010:15). These four phases contribute to determining whether additional change is required through time regarding the introduced process. Within the context of continuous improvement, the use of these four phases contributes to ensuring that the process is current, and provides validation that the process is effective, efficient, and adaptable organizationally (Page, 2010:15).

The performing of these steps represents a sequential method of instigating process improvement among organizations. Although the performing of these steps may contribute to improving the efficiency, effectiveness, and adaptability of organizations, the method does not accommodate a foundational approach involving process maturity as its primary premise. Within this sequential BPI method, no baseline framework exists that progressively improves processes with respect to considerations of evolutionary process maturity through time.

### **2.7.3 Business Process Improvement in the Criminal Justice Domain**

The use of BPI embellishes the process improvement initiatives of law enforcement organizations and justice systems. Historically, Western police organizations have generally benchmarked their performances against constrained factors associated with rates of various crimes, rates of arrests, rates of crime clearances, and times to respond to assistance calls (Davis, 2012:1). However, modern police environments are experiencing greater constraints regarding their organizational capacities to render public service, and must examine the creation of organizational value through improved efficiency and effectiveness.

Within the United States, McNabb (2009:26) indicates that the allocating of police resources regarding potential terrorist threats, Congressional mandates, and the abilities of police entities when coping with Acts of God, contributes toward a divergence between policing service demand and the scarcity of policing resources. The use of BPI provides a method of improving organizational efficiency and effectiveness with respect to the limitations of such constraints. Within the context of policing, McNabb (2009:26)

indicates that BPI may be leveraged as a method of improving the methods through which tasks are performed organizationally.

The use of BPI may embellish quality initiatives among police departments. One instance involved the 1990s implementing of a quality program involving the Tacoma, Washington Police Department (TWPD). This quality program bolstered improvements in the transporting of legal materials to court settings, among accounting functions, and the processing of municipal agreements (Ready, 2006:72). The TWPD generated improvements with respect to the modification of processes departmentally (Ready, 2006:72).

The Phoenix, Arizona Police Department also leveraged BPI as a method of improving organizational investigative processes within its crime laboratory. This instance involved the identification and documenting of foundational processes regarding a crime laboratory (Amari, 2006:3). A primary goal of this improvement initiative encompassed the requirements of the users of the crime laboratory as a tool to facilitate process specification and development (Amari, 2006:10-11).

Another example of BPI policing application involves the San Bernadino Sheriff's Department (SBSD) in California. The use of BPI contributed to the obtaining of monetary funds for a laboratory information management system (LIMS) (Penrod, 2007:169). The improvements and benefits generated from this use of BPI are summarized as follows:

“The LIMS will provide a means for law enforcement agencies throughout San Bernardino and Riverside Counties, as well as courts, district attorney's offices, probation, parole and licensing agencies, to interact with the forensic science laboratory. LIMS can integrate two existing independent non-communicating systems, the Property and Evidence Tracking System (PETS) and the Case Tracking System. The introduction of a single system will reduce workload and errors by eliminating the need to make entries into both systems. LIMS will provide a single electronic file; directly down-loading instrumental data to electronic case files thus

minimizing transcription errors; facilitating supervisory review of reports and notes; and streamlining report creation and distribution (Penrod, 2007, p.169).”

The use of BPI also has occurred among legal systems. Various implementations of BPI have been leveraged to generate process improvements involving information technology (IT) domains among justice systems and legal systems (Steelman, 2003:94). Within such contexts, the following methodology is prescribed:

Step 1: Analyze the court setting and specify the problem that necessitates the altering of processes (Steelman, 2003:94).

Step 2: Instigate communication among the personnel that may be impacted regarding the altering of processes (Steelman, 2003:94).

Step 3: Specify the potential catalysts that generated the problematic circumstances and determine the potential impacts regarding qualities, performances, productivities, and satisfactions (Steelman, 2003:94).

Step 4: Categorize these catalysts with respect to a set of primary domains, including location, methods, policy, technology, and personnel (Steelman, 2003:94).

Step 5: Brainstorm to improve the specificity of causation among the identified categories (Steelman, 2003:94).

Step 6: Identify any redundancies of causation among the identified categories and determine their contributions toward manifesting the problematic circumstances (Steelman, 2003:94).



Step 7: Craft multiple solution alternatives regarding the problematic circumstances given the categorical delineations of causation (Steelman, 2003:94).

Step 8: Instigate the implementation of the best solution alternative and monitor and adjust its progression towards generating improved processes.

The methodology of Steelman (2003:94) and the methodology of Page (2010:2) have some commonness. Both constructs commence with an analytical step that examines existing processes within the considered organizational environment. Both constructs terminate with a period of implementation that is succeeded by some aspect of continuous improvement through time. Certainly, differences exist among the intermediary steps of the two methodologies. For example, Steelman (2003:94) advocates a period of brainstorming whereas this activity is absent within the methodology presented by Page (2010:2). Regardless, both methodologies have a common goal: the improving of processes within an examined organizational environment.

The long-term, strategic implications of BPI are also considerations of police organizations. The strategic use of BPI is expressed within the 2009 strategic plan for the Denver, Colorado Police Department. Specifically, within this context, the use of BPI is anticipated to be a resource through which enhanced methods of accomplishing tasks are crafted during the coming years (LaCabe, Hickenlooper, & Whitman, 2009:10).

The notions of organizational value among police entities are unconstrained regarding American police agencies. They are also applicable within the contexts of police organizations within the United Kingdom. Within the context of IS and IT, BPI strategically facilitates process improvement among British police forces and the British justice system (Liu & Hu, 2005:380). This application of BPI contributes to the upgrading of current systems via additional functions, and the continuous development and introduction of new systems (Liu & Hu, 2005:380).

Within the United Kingdom, another example involves the Staffordshire Police (Tomkinson, 2007:43). This instance involved the use of electronic technologies and computer networks to facilitate communications among law enforcement personnel and also with the general public. In this instance, improvements regarding the resolving of assistance requests were accomplished (Tomkinson, 2007:43).

Both the American and United Kingdom examples of BPI, within the contexts of policing, justice systems, and legal systems show a variety of approaches to facilitating process improvement initiatives among law enforcement organizations. Each instance involved a situational application of BPI philosophies and techniques. However, these applications of BPI do not incorporate a foundational consideration of process maturity as a basic premise. The use of an evolutionary, progressive framework, through which the maturity of processes is improved through time, is unconsidered among all of the reviewed BPI example cases.

## **2.8 BENCHMARKING**

### **2.8.1 Defining Benchmarking**

According to Saul (2004:1), benchmarking is a form of continuously analyzing quantitatively the performance of a certain organization against the performances of its associated industry peers for the purpose of taking actions to better its various performances. Saul (2004:2) simplifies this definition as a “process” that is used to both measure and improve organizational performance. Sower, Duffy, and Kohers (2008:3) define the term benchmarking as a method of improving through which organizations compare themselves against peer entities toward a goal of bettering and refining their performances. Kelly (2001:1) indicates that benchmarking is an analytical method of comparing organizational performances against those of other organizations or organizational components with respect to achieving goals of improvement.

## **2.8.2 Benchmarking Concept**

A consideration of the aforementioned definitions of the term benchmarking yields the notion that an organization may compare and contrast its performance against the performance of another organization or against the performances of multiple organizations as a method of determining its characteristics of performance. The notion that an organization may compare or contrast its current performance against itself is also divulged from a consideration of these definitions. Through such comparing and contrasting, organizations may determine whether performance improvements may be necessary. Further, a consideration of the aforementioned definitions of the term benchmarking yields the notion that multiple classifications of the term benchmarking exist: 1) general, 2) internal, 3) external (i.e., competitive), and 4) functional.

The first category represents a general concept. Regardless of the nomenclature, the primary concept of benchmarking is nothing more than the organizational comparison of observations against historical observations or against observations regarding the performance of another organization through time. Randall (2011:4) corroborates this notion through observations that benchmarking involves a comparing of the performance of an organization regarding peers within its competitive service or industry or “internally” within the organization.

The second category represents comparisons that are performed within the boundaries of an organization without regard to any external considerations of peer organizations. This situation represents solely an internal perspective of organizational performance. No constraints exist regarding the metrics that may be examined via the use of internal benchmarks. Saul (2004:6) corroborates these notions, and indicates that internal benchmarking examines historical data internally, and contributes toward answering the question: “what were our results last year, and how much better do we want them to be this year?” Further, Saul (2004:6) indicates that internal benchmarking maintains an organizational focus regarding the future performance expectations of an organization.

Internal benchmarking is applicable among a variety of organizational contexts. From a human resources perspective, internal benchmarking may be used to evaluate personnel salary and rank metrics (Kurke & Scrivner, 2009:451). From an administrative perspective, Gudehus and Kotzab (2012:4) indicate that internal benchmarking may be used to compare the foundational processes of operational components of an organization as a method of determining differences among tasking and functioning.

The third category represents perspectives that are external to an organization. According to Saul (2004:6), external benchmarking examines the characteristics of peer organizations to determine the methods through which they exhibit superior performances concerning efficiency, effectiveness, and cost. Further, Saul (2004:6) indicates that external benchmarking contributes toward answering the question: "how does our organization compare to other organizations in generating a particular result?" Reider (2002:326) indicates that external benchmarking is a form of examining the processes of industrial peers to continuously improve an organization. Morreale and Terplan (2010:124) indicate that the concepts of external benchmarking and competitive benchmarking are synonymous.

Numerous uses of external benchmarking are described within contemporary literature. According to Kozak (2004:11), benchmarking was used by Xerox as a method of improving its financial performance and to improve service to its clientele. Martin (2008:23) describes applications of benchmarking involving rivals UPS and FedEx as a method of improving operational facets of the organizations. Regarding organizational financial management, Peters (2006:47) considers benchmarking applications involving the environments of Coke Argentina and Ford Argentina.

The fourth category involves considerations of the functional characteristics of an organization. According to Gessner, Schmidt-Gothan, and Lubben (2002:63), this type of benchmarking involves investigating separate organizational components to determine the possibility of optimizing resources in conjunction with crafting programs to enhance productivity. Harry and Schroeder (2005:65) indicate that functional benchmarking emphasizes processes without any consideration of industry categorization.

Functional benchmarking is used to examine organizational characteristics. From the perspectives of research and development and marketing communications, Cushman and King (2001:18) describe the implementing of functional benchmarking to generate improvements within the settings of General Motors with respect to comparisons regarding the performance of Ford Motors.

Although the use of benchmarking is situational among organizations, a process model for implementing benchmarking activities organizationally exists. A primary benchmarking process involves the following sequential activities:

1. The identification of a candidate process for improvement (Boone & Kurtz, 2013:358),
2. The comparison internally between the process attributes of an organization versus those of industrial peers (Boone & Kurtz, 2013:358); and
3. The implementation of change to incite improvements in quality organizationally (Boone & Kurtz, 2013:358).

Cannon (2011:110) describes a different approach to the cumulative benchmarking process. According to Cannon (2011:110), with respect to improving organizational processes, benchmarking may be implemented according to the following sequential activities:

1. Planning – This step involves the identification of essential processes and crafts methods of measuring and judging them (Cannon, 2011:110).
2. Research – This step involves using process characteristics and sampling to generate a comparative standard (Cannon, 2011:110).

3. Observation – This step involves amalgamating observations internally and externally regarding a benchmarking peer to facilitate organizational comparisons (Cannon, 2011:110).
4. Analysis – This step involves the identification of dependency relationships and catalysts that affect process relationships (Cannon, 2011:110).
5. Adapting – This step involves the crafting of hypothetical conjecture regarding the potential strategic benefits of findings versus long-term organizational expectations (Cannon, 2011:110).
6. Improving – This step involves prototyping and implementing of a proposed process (Cannon, 2011:110).

Rojas (2008:44) presents another benchmarking process. According to Rojas (2008:44), a foundational approach to benchmarking consists of the following sequential steps:

1. Definition – This step involves defining the target process of the benchmarking initiative (Rojas, 2008:44).
2. Setting benchmark – This step involves identifying and establishing a specific goal realistically (Rojas, 2008:45).
3. Preplanning – This step involves a consideration of the appropriate resources and methodologies necessary within the benchmarking initiative. The preplanning activities should generate a planning document that delineates the methods through which the initiative will be completed (Rojas, 2008:46).
4. Implementation – This step consists of organizing and implementing tasks commensurately with the specifications contained within the planning document (Rojas, 2008:47).

5. Gathering data – This step involves the collecting of data to judge if the implementing of the plan is properly functioning and is satisfactory (Rojas, 2008:47).
6. Charting progress – This step involves measurement to determine whether the benchmarking expectations are being satisfied through time, and incorporates a schedule through which comparisons of variables may be accommodated (Rojas, 2008:48).
7. Evaluation and audits – This step involves a determination of the accuracy of the initiative and whether the initiative is effective (Rojas, 2008:53).
8. Continuance of implementation – This step facilitates the continuance of the benchmarking initiative provided that impediments are avoided (Rojas, 2008:53). This continuance occurs commensurately with the specifications delineated within the planning document (Rojas, 2008:53).

Benchmarking represents a powerful resource through which an organization may compare and contrast its performance attributes against those of peer entities to embellish process improvement initiatives. Certainly, an organization may compare and contrast its current performance attributes against those gleaned from historical observations of the organization. Despite the strengths of benchmarking, the basic premises of benchmarking activities do not contribute toward process improvements from any perspectives of evolutionary process maturity through time. Instead, benchmarking is a method of inciting organizational process improvement based upon a comparison of observations regarding the performance of an organization at any period in time.

Various approaches to benchmarking exist within contemporary literature. Although the examined literature delineates different benchmarking methods, none of these methods

incorporates process maturity as a foundational basis of organizational process improvement. Among these methods, no baseline framework exists that progressively improves processes with respect to considerations of evolutionary process maturity through time

### **2.8.3 Benchmarking in the Criminal Justice Domain**

The application of benchmarking is not uncommon within the contexts of law enforcement organizations and within the justice system. From the perspective of personnel compensation within the United Kingdom, Winsor (2012:696) indicates that benchmarking activities may be used as leverage to negotiate salaries with respect to national data.

Within the United States, during 2008, benchmarking was implemented to examine various facets of the traffic policing characteristics of the Sacramento, California Police Department. According to Lamberth (2008:8), the Sacramento Police Department (SPD) used benchmarking activities to investigate the following concepts: 1) whether minority drivers were targeted during traffic stops; 2) the specific groups of minorities being targeted (if any); 3) the geographic regions in which targeting had some probability of occurring; 4) whether minority drivers were treated equally (if stops occurred); and 5) the rates of speed that were associated with the racial attributes of drivers.

Through the use of benchmarking, the Lamberth (2008:9) study showed that no differences existed regarding the issuing of citations among the racial groups and that no specific racial group was detained longer than any peer group. The Lamberth (2008:9) study also showed that white and Asian drivers were requested to exit their respective vehicles at a rate less than the rate that was exhibited regarding Hispanic and black drivers.

This study also used benchmarking to investigate searches. The outcomes of the study yielded the following conclusions regarding searches:



“Hispanic motorists were patted down (Terry cursory search) at a significantly higher rate than would be expected, while Black motorists were searched using the parole/probation search authority significantly more often than would be expected. Finally, with regard to searches, both Black and Hispanic motorists were searched for probable cause more than were motorists of other race/ethnicities. An analysis of hit rates, the rate at which contraband is found following a search, revealed that these rates are approximately equal for all four race/ethnicities (Lamberth, 2008:10).”

The final query within this study involved investigating the characteristics of speed limit offenses among the observed roadways. The study showed that no evidence existed regarding whether Hispanic or Black motorists likely exceeded the speed limit by at least 15 mph than did other motorists (Lamberth, 2008:10). The study also showed no statistical significance regarding whether white motorists exceeded the speed limit by at least 15 mph versus other motorists (Lamberth, 2008:10).

Other perspectives of benchmarking, within the context of criminal justice organizations, involve operations management and law enforcement training programs. Doss, et al., (2011:67) indicate that benchmarking may be used to conclude whether criminality may be reduced through time. Doss, et al., (2011:68) also indicate that benchmarking may be used to investigate the times necessary for law enforcement organizations to respond to assistance calls. Additionally, Doss, et al., (2011:68) indicate that benchmarking is applicable during law enforcement training through various forms of testing and examinations (e.g., physical fitness scores; written exam scores; etc.) to conclude whether candidates possess the expected skills and acumen that is commensurate with employment in the law enforcement vocation.

Additional methods of benchmarking exist within the policing domain. Engel and Calnon (2004:97-111) indicate that police benchmarking initiatives may involve the uses of data sets representing censuses, traffic stops, accidents, departmental comparisons, traffic violations, and interactions with the general public by law enforcement officers. All of

these facets of benchmarking involve comparing some aspect of current performance against measurements that were observed at some other point in time.

Regardless of the situation, benchmarking represents a powerful tool through which police organizations may improve their efficiency and effectiveness through time. The aforementioned descriptions of police benchmarking all involve comparing some aspect of current organizational performance against expected or historical observations. Although the prescribed processes of implementing benchmarking initiatives were sequential, they did not incorporate a consideration of evolutionary process maturation through time.

Further, among the examples presented from contemporary literature in which benchmarking was conducted among police organizations, none incorporated a benchmarking initiative from the perspective of process maturity. Within the examined literature involving practical applications of benchmarking, there is an absence of discussions that describe the leveraging of a foundational architecture of progressive process maturation through time. Therefore, with respect to the context of benchmarking within the criminal justice domain, the reviewed literature contained no discussions of approaching organizational process improvement from the perspective of process maturity or any form of an evolutionary process improvement paradigm.

## **2.9 STANDARD**

### **2.9.1 Defining Standard**

Lynch and Lynch (2005:18) indicate that standards are specifications, designated by appropriate authority, that provide a baseline for judging performances or actions. Standard is also defined as a ruling that clarifies expectations clearly and definitively (May, 2002:2). Roeser, Valente, and Hosford-Dunn (2000:182) indicate that a standard is the codification of practices that are associated with national and international domains of expertise. A standard is defined as a commensurate attribute, as can be secured with respect to uniformity, with respect to the accuracy of measuring processes (Doering & Nishi, 2008:1160).

## 2.9.2 Standard Concepts

Reviewing the preceding definitions yields some interesting observations regarding the term standard. Based upon an examination of these definitions, it may be stated that standards are generally commonly accepted and expressed methods of performing tasks among organizational environments through which uniformity and adherence to the standard occurs through time. Among organizations, standards are used to determine measurements regarding improvement effectiveness and to determine whether organizational goals were achieved through time (May, 2002:2). Standards also are applicable for requirements and qualities as a method of reducing defectiveness, and wastefulness among processes (May, 2002:2). The primary purpose of any standard is to facilitate invariability among process users (Roeser, et al., 2000:182).

The reviewed literature alludes to both the potential origins of organizational standards and the basic characteristics of standards. Such considerations include:

1. Maturing and fashioning of authorities, customs, or agreements that emerge through time (May, 2002:3),
2. May be derived from changing experiences and data that slowly influence the crafting of a process through time (May, 2002:3), and
3. May be derived from technical requirements that generally are static through time thereby contributing to process consistency (May, 2002:3).

Additionally, three characteristics that highlight the importance of any standard are noted as follows:

1. Scientific and specific – standards must be factual, and not based on guesses or speculation (May, 2002:2).

2. Adherence – standards are irrelevant if they are not followed within the organization. Standards must be followed consistently (May, 2002:2).
3. Disseminate – standards also should be recorded and disseminated among organizations as a method of facilitating personnel familiarity and conformance within an organization (May, 2002:2).

The identification and use of a standard contributes toward the establishing of standard operating procedure (SOP) among organizations. An SOP is defined as the standards that are associated with task performance within an organization (Green, 2001:94). Among organizations, any SOP that is related to common activities is experienced with greater frequency than are those which are associated with infrequent activities (Green, 2001:94).

Every organization is unique and exhibits characteristics and situations that influence its unique standards and SOPs. Standards and SOPs that are appropriate for one organization may be inappropriate within the situational contexts of a different organization (Green, 2001:94). Although differences exist among organizational standards and SOPs, some consensus is achieved through international considerations of standardization.

This consensus is accomplished internationally through the International Organization for Standards (ISO). The ISO represents an organization that devises standards for use among numerous domains ranging from risk management to quality management. The ISO facilitates the developing of standards economically, technologically, managerially, and intellectually (Oliviero & Woodward, 2009:64). The methodical process through which generating ISO standards occurs involves the following stages: 1) proposal; 2) preparatory; 3) committee; 4) enquiry; 5) approval; and 6) publication (Hunter, 2009:57).

Although the ISO presents numerous opportunities for revision and improvement, it does not approach improvement from the perspective of process maturity. The ISO paradigm

does not incorporate any facet of an evolutionary process maturity architecture or framework through time to eventually yield a highly optimized standards outcome.

Similarly, this absence of a process maturity framework is applicable to the general notion of standards. The aforementioned definitions of the term standard show that a standard represents a method of performing a task among organizations that is commonly accepted and is generally adhered to within the boundaries of the organization. However, such notions do not necessarily incorporate a process maturity framework as a primary basis of generating organizational process improvement.

### **2.9.3 Standard in the Criminal Justice Domain**

The use of standards is not uncommon among law enforcement entities and within the justice system. During 1967, the Presidential Commission on Law Enforcement and Administration of Justice indicated that the justice system must enforce conduct standards that were generally acceptable for the purposes of protecting society and its individual members (Gaines & Miller, 2012:10). According to Gaines and Miller (2012:10), this enforcement occurs in conjunction with police organizations, and encompasses the controlling and preventing of crime, and the providing of and maintaining of justice.

Police organizations must be mindful of standards regarding both their tangible and intangible attributes. Green, Lynch, and Lynch (2012:21) indicate that four categories of standards permeate the justice system and police organizations: 1) legal standards, 2) ethical standards, 3) moral standards, and 4) performance standards.

An example of legal standards involves court proceedings. From the perspective of juries within the United States, Neubauer and Fradella (2011:361) indicate that differences in perceptions of justice standards contribute to disagreements between judges and juries that result in juries deliberately modifying interpretations of law in accordance with community standards and perceptions of law. This community perspective is reflective of community standards among localities. Further, Neubauer

and Fradella (2011:361) indicate that such standards are affiliated with the notion of jury nullification among criminal cases.

Ethical standards are common among policing organizations. This type of standard influences the professionalism of law enforcement personnel (Lynch & Lynch, 2005:18). These ethical standards are exhibited within the Code of Ethics of the International Association of Chiefs of Police (IACP). Ethically, for instance, these standards incorporate facets of honest behavior among law enforcement personnel, service to community, and adherence to law by police personnel (McElreath, et al., 2013:189). Therefore, all law enforcement personnel must be mindful of standards that affect both their personal and professional behaviors.

These IACP tenets represent standards of living and professional conduct that express an unequivocal commitment to the policing profession among its membership. These standards influence the personal and professional decisions and behaviors of police personnel, and emphasize integrity among all the endeavors of an individual. Also, these notions introduce the concept of moral standards within the context of policing.

Moral standards influence the personal conduct of law enforcement personnel with respect to foundational beliefs of right versus wrong. This notion encompasses the concept of moral reasoning. According to Carper and McKinsey (2012:23), moral reasoning is defined as mental processes that rationally determine whether a certain action is either wrong or right thereby yielding a moral conclusion.

Lynch and Lynch (2005:18) express examples of moral standards and affiliated moral reasoning. According to Lynch and Lynch (2005:18) an example includes determining if a police officer should use a vehicle that may be taken home for the conducting of personal business. Lynch and Lynch (2005:19) indicate that moral standards are unique for individuals given differing personal values and beliefs of right versus wrong among personnel. Given this notion, Lynch and Lynch (2005:19) indicate that police chiefs should be cognizant of such scenarios, and must incorporate standards appropriately within the law enforcement organization.

These notions introduce the concept of performance standards within the context of police organizations. From organizational and societal perspectives, Withrow (2011:152) indicates that few universal standards exist among police organizations. This situation arises from public perceptions regarding fairness in the rendering of public services among localities (Withrow, 2011:152). Within the United States, police organizations must be leery of implementing quotas (e.g., a certain quantity of speeding tickets issued monthly, etc.) and must be careful to avoid racial profiling. Therefore, officers must exercise discretion when rendering decisions, and must act in accordance with any departmental policies.

However, police organizations may use performance standards to assess the professionalism of individual officers (Lynch & Lynch, 2005:19). Within this context, for instance, performance standards exist that accommodate the filing of reports or for use as court testimony (Lynch & Lynch, 2005:19). Further, many police organizations maintain standards for recruiting new personnel and promoting personnel through the established ranks (Lynch & Lynch, 2005:19). In such cases, the use of standards contributes towards benchmarking within the law enforcement organization.

These types of standards may involve demographics associated with a variety of factors ranging from whether a police job applicant is of the minimum age required for becoming a police officer to whether the applicant has a criminal background (Dempsey & Forst, 2012:99). Such standards contribute toward crafting law enforcement officers whom are capable of effectively providing public service, capable of exuding professionalism, and contributing toward minimizing any negative incidents with the served populace (Dempsey & Forst, 2012:101).

The use of standards among law enforcement organizations contributes toward the bolstering of both public perceptions of policing quality and the quality of law enforcement personnel (Doss, et al., 2012:49). The use of standards contributes toward the strengthening of rendering decisions among law enforcement administrators, managers, and leaders strategically, tactically, and operationally (Doss, et al., 2012:50). Certainly, the use of standards also influences the decisions of individual law enforcement personnel whether an officer has administrative or field duties.

Although standards provide law enforcement organizations with an accepted method of accomplishing tasks and activities, provide some baseline metrics regarding the characteristics of personnel, and embellish organizational uniformity, these benefits are facilitated without the use of an evolutionary process maturity framework. However, given the prevalence of standards among law enforcement organizations, the reviewed literature does not discuss instances of integrating a progressive, evolutionary process improvement framework with law enforcement organizational standards. Such a construct is absent within the reviewed literature regarding the domains of policing and the justice system.

## **2.10 SIX SIGMA**

### **2.10.1 Defining Six Sigma**

Six Sigma is a methodical tool through which problems may be solved, systems may be improved strategically, and services may be enhanced via statistical analysis to lower defectiveness within an organization (Allen, 2010:8).

Two definitions of Six Sigma also exist from the perspectives of technology and culture. These two definitions are given as follows:

1. Technically -- Six sigma measures statistically process performance versus the expectations of clients (Nunnally & McConnell, 2007:9).
2. Culturally – Six Sigma is a philosophical approach towards improving process performance using factual information to support decisions and to satisfy clients (Nunnally & McConnell, 2007:9).

Another perspective exists within the examined literature regarding the defining of Six Sigma. According to Kress (2010:13), Six Sigma both systematically and quantitatively contributes toward improving processes while simultaneously reducing instances of defectiveness.



### **2.10.2 Six Sigma Concept**

The definitions of Six Sigma show that the Six Sigma concept is both a quantitative resource to embellish organizational process improvement paradigms and is a management philosophy through which overall improvements in organizational quality may be facilitated through time. Hayler and Nichols (2007:5) indicate that Six Sigma emphasizes the details of customer expectations and incorporates factual information to improve the organizational ability to render quality services.

Six Sigma initiatives is implemented through the use of a methodical process within organizations (Cox, Gaudard, Ramsey, Stephens, & Wright, 2010:3). According to Cox, et al. (2010:3), this process consists of the following stages:

1. Define
2. Measure
3. Analyze
4. Improve
5. Control

This approach facilitates the improving of processes by using teams to solve problems (Cox, et al., 2010:3). These process stages represent the DMAIC approach (an acronym of the steps) of implementing Six Sigma (Cox, et al., 2010:3).

The first step of the DMAIC represents the expressing of a problem statement against which a Six Sigma method is to be applied. Within this step, the defining of the problem occurs with respect to the process characteristics of the organizational environment. Hayler and Nichols (2007:235) indicate that this stage involves problem definition, process definition, and the expression of customer expectations.

The second step of the DMAIC represents data collection and quantitative measurement. Hayler and Nichols (2007:237) indicate that this step involves the quantifying of performances or process attributes.

The third step of the DMAIC represents an analytical phase. Hayler and Nichols (2007:233) indicate that this step involves the scrutinizing of improving processes. Within this stage, investigating and verifying information occurs to bolster the stating of the considered problem (Hayler & Nichols, 2007:233). Further, analytical investigations of processes include process mapping with respect to perceptions of contributed process value (Hayler & Nichols, 2007:233).

The fourth step of the DMAIC represents the improvement stage. This step emphasizes the creative generation of ideas. Hayler and Nichols (2007:236) indicate that this step involves the determining of possible methods through which problems may be solved.

The fifth step of the DMAIC represents the control stage. According to Tennant (2002:8), this step involves the repetitive measuring of the process that was improved, the introducing of additional procedures and controls, and the assigning of process ownership.

Observations of financial benefit are described within the reviewed literature. Creveling, Slutsky, and Antis (2003:6), indicate that Samsung witnessed a tripling of its profits to exceed \$530 million and sales growth to \$4.4 billion resulting from the implementing of Six Sigma paradigms. Taghizadegan (2006:4) indicates that Motorola Corporation increased its revenues from approximately "\$2.3 billion during 1978 to approximately "\$8.3 billion" during 1988 through the use of Six Sigma. Taghizadegan (2006:4) also indicates that General Electric Corporation attained savings of approximately \$4 billion annually resulting from a five-year Six Sigma initiative. Other corporations have benefitted from the implementing of Six Sigma. Two notable examples include Dupont and Allied Signal (Taghizadegan, 2006:4).

Synthesizing these examples shows the potency of Six Sigma as both a management philosophy and as a quantitative process improvement resource through which financial cost savings may be incited among organizations. Through Six Sigma, organizations

may generate improvements in both efficiency and effectiveness of operations strategically and tactically through time. Because of Six Sigma, organizations may diminish wastefulness among their work settings and processes while simultaneously optimizing their work environments.

Despite the benefits of Six Sigma, the foundational concepts of Six Sigma do not approach organizational process improvement from the perspectives of process maturity or any form of a process maturity framework. The DMAIC is a sequential, progressive approach to implementing Six Sigma process improvement initiatives. However, the basic premise of the DMAIC does not incorporate any facet of improving the maturity of organizational processes through time. Given these notions, the foundational concept of process maturity and a process maturity framework is absent from the basic components of Six Sigma process improvement methodologies.

### **2.10.3 Six Sigma in the Criminal Justice Domain**

The use of Six Sigma is appropriate for law enforcement organizations and within the justice system. Within the United States, the uses of Six Sigma among law enforcement organizations are relatively recent events that have transpired within the last decade. Examples of leveraging Six Sigma among law enforcement organizations include the Mesa, Arizona Police Department, the Monroe County Sheriff's Department (New York), and the Ventura, California, Police Department.

According to Scarborough (2007:1), during the last decade, the Mesa, Arizona, Police Department was one of four American police agencies that participated in a pilot study involving the implementing of the Six Sigma philosophy among law enforcement agencies. This Mesa experiment leveraged Six Sigma to examine process components or the origins of criminality (Scarborough, 2007:1).

The use of Six Sigma improved the efficiency and effectiveness of the Mesa law enforcement capacity to render public service and to demonstrate financial cost savings. Scarborough (2007:1) indicates that the use of Six Sigma generated savings of

approximately \$326,950 (an amount equal to the cost of four full-time law enforcement officers).

The Mesa instantiation of Six Sigma also contributed toward improved operational processes within the law enforcement setting. One example involves the booking process used to incarcerate prisoners. According to Scarborough (2007:1), the booking process usually required approximately “two hours” for completion, but necessitated approximately “10 minutes” after the implementing of Six Sigma.

Considering this example provides some interesting observations. Through Six Sigma, the booking process became much more efficient without compromising the effectiveness of booking inmates. Because less time is involved in the booking process, the use of certain resources may require less time thereby allowing them to be quickly allocated elsewhere.

Another law enforcement organization that implemented Six Sigma is the Broward County, Florida, Sheriff’s Department (BCSD). The BCSD leverages Six Sigma as a management philosophy through which it has embellished operational processes. Fletcher (2010:1) indicates that this use of Six Sigma improved the ability of the BCSD to implement additional process and activities thereby increasing the productivity of personnel while simultaneously reducing the operational costs of the organization.

The BCSD instantiation of Six Sigma was primarily implemented among operations management functions. According to Fletcher (2010:1), the BCSD implements assessments each month of its tools and resources that contributes to cost reductions associated with inferior repairing of resources. The BCSD also plans quality organizationally to embellish its activities of controlling and coordinating various tasks within its operations and administration (Fletcher, 2010:1).

Implementing such a plan improves the ability of the law enforcement organization to render public service efficiently and effectively. The notion of effectively and efficiently rendering police services is substantiated by Doss, et al., (2011:51). From the perspectives of coordination and control, considerations of quality are important factors when rendering a variety of police services (Doss, et al., 2011:51). For instance, when

taking statements from members of the public, police personnel may compare and contrast the statements multiple times to determine whether corroboration exists among the recorded statements (Doss, et al., 2011:51).

Through using Six Sigma among the functions of operations management, the BCSD has successfully demonstrated strong characteristics of efficiency and effectiveness with respect to the attributes of peer organizations. The BCSD demonstrates enhanced productivity levels of approximately 120% versus observed norms that range between 80% and 85% (Fletcher, 2010:1). Additionally, Fletcher (2010:1) indicates that the BCSD demonstrates an improved efficiency of operations with respect to maintaining the effectiveness of maintenance operations. Regarding vehicle fleet maintenance, for instance, Fletcher (2010:1) indicates that attentiveness to controlling productivity processes improves organizational efficiency and the ability of the BCSD to maintain its resources using a minimum quantity of personnel. Therefore, the use of Six Sigma contributes to the optimizing of resources within the law enforcement organization.

Within the law enforcement domain, another instance of Six Sigma involved collaboration between the Xerox Corporation and the Monroe County Sheriff's Department (MCSD) of New York. This instantiation of Six Sigma contributed to the automating of completely manual law enforcement processes ranging from field patrol operations to administrative reporting tasks.

The Xerox Corporation (Xerox, 2005:2) indicates that the MCSD was unable to efficiently process a vast backlog of data that increased over several months. Although manual processes existed through which such records and data were successfully processed effectively, the efficiency of the system was poor given that no aspect of the processes was automated (Xerox, 2005:2). Because of such inefficiency, organizational communications involving requests for information were either delayed or slowly facilitated (Xerox, 2005:2). The use of Six Sigma, incorporating existing organizational infrastructures, facilitated the crafting of automated solutions within the organization (Xerox, 2005:2).

The MCSD initiative also dramatically reduced the cycle time of operations affiliated with reporting. Before its instantiation of Six Sigma, the MCSD required a lengthy period for

the purposes of processing reports and generating information regarding any queries made against its data sets (Xerox, 2005:3). The introduction of automated software systems and streamlined law enforcement processes nearly eliminated these lengthy cycle time requirements through the crafting of an online system that was available continuously (Xerox, 2005:3).

Similar facets of operationally using Six Sigma occurred within the settings of the Ventura Police Department (VPD), California. Similar to the MCS D situation, the VPD experienced large cycle times that delayed investigations (Ventura, s.d.). The use of Six Sigma contributed toward cycle time reductions organizationally, and facilitated reductions of observed acts of crime within its locality (Ventura, s.d.). Through the reduction of cycle times, law enforcement organizations may improve the speed with which investigations and administrative tasks are performed. Therefore, some improvements in organizational efficiency may be gained.

In the Ventura instance, before it implemented a Six Sigma initiative, the VPD experienced records and information processing cycle times that averaged approximately 97 hours (Ventura, s.d.). The operational leveraging of the Six Sigma philosophy contributed toward the pursuance of a 24 hour cycle time (Ventura, s.d.). The final outcome of the Ventura Six Sigma initiative did not yield the desired cycle time of 24 hours (Ventura, s.d.). However, it did manifest a strong cycle time reduction that demonstrated an improved cycle time of 34.4 hours (Ventura, s.d.).

Each of these Six Sigma implementations demonstrated its potency as both a quantitative tool to improve organizational efficiency and effectiveness and its potential as a management philosophy through which organizational process improvement initiatives may be crafted. Thus, Six Sigma is a strong tool through which law enforcement organizations may improve their efficiency and effectiveness through time. In each of these Six Sigma cases, organizational improvements were manifested through the use of Six Sigma paradigms to generate improvements in both efficiency and effectiveness through time.

However, none of these Six Sigma examples involved a consideration of process maturity despite showing numerous activities of process improvement among law

enforcement organizations. Within the Six Sigma law enforcement examples, any process improvements resulted from changes in business practices, technologies, or organizational cultures. The Six Sigma concept does not facilitate process improvement from the perspective of an evolutionary, progressive framework that emphasizes the improving of the maturity of processes through time.

## **2.11 LEGISLATION**

### **2.11.1 Defining Legislation**

Panken (2005:123) defines legislation as the crafting of tenets by some authority purposefully to generate a legally binding circumstance. Within the United States, legislation is also the making of rules by Congressionally designated entities through which an array of domains (railways, energy, and so forth) are regulated (Zander, 2004:120). Given these notions, legislation is essentially the crafting, expressing, and codifying of law by the actions of an appropriate governmental entity in which a legally binding circumstance is produced via the legislative process.

### **2.11.2 Legislation Concepts**

A primary function of police agencies is to enforce the laws that impact their localities. Law enforcement organizations are subordinate to these laws, and their activities and endeavors must not transgress these laws. Further, some aspects of law are regulatory by their contents and intent, and impact the operations of law enforcement agencies. Therefore, all law enforcement organizations must not transgress the very laws that they are obligate to enforce.

It is beyond the scope of this research to consider cumulatively legislation and law with respect to its impact regarding law enforcement operations and functions. Instead, within this research, aspects of law are considered from perspectives that impact organizational processes among law enforcement organizations and the domain of policing processes.

Within the United States, legislation occurs among three levels: 1) federal, 2) state, and 3) local. American police organizations must both enforce these three levels of law and adhere to their tenets. Within the United States, the Constitution is the highest stating of law with which conflicts must not exist with other subordinate laws (Klinoff, 2012:349). Legislation must be passed that does not transgress the Constitution (Klinoff, 2012:349). State laws must be within the bounds of enforcement, may be crafted to embellish federal legislation, and must not diminish law federally (Klinoff, 2012:349). An analogous relationship exists regarding the laws of localities versus statutes federally or among the states (Klinoff, 2012:349).

Given these notions, it is evident that any state or local laws or ordinances must be within the scope of the tenets of the U.S. Constitution. They must not transgress the tenets of the U.S. Constitution, and may elucidate and expand the primary points of law that are delineated within the U.S. Constitution.

The responsibility of law enforcement organizations to enforce the law is influenced by the notion of constitutionality. The constitutionality of any law is evaluated and concluded judicially (Klinoff, 2012:349). If any question of constitutionality arises, it may be argued within the court system (Klinoff, 2012:349). Once a decision regarding constitutionality is rendered, it establishes a precedent that influences later interpreting and enforcing of law (Klinoff, 2012:349).

Legislation is valid only if laws are appropriately instantiated and are not reversed within the court system (Klinoff, 2012:349). Laws may either be suspended or reversed through court decisions (Klinoff, 2012:349). Further, through the use of referendums or voter initiatives, a law may be created and upheld within the justice system through time (Klinoff, 2012:350).

Within the context of process improvement, all organizational activities contributing toward the improving of processes must be lawful. The presence of laws and legal requirements affects process improvement initiatives. According to Pastinen (2010:6), organizations must be mindful of changing legal influences as a turbulent factor within the application of process improvement paradigms. Concerning such turbulent attributes,



Pastinen (2010:6) indicates that factors involve additional expectations of clients, diminishing or increasing of expertise, and legislative changes through time.

O'Connor, Rout, McCaffery, and Dorling (2011:70) provide similar notions concerning the boundaries of legislation. According to O'Connor, et al., (2011:70), process improvement initiatives must ensure both legislative and regulatory compliances with respect to contractual obligations. Further, regarding instances that involve information security, O'Connor, et al., (2011:70) indicate that organizations must ensure compliance to protect both data and privacy interests in accordance with legislative and regulatory constraints.

Legislation is the act of producing societal laws that influence and govern the behaviors of organizations and individuals. These laws must be constitutional, and they permeate federal, state, and local levels of society and justice systems. Legislation impacts the methods through which organizations conduct their operations. Clarkson and Eckert (2005:127) corroborate this notion through observing that businesses are constrained in their operating methods with respect to the restraints expressed among established laws.

However, although legislation impacts the methods, functions, and activities through which process improvement initiatives may be instigated and conducted, it is not concerned with process maturity among organizational environments. Legislation does not incorporate any progressive, evolutionary model for improving organizational processes through time with respect to the maturity of processes.

### **2.11.3 Legislation in the Criminal Justice Domain**

Law enforcement organizations must conduct their operations, activities, and functions commensurately within the boundaries and tenets of expressed law. Numerous pieces of legislation impact the operational, managerial, and functional characteristics of law enforcement organizations. It is beyond the scope of this research to consider an exhaustive investigation of legislation and laws that impact law enforcement organizations throughout the entirety of the nation or the entirety of the justice system.

Instead, only relevant examples that impact process improvement paradigms, within the criminal justice domain, are considered herein.

All law enforcement organizations are comprised of people. Humans lead, manage, and conduct process improvement initiatives within the work environments that exist among law enforcement organizations. The ability to hire qualified personnel or to dismiss unqualified personnel impacts the organizational characteristics of leadership and management. Therefore, a consideration of legislation and process improvement, within the context of the criminal justice domain, may be considered from the perspective of legislation that impacts human resources issues.

Issues of hiring, retaining, or dismissing personnel often involve the use of polygraph systems to determine employment eligibility among law enforcement organizations and within the corrections system. For example, from a historical perspective, during the 1980s, the laws of the state of Pennsylvania forbade employers from using polygraphs when evaluating employment candidates (Twomey, 2010:648). The only exception existed solely for police organizations (Twomey, 2010:648). Twomey (2010:648) indicates that personnel hiring implemented a regiment of examinations in conjunction with “medical,” “psychiatric,” and “background” evaluations. The use of polygraphs was also incorporated within the candidate screening process (Twomey, 2010:648). By using polygraphs in such fashions, interviewers gain multiple perspectives regarding candidates that seek entry into policing. As a result, candidates may be dismissed for multiple reasons ranging from psychological issues to a history of criminality.

Similarly, the use of such mechanisms is not uncommon among the personnel and human resources departments of modern law enforcement agencies within the United States. According to Gaines and Worrall (2012:297), both background investigations and polygraph examinations are common screening mechanisms when evaluating applicants for law enforcement positions. Specifically, Gaines and Worrall (2012:297) indicate that these investigations and examinations are relevant and necessary because police organizations must employ impeccable personnel. Gaines and Worrall (2012:297) also indicate that the scope and magnitude of these examinations vary among police organizations because of numerous factors including the availability of resources, amount of time involved, and financial costs. Among federal government

employers, employment positions exist that involve intelligence functions that necessitate the screening of candidates (McElreath, et al., 2013:400). Similarly, state law enforcement employment positions may also necessitate the use of polygraphs during the hiring process (McElreath, et al., 2013:400).

The use of such screening mechanisms is both lawful and appropriate for evaluating potential law enforcement personnel. If a candidate whose background poses some dubious characteristics that may be detrimental to employment candidacy, but is knowledgeable concerning the fundamental requirements of the position being sought, then the applicant may be altogether dismissed as a viable candidate and denied employment with the law enforcement organization. Within the United States, polygraphs may be used during the hiring processes of federal, state, or local law enforcement agencies.

Given these job qualifications and screening requirements, the use of such mechanisms has ramifications for positions involving process improvement functions and responsibilities. Candidates whose backgrounds are professionally appropriate may be unconsidered because of a failure to successfully pass a polygraph examination. As a result, the hiring organization loses the opportunity to employ someone whose professional process improvement knowledge and skills are commensurate with the requirements of the considered job position.

The use of these screening mechanisms represents an instance of how legislation may impact process improvement environments. Further, such legislative constructs are unconcerned with the characteristics of the work environment and involve no consideration of process maturity among organizations. Instead, they influence the methods of operations and functions that exist among the settings of law enforcement organizations, and impact managerial and administrative decisions that may involve process improvement paradigms.

## **2.12 POLICY**

### **2.12.1 Defining Policy**

Porche (2004:318) defines policy administratively as a decision that is rendered by government factions that identify a course of specific endeavor. According to Howard (2007:378), policy represents the principles that embody managerial positions of control among organizational components.

### **2.12.2 Policy Concepts**

Policies govern organizational environments with respect to outlining the acceptable and unacceptable modicums of decorum and methods of conduct within the work setting. Policies also contribute to crafting and guiding specific processes and procedures to which organizations must conform when conducting the business of the organization. Through the expression and use of policy, organizational decisions and activities may be guided throughout the implementing of process improvement initiatives.

Essentially, policies are reflections of common “values” that are maintained and promoted within an organization (Pfeifer, 2002:7). From a strategic perspective, regarding long-term organizational functions, Page (2002:1) indicates that policies represent a foundational method through which the documenting and publishing of an organizational process occurs.

Policy may be considered from the perspective of process improvement. Ebert, Dumke, Bundschuh, and Schmietendorf (2005:159) indicate that policies involve commitments to which an adherence is expected among process activities. According to Persse (2006:294), policy may be leveraged to influence commitments among executive leadership regarding the adopting of processes. Further, regarding organizational process improvements, Persse (2006:294) indicates that organizations should codify an expression of the expectations that are associated with processes and their affiliated activities. Additionally, such expectations should be expressed within a couple of pages of documentation, and should exhibit a “high-level” approach to implementing processes (Persse, 2006:294).

Calvo-Manzano, Cuevas, Feliu, and Serrano (2008:26) consider the expression and documentation of policy to be an essential component of the commencing of any process improvement initiative. According to Calvo-Manzano et al. (2008:26), the documenting of policy is an initial activity that is associated with the improving of organizational processes. Lientz and Rea (2002:195) also advocate the issuing of policy during the commencing pilot stages of improvement initiatives. Lientz and Rea (2002:195) consider this stating of policy to be a preventive action that diminishes the potential of problematic situations arising, and that also bolsters the managerial capacity to render decisions.

Policies are unique among organizations. Policy is independent of any particular process improvement paradigm or philosophy, and may be used in conjunction with various forms of process improvement. Therefore, policies may be crafted among organizational settings that implement TQM, BPI, BPR, Six Sigma or any other improvement philosophy.

Pfeifer (2002:68) considers the use of policy among organizational settings that leverage TQM as an improvement initiative. In this instance, Pfeifer (2002:68) indicates that a primary managerial function is to craft policies that have some level of transparency. This use of policy contributes to a mutual understanding between management and personnel regarding expectations associated with the improvement initiative.

Policy may be considered from the perspectives of process reengineering, innovation, and change among organizations. According to Grover and Kettinger (1998:537), innovativeness associated with processes necessitates changes among work tasks, and the associated policies must accommodate such changes. Radhakrishnan and Balasubramanian (2008:15), with respect to the potential of organizational personnel resisting change during periods of process reengineering, indicate that organizational management must advocate insistently the acceptance of and implementation of organizational change.

Policy may be considered from the perspective of Six Sigma initiatives. According to Snee and Hoerl (2003:227), Six Sigma does not accommodate any “template” regarding

managerial efforts or policy. However, Snee and Hoerl (2003:227) advocate the necessity of organizational policy, and emphasize the developing and deploying of policy organizationally during Six Sigma initiatives.

These examples show that policy is a consideration of organizations when undertaking any improvement initiative. The selected improvement paradigms (e.g., TQM, Six Sigma, etc.) do not necessarily dictate the tenets of policy that organizations must deploy throughout their enterprises. However, organizations must craft and disseminate policies that represent their unique situations and work settings.

Each of these examples also shows that the general concept of policy is not necessarily concerned with improving organizations through the use of any prescribed framework that matures organizational processes through time. Instead, policies are crafted to guide decisions and to influence behaviors organizationally throughout the duration of improvement initiatives regardless of the selected process improvement paradigm.

### **2.12.3 Policy in the Criminal Justice Domain**

Policies are common among law enforcement organizations, and uniquely influence their operational processes. Hicks (2007:4) indicates that police policy is a subset of public policy that impacts communities uniquely. According to Hicks (2007:4), the basic concept of policies affecting society involves providing an array of societal “services and programs” whereas policies affecting policing contribute to the maintaining of societal order. Further, Hicks (2007:4) indicates that any policing policies must be commensurate with the tenets of policies that affect the public.

This integration of public policy and police policy influences the operations and functions of law enforcement organizations. Cole, et al., (2013:206) consider this integration from the perspectives of law enforcement organizational policy and the rendering of police services among communities. Given the economic constraints of resource allocation among law enforcement agencies, Cole, et al., (2013:206) indicate that law enforcement organizations should craft personnel policies delineating the expectations of fulfilling

organizational mission and the use of personal and professional discretions during service calls.

Given these notions, police policies must be crafted to accommodate both the resources of the police organization and the needs of its served public. Three primary paradigms exist through which such considerations affect policing policy and society. The following table highlights the salient characteristics of these methods (Cole, et al., 2013:207):

Table 2.5 – Policing Paradigms

Type	Description	Society
Watchman	Emphasizes the sustaining of orders within society.	Diminished industry, racial and ethnic integration, and “working class.”
Legalistic	Emphasizes the enforcing of “laws.”	Governmental reformation; integration “socioeconomic” attributes.
Service	Emphasizes balancing services with enforcing laws and maintaining societal orders.	Suburban areas.

The first category, designated as watchman, involves a consideration of maintaining societal order. According to Cole, et al., (2013:206), this category involves the discretionary practices and attitudes among law enforcement officers when encountering offenses. When exercising policies derived within this category, law enforcement personnel choose to disregard various infractions of low severity (e.g., traffic ticket) in favor of maintaining societal order (Cole, et al., 2013:206). The arresting of individuals only occurs when infractions of greater severity are observed (e.g., robbery), and when societal order is compromised (Cole, et al., 2013:206). Because of the scope of

discretion manifested within this category, law enforcement officers may contribute toward perceptions of discriminatory treatment of individuals within the populace (Cole, et al., 2013:206).

The second category, designated as legalistic, involves a consideration of stringently enforcing the law. According to Cole, et al., (2013:206), this category involves a law enforcement personnel exuding professional characteristics when encountering the public and performing duties. Further, law enforcement personnel may choose to detain large portions of juveniles, write numerous moving citations, and perform a high quantity of arrests associated with misdemeanors (Cole, et al., 2013:206). When exercising policies that are crafted according to the tenets of this category, law enforcement personnel must not exhibit differing behaviors and treatments when interacting with various demographic groups (Cole, et al., 2013:206). Although this approach may seem cruel, it lowers the probability of law enforcement personnel experiencing instances of discrimination (Cole, et al., 2013:207).

The third category, denoted as service, involves a consideration of rendering public service within the context of a quality of service approach. According to (Cole, et al., 2013:207), this category involves acknowledging that members of the public expect policing services with an individualistic treatment. When exercising policies derived within this category, law enforcement personnel may address the actions of perpetrators in such a way that averts embarrassing situations (Cole, et al., 2013:207).

These paradigms also emphasize public service among law enforcement organizations. Such notions of public service are not unfounded and immaterial factors when crafting policies among law enforcement organizations. Among democracies, when crafting organizational policies among law enforcement organizations, it must be acknowledged that people may contribute to the methods of policing that are employed by their law enforcement agencies (Cordner & Scarborough, 2010:127).

Policies among law enforcement organizations must achieve some equilibrium between rendering policing services and accommodating the needs and wants of the general public. According to Cordner and Scarborough (2010:127), the inclusion of community and public feedback is essential when crafting law enforcement policies that exhibit



optimal balancing between organizational policing paradigms and the desires of the public.

Although these considerations of policy represent foundational approaches for rendering public service, they are unconcerned with the maturity of the processes that comprise the enacting of their essential elements. They are also unconcerned with any specific process maturity framework through which organizationally processes may be systematically and progressively improved through time. Instead, they are representative of wide expressions of philosophies and purposes, as opposed to constrained dictates operationally, through which public services are both influenced and rendered within society (Cordner & Scarborough, 2010:127). Given such notions, their basic concepts are unrepresentative of evolutionary process improvement paradigms.

## **2.13 COMPSTAT**

### **2.13.1 Defining Compstat**

According to Godown (2004:1), Compstat is defined as a paradigm for operational managing of law enforcement organizations that accommodates innovation, processes, systems, and strategy towards the fulfilling of organizational strategy. DeLorenzi, Shane, and Amendola (2006:1) indicate that Compstat is a process incorporating the activities of collecting, analyzing, and mapping quantitative observations. By using aspects of benchmarking and statistical analysis, law enforcement organizations may interject accountability among their management functions via Compstat (DeLorenzi, et al., 2006:1). According to Weisburd, et al., (2004:1), Compstat is an information processing system that focuses upon criminality and crime tracking initiatives.

### **2.13.2 Compstat Concept**

Shane (2004a:13) indicates that the foundational Compstat paradigm involves emphasizing the notions of accuracy of information processing, tactical effectiveness, deploying resources and people quickly, and evaluations succeeding initiatives. Based

upon this description, the Compstat concept is representative of an analytical process that facilitates a diminishing of criminal activities while simultaneously providing opportunities for organizational optimization. Mitchell and Casey (2007:63) indicate that the Compstat paradigm bolsters various law enforcement functions through organizational process improvement, quantitative statistical analysis methods, and improvements regarding organizational quality.

According to Shane (2004b), the Compstat paradigm leverages descriptive statistics to portray attributes of an examined criminal domain. Through the use of the Compstat paradigm, law enforcement organizations may compare and contrast various quantitative data sets to support the rendering of human decisions, to support benchmarking initiatives, or to support the policing functions of crime mapping via spatial analysis (Shane, 2004b). These Compstat abilities contribute toward improvements to organizational effectiveness and efficiency among law enforcement organizations.

Shane (2004a:13) considers the Compstat paradigm from the perspectives of both historical observations and real-time observations. Based upon these observations, Shane (2004a:13) indicates that the efficiency and effectiveness of police organizations are influenced by the potential of timely data processing functions. Because of its real-time features, Compstat represents an efficient resource through which human decisions may be improved. Such efficiency results from a reduced time required to obtain Compstat information via its real-time capabilities of interacting with data sets.

According to Shane (2004c:14), criminal domains are continuously changing through time. This notion is salient regarding the Compstat concept. Within the context of implementing the Compstat paradigm among police organizations, continuous organizational improvements and an ability to adapt to the changing criminal domain are necessary among police organizations in order to diminish instances of crime (Shane, 2004c:14). Adapting to the dynamics of a changing criminal domain improves the ability of law enforcement organizations to render public service and to demonstrate improved organizational performance through time (Shane, 2004c:14).

The Compstat paradigm also represents a qualitative resource through which the administrators, managers, and leaders of law enforcement organizations may pursue

organizational improvement through time. Therefore, the Compstat paradigm may be implemented with respect to the managerial philosophies and methods that permeate law enforcement organizations. From these perspectives, such personnel may leverage organizational feedback to support quality improvement initiatives within the law enforcement organization. These notions regarding the managerial contexts of the Compstat paradigm are corroborated within the examined literature. According to Ozdemir (2011:3), Compstat is a complex paradigm, influenced by middle police management, which contributes toward the maintaining of societal order and the diminishing of criminality within society.

The managerial importance and significance of the Compstat paradigm are essential aspects of managing law enforcement organizations. According to Hoover (2004:2), the Compstat paradigm represents an amalgamation of operations management methods and enforcement paradigms. This integration of approaches represents an integrated form of organizational management that interjects accountability within law enforcement organizations with respect to the strategic goals of reducing criminality within society (Hoover, 2004:1). Therefore, given these notions, the Compstat paradigm affects the short-term and long-term functions, activities, interests, and endeavors of law enforcement organizations.

The Compstat paradigm is comprised of various policing approaches. According to Hoover (2004:3), these integrated approaches are identified as: 1) analyzing crime via real-time methods, 2) law enforcement targeting, 3) “broken windows” theory, 4) units that respond to crime, 5) command responsibility and answerability 6) developing police organizations, and 7) crafting policing methods that are geared toward specific acts of criminality instead of community-oriented police practices.

The first Compstat approach involves a consideration of real-time activities to analyze data sets regarding the characteristics of criminal offenses that impact a locale. According to Hoover (2004:3), this approach incorporates real-time analysis of data to identify and determine patterns, information processing to visualize these patterns, and the ability to analyze criminality with specificity. Through the use of software systems to perform this type of Compstat analysis, automation occurs within the law enforcement

organization thereby eliminating manual analysis. As a result, organizational process improvement is embellished from the perspective of efficiency.

The second Compstat approach involves an ability to target specific criminal entities and attributes of crime. Hoover (2004:3) defines this ability as an array of activities that are targeted toward certain acts of crime with the specificity of location and time. This facet of Compstat demonstrates a high level of detailed attention to the characteristics of crime within a locale. Because of this focused attention, organizational improvement is embellished from the perspective of effectiveness with respect to diminishing the impacts of a specific form of criminal activity within a locale.

The third Compstat approach involves the notion of Broken Windows Theory. According to Hoover (2004:3), if a locale can be ridded of crime and its negative social effects, then instances of severe criminality may also be eliminated. This approach is preventive because it diminishes negative conduct within the served populace, diminishes the negative effects of criminality, and eliminates potential agents of crime.

The fourth Compstat approach involves a consideration of team-based tactics to counter criminal activities within a locale. According to Hoover (2004:3), these teams represent groups whose initiatives are influenced and monitored by commanders. Within this context, organizational improvement is gleaned from the ability of a law enforcement organization to exhibit the capacity to address specialized criminal issues through the use of a specialized unit. Further, because of daily monitoring, organizational improvement is manifested through consistent and continuous communications between factions of management and field personnel.

The fifth Compstat approach involves a consideration of accountability among the leaders of law enforcement organizations. Hoover (2004:3) indicates that accountability is not necessarily punitive or negative. Instead, accountability may also be used as a supportive and evaluative mechanism regarding the activities of commanders (Hoover, 2004:3). This inclusion of accountability improves law enforcement organizations through a consideration of performance. If performance is positive and creates value for the organization, then such performance may be rewarded. If performance is negative

and detracts from the creation of organizational value, then reprimands, reassignments, or dismissals of the responsible parties may occur.

The sixth Compstat approach involves an enterprise perspective regarding law enforcement organizations. Hoover (2004:3) indicates that this approach involves monitoring for proactive purposes towards the goals of improving continuously the law enforcement organization, involves a consideration of outcomes, and may be perceived as a law enforcement derivative of "Total Quality Management." Because of its continuous improvement tenets and enterprise focus, this approach embellishes organizational improvement from the perspective of organizational quality.

The seventh Compstat approach involves a consideration of resource allocation. According to Hoover (2004:3), the primary uses of any community-oriented tools are altered to addressing types of crime with specificity. According to Hoover (2004:3), diminishing instances of crime supersedes any considerations of lifestyle quality within the populace. This approach presents a strict leveraging of organizational resources to deter crime without regard for the comfort of the served populace.

Considering the synthesis of these approaches involves contemplating the quantitative and qualitative characteristics of the Compstat paradigm. Qualitatively, the Compstat paradigm represents a managerial philosophy through which law enforcement organizations may instantiate improvement initiatives. Quantitatively, the Compstat paradigm represents a resource through which an organization may evaluate its performance through various forms of metrics analysis. However, despite this dichotomy of perspectives, the Compstat paradigm does not incorporate any mechanism through which organizational process maturity is addressed via a progressive process improvement framework. Instead, the Compstat paradigm incorporates various facets of statistical analysis, targeted law enforcement to address criminality with specificity, and diminishing criminality within society. Regardless of these attributes, the Compstat paradigm contains no mechanism to facilitate evolutionary process maturity among law enforcement organizations.

### **2.13.3 Compstat in the Criminal Justice Domain**

The CompStat paradigm originated in the criminal justice domain, and continues to be implemented among law enforcement entities as a resource through which organizational improvement initiatives are pursued. The Compstat paradigm was crafted in 1994 by William Bratton in conjunction with the New York Police Department (NYPD) (Weisburd, et al., 2004). After its introduction among law enforcement organizations, it experienced rapid growth and implementation among police departments nationally (Weisburd, et al., 2004). Within the United States, the Compstat paradigm is generally adopted by larger law enforcement entities whose organizational structuring exhibits complexity. DeLorenzi, et al., (2006:1) indicate that approximately 58% of sizeable law enforcement organizations were using or were anticipating the use of some form of Compstat within their respective agencies.

According to Janetta (2006:1), the implementation process of the Compstat paradigm consists of a primary array of inter-related operations methods that consist of seven basic principles. Janetta (2006:12) expresses these components as 1) the clarifying of "mission," 2) answerability within the organization, 3) geographical command constructs, 4) formulating problems via analyzing data, 5) organizations that are flexible, 6) innovation when solving problems, and 7) externally sharing and exchanging intelligence. The cumulative implementation process is cyclical, and the individual steps are sequential.

The first implementation category involves a consideration of defining and expressing the mission of the law enforcement organization. According to Thompson, Strickland, and Gamble (2008:24), organizational mission expresses the validity of existence for an organization in relation to the overall strategy of the entity. Wheelen and Hunger (2010:17) indicate that a mission statement defines the purposeful characteristics of the agency that distinguishes it from its peers with respect to differentiations of service and market.

These considerations of mission provide a foundation for sharing organizational anticipations and beliefs among law enforcement personnel and influences perceptions within society (Wheelen & Hunger, 2010:17). Compstat may be used for clarifying the

purpose of a law enforcement organization with respect to the contents of its mission statement (Janetta, 2006:1).

The second implementation category involves a consideration of accountability that exists within the law enforcement organization. Kearns (2000:24) indicates that administrators, leaders, and managers are accountable within their respective chains-of-command, are also accountable to their served populace and society, and are also accountable to the leaders of government entities. With respect to law enforcement organizations, Weisburd, et al., (2004:2) express similar notions of internal accountability, regarding descriptions of organizational relationships, that exists regarding police leadership and street patrols.

Among law enforcement organizations that implement the Compstat paradigm, the exercising of strict accountability is a paramount aspect of improving organizational performance through time. According to Janetta (2006:1), police managers that demonstrate poor performance are offered a chance to improve their performance unless they are replaced because of repeated instances of poor performance. However, for excellent performance, such individuals are identified for retention and promotion (Janetta, 2006:1).

The third implementation category involves a consideration of the geographic organizational control structuring and chain-of-command structures that exist within the law enforcement organization. According to Willis, et al., (2003:69), despite the decentralization focus of Compstat, it reinforces a hierarchical, top-down chain-of-command. Willis, et al., (2003:69) also indicate that the Compstat paradigm facilitates commanding operationally while simultaneously revitalizing organizational leadership within the police agency. Accountability permeates this type of chain-of-command and organizational structuring among law enforcement organizations that implement the Compstat paradigm. According to Janetta (2006:2), the Compstat paradigm interjects accountability among middle police managers, and empowers them to influence activities that contribute toward the fulfilling of “mission” organizationally. Therefore, organizational structuring within the Compstat paradigm exhibits characteristics of both centralized and decentralized decisions (and the related accountabilities) among leaders, managers, and administrators of law enforcement organizations.

The fourth implementation category involves a consideration of the timeliness, robustness, integrity, and processing characteristics of data sets that exist within the law enforcement organization. Taylor, Fritsch, Liederback, and Holt (2011:294) emphasize the importance of information processing to law enforcement organizations, and that managerial personnel of law enforcement organizations must use data sets that exhibit high levels of data integrity.

Among law enforcement organizations that implement the Compstat paradigm, Janetta (2006:6) indicates that it involves a strong focus regarding the timeliness and accuracy of data to support the functions of command personnel when diagnosing aspects of criminality, and for police leadership when evaluating the performances of commanders regarding their effectiveness. The use of data among law enforcement organizations is important because it facilitates a determination of whether the organization has successfully addressed issues of criminality and personnel performance (Janetta, 2006:6).

The fifth implementation category involves a consideration of an ability to adapt to change that exists within the law enforcement organization. According to Doss, et al., (2011:72), law enforcement entities undergo change through the passing of time. Because of societal and organizational changes through time, the obsolescence of paradigms that previously demonstrated effectiveness occurs thereby necessitating new considerations of methods of diminishing crime, ways of maintaining societal order, and leading law enforcement organizations (Doss, et al., 2012:72).

These notions are reflected in the writings of Janetta (2006:7) regarding the Compstat paradigm. According to Janetta (2006:7), law enforcement organizations should be of sufficient flexibility to allocate resources with respect to the dynamic characteristics of crime that exist within their respective locales. Further, Janetta (2006:7) indicates that a law enforcement organization should continuously evaluate its resource allocation requirements because ineffectiveness may degrade the organization and the effectiveness of its command personnel.



The sixth implementation category involves a consideration of the attributes of creativity and innovativeness that exist within the law enforcement organization. According to Willis, Mastrofski, and Weisburd (2003:72), the Compstat paradigm necessitates quick law enforcement responses to criminality without lengthy periods of strategizing. For example, among law enforcement organizations, Gaines and Kappeler (2011:143) indicate that command personnel advocate that their street personnel attain and maintain a strong relationship with the citizenry as a method of improving the ability of the organization to counter quickly any events of criminality. Janetta (2006:7) also considers innovation within the context of implementing Compstat among law enforcement organizations. According to Janetta (2006:7), examples of such innovation involve adapting the successful methods and paradigms of peer law enforcement entities and devising new ways of addressing criminality within society.

The seventh implementation category involves a consideration of the attributes of sharing information externally that affect the law enforcement organization. Hanna (2010:62) indicates that trustfulness and accountability rely upon the accessibility and transparency of information between law enforcement organizations and the citizenry.

According to Janetta (2006:7), implementation of the Compstat paradigm is useful when obtaining the cooperativeness and supportiveness of any stakeholder within society with respect to a consideration of effectively accomplishing the mission of the law enforcement organization. Leveraging Compstat to embellish public support for law enforcement organizations also involves the disseminating of statistics and crime mapping information to the public and among peer organizations (Janetta, 2006:7). According to Janetta (2006:7), such actions allow organizational leaders to benchmark the performances of command staff and to alter the practices of the law enforcement entity as necessary to generate organizational improvements.

Examining these tenets reveals the dimensioning of the Compstat paradigm throughout the organizational structuring of law enforcement organizations, and reveals its relationships between the law enforcement organization and the served populace. Similar observations are expressed within the examined literature. Ansell (2011:116) indicates that among law enforcement organizations, the Compstat paradigm is conceptually exercised within the law enforcement organization using both a horizontal

and vertical instantiation. Regarding the served public, Barak (2007:95) indicates that the Compstat paradigm may be leveraged to portray to the public the initiatives accomplished and the effectiveness achieved as methods of soliciting societal supportiveness.

Examining these tenets also reveals both qualitative and quantitative aspects of the Compstat paradigm that contribute toward organizational improvements among law enforcement organizations. However, its organizational improvement potential is based upon managerial philosophies and the use of quantitative metrics analysis. The implementation method, described by Janetta (2006:7), does not approach organizational improvement from a process maturity perspective.

Instead, the implementation method of Janetta (2006:7) considers organizational improvement from the managerial perspectives of controlling, coordinating, leading, organizing, and planning within the context of law enforcement organizations. The implementation method prescribed by Janetta (2006:7) does not incorporate any facet of a progressive, evolutionary framework that matures organizational processes through time. Given these notions, the Compstat paradigm does not address organizational process improvement from a perspective of process maturity.

## **2.14 CAPABILITY MATURITY MODEL (INTEGRATED)**

The preceding managerial paradigms are resources through which process improvement occurs among organizations within the justice domain. However, none of these paradigms approaches process improvement from the perspective of progressing process maturity through time via a methodical framework. Therefore, they are inadequate resources with respect to the maturing of processes via a specific maturity framework incorporating progressive stages of improvement through time.

However, the literature showed a model that does implement adequately a methodical framework for progressively implementing process improvement from the perspective of process maturity. This framework is the Capability Maturity Model Integrated (CMMi).

The literature showed various derivative frameworks of the CMMi among domains that are unrelated to the justice system. Given the descriptions of the CMMi and its derivatives, a precedent is established in the literature regarding the crafting of maturity model frameworks that use the basic CMMi framework as a foundational basis.

#### **2.14.1 Defining Capability Maturity Model (Integrated)**

The Capability Maturity Model (Integrated) (CMMi) is defined as an integration of “best practices” regarding developing processes, software theory, and systems theory that approaches the improvement of organizational process from a process maturity perspective through time (Kandt, 2006:229). Borgen and Ohren (2001:59) indicates that the CMMi is an attempt to integrate such practices to improve processes and products while simultaneously reducing redundant and inconsistent attributes of improvement models among various business domains. Further, the CMMi also contributes to improvements in the qualities of products, performances of projects, and performances of organizations (Walker, 2007:50).

#### **2.14.2 Capability Maturity Model (Integrated) Concept**

Gu and Lu (2006:97) indicate that the CMMi represents the most dominant approach to improving processes. Conceptually, the CMMi represents a soundly established process architecture that synthesizes the “best practices” that are derived from historical maturity model frameworks (Nandyal, 2003:8). Meisner (2007:11) indicates that the CMMi framework emphasizes the developing of processes as an essential aspect of improving process maturity. Organizational improvement is derived from process improvement instead of transforming organizations (Meisner, 2007:11). According to Giachetti (2010:97), the basic concept of the CMMi emphasizes the notion that the improving of maturity, embedded within process improvements, generates stronger performances and qualities of products. Essentially, implementing the CMMi model provides a means of assessing organizational process maturity regarding any managerial process among projects (Giachetti, 2010:98).

According to Meisner (2007:9), the CMMi is comprised of two primary architectures: “capability levels and processes” and “maturity levels and processes.” Because this research considers only the characteristics of process maturity among organizations and the maturity attributes of the CMMi, it is beyond the scope and magnitude of this research to consider any investigations and discussions regarding capability level and any affiliated processes. Instead, the investigations and discussions presented herein consider only characteristics of maturity levels and affiliated processes.

According to Kulpa and Johnson (2008:32), levels of maturity represent performances that are anticipated organizationally. The primary CMMi framework consists of five sequential, progressive maturity levels: 1) initial, 2) managed, 3) defined, 4) managed quantitatively, and 5) optimized. These five levels of process maturity represent the individual stages of the sequential, evolutionary process improvement framework within the CMMi architecture and within this research.

The first CMMi level is representative of an organizational process state that exhibits randomness. According to Meisner (2007:9), this CMMi state involves organizational processes that are random and immature.

The second CMMi level is representative of an organizational process state involving an initial instantiation of managed processes. Meisner (2007:9) indicates that this CMMi level exhibits process characteristics that are representative of planning and executing in conformance with any applicable organizational policies, and occur in conjunction with the use of qualified personnel and resource sufficiency.

The third CMMi level is representative of an organizational process state involving processes that are understandable and expressed. Meisner (2007:9) indicates that this CMMi level exhibits process attributes that are definitively conceptualized, and are expressed within the organizational documentation.

The fourth CMMi level represents a numerically measurable process state. According to Meisner (2007:9), this level involves the setting of an objective quantitatively regarding qualities and performances associated with the managing of a process.

The fifth CMMi level represents an optimized process state in which wastefulness is minimized. According to Meisner (2007:9), this level involves the continuous improvement of processes with respect to the quantitative aspects of process variability.

The CMMi framework serves as a complement to the aforementioned organizational improvement paradigms and philosophies discussed herein. The preceding concepts all represent paradigms and resources through which organizational process improvements may be attained through time. However, none approach organizational process improvement from the perspective of a framework that encompasses evolutionary process maturity through time. Regardless, the CMMi paradigm may be used as a complementary approach to improve concurrently organizational processes in conjunction with various quality philosophies and approaches.

According to Kasse (2008:335), the CMMi framework is an expression of TQM with respect to the notion of continuously improving processes to improve the qualities of services and products. Dounos and Bohoris (2007:4) express that the CMMi framework may be integrated with TQM concepts as a method of improving organizations. Further, Jain and Gupta (2011:204) state that the CMMi framework is a primary certification to the pursuit of TQM and to achieving organizational “excellence.”

The CMMi framework may be integrated with Six Sigma methods among organizational process improvement initiatives. This notion is corroborated by Siviyy, Penn, and Harper (2005:14) through observing that “Six Sigma” may be leveraged to identify a process that must be repeated, to determine “best practices,” and then to craft processes optimally. Additionally, with respect to the maturity of organizational processes, Siviyy, et al., (2005:18) indicate that the use of Six Sigma may continue across the organizational enterprise as an organization improves the maturity of its processes through time.

The CMMi framework may also be used in conjunction with ISO standards. Yao and Lee (2004) investigate the integration of ISO 9001 (quality management systems) with the CMMi framework and architecture. Laporte, April, and Renault (2006:2) indicate that the CMMi framework is commensurate with the ISO standards of 15504 and 90003. According to Mutafelija and Stromberg (2003:144), the ISO verifying and validating tenets are contained within the CMMi framework.

The relationship between ISO standards and the CMMI framework is a pertinent aspect of organizational process improvement. According to Mutafelija and Stromberg (2009:118), the foundational relationship necessary for improving processes may be observed within the relationship that exists between the CMMi framework and ISO standards. However, because of differences between the CMMi framework and ISO standards, an exact mapping of specific attributes is rare (Mutafelija & Stromberg, 2009:118). Regardless, Mutafelija and Stromberg (2009:118) indicate that CMMi activities may be related to ISO tenets using an M:1 CMMi to ISO ratio. Examples of such common mapping attributes, between the ISO standards and the CMMi framework, include facets of continuous quality improvement of organizational processes and sufficient personnel training among organizations (Mutafelija & Stromberg, 2009:123-124).

Process maturity modeling also supplements BPM initiatives. Plenkiewicz (2010:5) indicates that BPM is a foundational aspect of the CMMi framework. Rosemann, De Bruin, and Hueffner (2004:1) indicate that process maturity modeling is applicable within the context of BPM, and introduce a business process maturity model (BPMM) as the delineation of an architecture that is necessary for evaluating BPM attributes and accomplishments. Röglinger, Pöppelbub, and Becker (2012:328) indicate that maturity modeling of processes represents a method of process improvement among organizations and BPM initiatives.

Initiatives involving BPI philosophies also may be enhanced by an integration of the CMMi framework. Gu and Lu (2006:99) determined that the CMMi framework positively impacts BPI outcomes within the context that BPI represents a dynamic performance alteration among organizations. Similarly, Paul, Yeates, and Cadle (2010:13), within the context of business analysis and overall business process improvement, delineate the mapping of CMMi maturity levels to business analysis activities thereby posing a strategic model of organizational process improvement from an enterprise perspective through time.

Benchmarking initiatives are also embellished by the CMMi framework. According to Chrissis, Konrad, and Shrum (2003:104), from the perspective of organizational

appraisal, benchmarking facilitates a comparing of organizational benchmarks and that customizing the CMMi framework, for benchmarking purposes, depends upon an adherence organizationally to a specific array involving the process area, process goal, and process practice. Kulpa and Johnson (2008:17), indicate that benchmarking activities are inputs and precursors for CMMi activities through indicating that organizational personnel may observe different locations as a method of learning from counterparts.

Initiatives involving BPR may be embellished through the use of maturity modeling. Gardner (2004:124) presents a model that incorporates a progressive maturity modeling framework that is incorporated simultaneously during a “reengineering” paradigm. Grummitt (2009:20) indicates that BPR embellishes process maturity modeling from the perspectives of refining processes. Nandyal (2007:17) advocates the use of team units, as mechanisms within process improvement initiatives, in order to solicit feedback from organizational personnel when implementing processes.

When considered cumulatively, the contemporary literature shows the robustness of the relationships that exist between the CMMi framework and various improvement paradigms that exist among a variety of services and industries. The traditional paradigms of BPI, BPR, BPM, ISO, TQM, Six Sigma, Reengineering, benchmarking, etc., may complement and embellish instantiations of the CMMi framework among organizations that implement process improvement initiatives. However, regarding these discussions, the examinations of the literature show no application of these relationships within the context of the criminal justice domain.

### **2.14.3 Capability Maturity Model (Integrated) Application Domains**

There are three primary industrial application domains in which the CMMi has mainly facilitated process maturity improvements: 1) among financial services, 2) among government agencies, and 3) among information technology firms. An itemizing of these application domains is given as follows:

*Financial industry* – From the perspective of financial appraisal, organizations may integrate CMMI and OPM3 for improvement purposes. Within this context, an examination and evaluation occurs to determine whether an organization adheres to “best practices” effectively (Hussain, Rajput, Chowdhry, & Gee, 2008:238).

*Government agencies* – According to Pyster (2005:76), the CMMi framework is applicable within both lowest and highest levels of organizations within both private and public organizations. The implementing of the CMMi framework, among government settings, may be applied to solitary endeavors in conjunction with a gradual expansion among other programs (Pyster, 2005:76).

*Information technology* – Cater-Steel (2009:425) indicates that the CMMi framework represents well-known architecture within the technological context of developing software. After the year 2006, Cater-Steel (2009:425) also indicates that the CMMi achieved greater notoriety and use outside the software domain. This noticing of the CMMi process maturity framework expanded it into the domains of acquisitions and services (Cater-Steel, 2009:425).

#### **2.14.4 Lack of a Maturity Framework in the Criminal Justice Domain**

Based upon the literature described herein, there is no categorical listing or indexing of any materials that specifically identify the crafting and implementing of a CMMi framework uniquely within the context of criminal justice entities. Therefore, it is the expected purpose of this research to investigate the employee perceptions of organizational processes, process maturity, and process improvement initiatives of criminal justice organizations. Further, this research proposes a potential maturity model that may be beneficial within the criminal justice domain. Through such inquiry, this research addresses the shortcomings of the literature regarding the absence of a maturity-based, evolutionary approach to process improvement among criminal justice organizations.



## **2.15 LITERATURE SYNTHESIS TO PROPOSE A MATURITY MODEL**

The reviewed literature showed that the existing models do not incorporate process maturity as a foundational principle. It also showed that the existing models do not progressively approach process improvement via the use of a progressive maturity model framework for improving processes through time. These models, consisting of TQM, Compstat, BPI, BPR, and so forth, are unlikely candidates for crafting a process maturity model framework.

However, within an unrelated domain, the CMMi exists as a process maturity model framework that is used for improving processes progressively. The reviewed literature showed that derivative models of the CMMi exist among domains that are unrelated to policing. Therefore, a derivative model, within the context of the justice system and law enforcement organizations, may be generated using the CMMi framework as its basis.

Cumulatively, maturity model frameworks do not emphasize a primary application within the criminal justice domain. From the perspective of a solitary entity, the CMMi framework is historically unrelated to the work environments of law enforcement organizations. With respect to each of the separate maturity levels that comprise the CMMi framework, no specific requirements exist among these maturity levels to influence the instantiating of the CMMi framework within the context of the criminal justice domain and its encompassed law enforcement organizations.

Given these considerations, within the criminal justice domain, there exists no specific, foundational process improvement maturity model framework to embellish law enforcement process improvement initiatives. However, the CMMi framework demonstrates portability among various domains through its instantiations among work environments comprising government agencies, financial services, and information technology organizations.

A maturity model may be derived from the basic characteristics of the existing CMMi framework, and may incorporate five progressive, separate maturity levels that are analogous with those of the CMMi maturity levels. Instead of emphasizing process maturity within the contexts of work environments comprising government agencies, financial services, and information technology organizations, the proposed model emphasizes process maturity and process improvement within the context of law enforcement organizations.

Based upon the foundational tenets of the CMMi framework, the maturity levels of the proposed model within the criminal justice domain, denoted herein as the criminal justice maturity model (CJMM), are delineated as follows:

Table 2.6 – Maturity Levels of the Proposed CJMM

Maturity Level	Maturity Level Description
CJMM Level 1	Represents ad hoc, unstructured, and chaotic processes.
CJMM Level 2	Represents managed and reactive processes that exhibit some characteristics of planning, control, measurement, and performance.
CJMM Level 3	Represents processes that are understandable, repeatable, and that are expressed within organizational documents.
CJMM Level 4	Represents processes that are quantitatively measured, controlled, and managed.
CJMM Level 5	Represents processes that are refined, optimized, and that involve continuous improvement.

Commensurate with the basic concepts represented by the CMMi framework, the proposed CJMM maturity levels represent sequential, progressive stages of organizational process maturity through time. The proposed model commences with a process state of randomness and exhibits the highest stage of process maturity that is associated with highly optimized processes that embellish both organizational efficiency and effectiveness through time.

A greater depth of consideration involves contemplating requirements and activities that may be integrated among these separate maturity levels to influence the instantiating of the CMMi framework within the context of the criminal justice domain and its encompassed law enforcement organizations. Examples of such requirements and activities are presented within the following table.

Table 2.7 – Maturity Levels of the Proposed CJMM

Maturity Level	Maturity Level Requirements Descriptions
CJMM Level 1	Explorations to determine relevant processes. Initiative requirement specifications.
CJMM Level 2	Initiative planning mechanisms. Initiative tracking mechanisms. Initiative quality assurance.
CJMM Level 3	Use of peer-reviews among personnel. Personnel training.
CJMM Level 4	Instantiation of process management. Instantiation of quality management.
CJMM Level 5	Process monitoring for continuous improvement. Process change management for continuous improvement. Process resource management for continuous improvement.

The first maturity level of the CJMM represents ad hoc, unstructured, and chaotic processes exhibiting an initial process state of immaturity. Such processes must be examined to determine whether they are relevant to the considered improvement initiative. Completing this initial stage bolsters an understanding of the requirements that highlight the salient aspects of the desired process improvement initiative.

The second maturity level of the CJMM represents managed and reactive processes that exhibit some characteristics of planning, control, measurement, and performance. Processes that are deemed relevant to the improvement initiative must be examined to determine their inputs, outputs, performance, and expected outcomes. Such actions

improve the organizational understanding of the examined processes. After these items are delineated, the law enforcement organization may facilitate planning activities to manage initiative implementation, and both craft and implement tracking mechanisms to evaluate, manage, and control the improvement initiative. Completing these actions could provide law enforcement organizations with a basic array of documentation, regarding its examined processes, that contributes toward process repeatability.

The third maturity level of the CJMM represents processes that are understandable, repeatable, and that are expressed within organizational documents. This notion accommodates the continuance of the activities and requirements that are affiliated with the preceding stages of the CJMM. Through the improved understanding of organizational processes and the use of the derived process documentation, law enforcement organizations may conduct training sessions to improve the knowledge and understanding of personnel whom are associated with the considered process. Peer reviews among these personnel may contribute to the improving of process documents, considered processes, and training methods.

The fourth maturity level of the CJMM represents processes that are quantitatively measured, controlled, and managed. These notions are representative of process management and quality management within the process improvement initiative. Such actions contribute toward organizational value and quality through ensuring that processes are performed identically each time they are implemented. Further, such actions also contribute toward improving and maintaining organizational efficiency and effectiveness through conformance to procedural guidelines that are affiliated with the performed process. This maturity level accommodates the continuance of the activities and requirements that are affiliated with the preceding maturity levels of the CJMM.

The fifth maturity level of the CJMM represents processes that are refined, optimized, and that involve continuous improvement. Again, this maturity level accommodates the continuance of the activities and requirements that are affiliated with the preceding maturity levels of the CJMM. This stage represents the culmination of organizational process understanding and implementation, and exhibits heightened efficiency and effectiveness regarding the considered process. It also involves various facets of monitoring for continuous improvement with respect to any changes that may occur

within the organizational environment (e.g., personnel changes; mission changes; technology changes; etc.).

Commensurate with the tenets of the CMMi, achieving the fifth level of maturity within the CJMM is not necessarily a permanent state of process maturity. Organizational changes may interject some degradation of process maturity thereby causing the organization to exhibit the characteristics of a previous maturity level or may necessitate the implementing of the model from the initial maturity level. If process maturity regresses, then the necessary progressive stages, requirements, and activities must again be implemented to facilitate progression toward the final maturity level.

## **2.16 OBSERVATIONS AND SYNTHESIS**

The reviewed literature represents an amalgamation of discussions that impact the improving of processes from a variety of perspectives: criminal justice, police science, project management, quality management, software engineering, management, public administration, and business administration. An examination of these domains yielded a variety of methods that contribute toward facilitating and influencing process improvement initiatives among organizational settings. These methods include TQM, BPM, BPR, BPI, benchmarking, standards, Six Sigma, legislation, policy, Compstat, and the CMMi.

Within this array of methods, only the CMMi approaches process maturity from the perspective of a progressive, evolutionary framework through which organizational processes are matured through time via the use of expressed maturity levels and their affiliated requirements characterizing various states of process maturity. The remaining methods do not incorporate a perspective of process maturity as a foundational basis of inciting process improvement among organizations.

Law enforcement organizations must render public services efficiently and effectively. Therefore, they must be concerned with the qualities of processes that exist among their unique work environments that provide organizational value by contributing to

improvements in organizational efficiency and effectiveness. The conjectured CJMM provides a construct through which organizational processes may be matured to bolster organizational efficiency and effectiveness. The foundational basis of the conjectured CJMM involves the notion of maturing processes via a progress process maturity framework.

Given such notions, based upon the reviewed literature, the following observations are yielded:

- The CMMi was historically crafted among software and systems environments to facilitate organizational process improvement, and did not originate within the criminal justice domain.
- The CMMi has applications among unrelated domains representing financial services, government agencies, information resources, and technologies. Therefore, because of its flexibility, the CMMi exhibits the potential of adaptation among unrelated domains.
- Many philosophies and methodologies (e.g., TQM, BPM, BPR, Compstat, etc.) exist to support organizational process improvement initiatives, but they do not approach process improvement from the perspective of process maturity.
- The absence of a process maturity improvement construct, within the criminal justice domain, facilitates a variety of process improvement paradigms among law enforcement organizations. As a result, a variety of different approaches to organizational process improvement exist among law enforcement organizations.
- As a method of countering the shortcomings of process maturity perspectives among the primary methods of improvement (e.g., TQM, BPR, Compstat, etc.) that exist within the criminal justice domain, a derivative construct of the CMMi may be contemplated (i.e., the

conjectured CJMM) as a construct to support organizational process improvement from a process maturity perspective.

- Using the CMMi framework as a basis, the CJMM framework may be crafted to facilitate process improvement initiatives among law enforcement organizations. This conjectured CJMM framework delineates separate, progressive maturity stages and their affiliated requirements and activities.

Through using the conjectured CJMM as a basis to support organizational process improvement initiatives, law enforcement entities may pursue higher levels of process maturity with respect to a culminating state of process optimization and continuous improvement through time. Because of the flexibility of the CMMi, represented within the conjectured CJMM, law enforcement organizations may craft their unique maturity level requirements that are commensurate with the basic concepts of each stage of maturity exhibited within the conjectured CJMM.

Based upon the discussions presented within the literature and the discussions regarding the recommended CJMM maturity framework, arguments are offered to show that maturity modeling may be used among law enforcement organizations as a valid method of generating process improvements. Given these notions, the CMMi represents a legitimate resource through which a criminal justice maturity framework may be crafted, managed, maintained, and monitored to facilitate process improvement initiatives among law enforcement organizations.

## **2.17 MOTIVATING THE STUDY AND RELEVANT LITERATURE**

This study examines process maturity modeling within the context of administrative processes that exist among law enforcement organizations. A salient aspect of motivation for this research is derived from previous studies that examined process maturity modeling within the policing domain and among unrelated domains. The

literature shows the investigating of maturity modeling from the perspective of management versus non-management, an urban versus rural perspective, and a geographic perspective.

During law enforcement investigations, interoperability within the organization and with external entities is a salient factor when solving cases (Gottschalk, 2009:14). Gottschalk (2009:14) examined processes of police organizations involving the maturity stages of organizational interoperability processes that occur during crime mapping endeavors. Gottschalk's (2009:14) research proposed a process maturity model for geographic information systems, within the context of law enforcement organizations, that implemented processes associated with crime mapping activities. The research examined process maturity levels involving geographic information systems and crime mapping activities (Gottschalk, 2009:14). Gottschalk (2009:14) showed that higher stages of process maturity involve increasing amounts of interoperability.

Another study examined maturity modeling within the context of law enforcement communications and knowledge management. In this instance, a six-stage growth maturity model was examined regarding organizational growth and knowledge management (Gottschalk, 2006:381). The examined maturity model accommodated growth stages involving knowledge management requirements within the context of law enforcement communications processes (Gottschalk, 2006:386). The potential benefits of this model were deemed to be within the strategic planning endeavors of law enforcement organizations (Gottschalk, 2006:386).

The writings of Gottschalk (2006) and Gottschalk (2009) provide a foundation for further exploring the potential of a maturity model framework within the context of the justice system. Respectively the foundations of these maturity models were organizational growth and knowledge management (Gottschalk, 2006:381) and geographic information systems using crime mapping processes (Gottschalk, 2009:14). This study continues the line of research involving the examining of process maturity models via investigating the CMMi within the context of administrative processes among law enforcement organizations.



This study examines the maturity model framework from the perspectives of management versus non-management personnel, urban versus rural personnel, and Alabama versus Mississippi personnel. Therefore, this study examines the CMMi from the perspectives of job category, organization type, and geography. Linking these variables to the proposed model necessitates a consideration of previous research in which these perspectives were used as interest factors in maturity model research. The literature review shows instances where these perspectives were used as interest factors regarding the CMMi.

The literature discusses the relationship between managers and non-managers when implementing the CMMi organizationally. West (2005:15) considers such relationships within the context of the CMMi. For instance, West (2005:15) indicates that managers among CMMi organizations must select subordinate, non-management personnel whom are subject area experts when forming focus groups. Among focus groups, such expert, subordinate personnel are essential when crafting an array of processes within an organization comprehensively (West, 2005:15).

The literature shows instances of using geography as an interest factor when researching the CMMi. De Oliveira, Valle, and Mahler (2010:177) used the perspective of geography to explore the CMMi among the nations of India, China, and Brazil. This study showed that the CMMi contributed beneficially to organizational productivity among smaller organizations among these nations (De Oliveira, et al., 2010:187).

The literature also shows the urban versus rural perspective. Reddick (2010:505) quantitatively compares urban versus rural area within the nation of New Zealand to investigate how well government organizations have matured their processes via the use of process maturity modeling. Reddick indicates that the CMMi may be used as a foundation for developing such systems (Reddick, 2010:652). Reddick (2010:505) uses the perspective of urban versus rural entities, involving process maturity, as a consideration generating an electronic governance infrastructure (Reddick, 2010:505).

The CMMi literature showed three perspectives. The preceding discussions of West (2005) provide an organizational context of human resources regarding the CMMi. The preceding discussions of De Oliveira, et al., (2010) provide an organizational context of

geography with respect to organizational productivity regarding the CMMi. The preceding discussions of Reddick (2010) provide a basis of organizational type within the context of urban versus rural organizations regarding the CMMi. These perspectives are reflected within this study through the use of the job category, geography, and organizational type variables.

Using the variables of job category, organizational type, and geography provides a unique basis for this study to examine the potential of the CMMi. The use of these three variables is important because it provides a basis for examining the CMMi from three different views: perceptions of organizational personnel and human resource regarding process improvement endeavors (i.e., managers versus non-managers), organizational size differences (i.e., urban versus rural), and differences that may be exhibited geographically between organizations (i.e., Alabama versus Mississippi). Thus, this study represents an exploratory continuation, within the context of law enforcement organizations, of CMMi themes that are established within the literature.

The differences among these perspectives are important for organizations seeking to implement the CMMi as a method of process improvement. Law enforcement organizations are comprised of people, including management and non-management personnel. Through examining the perceptions of personnel within this grouping, law enforcement organizations may gain insight regarding the ability to render management decisions that affect CMMi process improvement initiatives (e.g., selecting members of process focus groups) whereby an improved ability to render public service may be realized. Law enforcement organizations differ in size and scope, and serve different populaces within society. Through examining the perceptions of personnel in the grouping of urban versus rural entities, law enforcement organizations may gain insight regarding CMMi organizational administrative processes (e.g., differences in perceptions of process efficiency and effectiveness). Geographically, within the United States, law enforcement organizations exist among all of the individual states. Through examining the perceptions of personnel in the grouping of Alabama versus Mississippi entities, insight may be gained regarding any differences that may exist regarding the perceptions of law enforcement personnel with respect to crafting unique versions of the basic maturity model framework within law enforcement organizations among the individual states.

The expectations of a potential relationship among these variables must also be considered. All law enforcement organizations are comprised of humans, and are no better than the individuals that comprise each individual agency (McElreath, et. al. 2013:397). Within American society, the traditional goals of law enforcement entities are maintaining order and deterring instances of crime (McElreath, et. al. 2013:226). Given such notions, regardless of job category, geographic location, or whether an urban or rural populace is serviced by the law enforcement organization, all law enforcement organizations share the common goals of deterring crime and maintaining order within society. Among law enforcement organizations, numerous administrative processes exist, ranging from evaluation to appraisal, which contribute to the organizational ability to accomplish these common goals (Gul & O'Connell, 2013:13). Given these common organizational attributes and goals, a relationship is expected regarding the variables within this study.

This study incorporates one-way ANOVA to determine whether statistically significant differences exist among perceptions within the groups of management versus non-management, urban versus rural, and Alabama versus Mississippi personnel. Although ANOVA may indicate whether a statistically significant difference exists regarding the perceptions of the respondent groups, it does not provide any insight regarding the directionality of these perceptions regarding levels of agreement, disagreement, or neutrality. Thus, within this study, an analysis of the means for each of the stratifications is performed to examine the directionality and strength of responses. The use of these methods is complementary to provide a robust overview of the analyses with respect to the generating of conclusions. These conclusions are presented within the seventh chapter of this document.

Such approaches are commensurate with methodologies expressed within the literature. The ANOVA method is used to examine whether the means of examined groups are equal when performing hypothesis tests (Cooper & Schindler, 2010:122). Thus, ANOVA only determines whether a statistically significant difference exists regarding the examined perceptions within the responses. However, the use of mean analysis is used to examine the directionality of responses, and it may incorporate subjectivity when establishing limitations and boundaries (McNabb, 2010:207). Therefore, within this

study, mean analysis is used to examine the directionality of perceptions with respect to the ANOVA findings. Both approaches are used within this research. Within the succeeding chapters, the mean analysis is presented within Chapter 3. The ANOVA findings are presented within Chapter 4, Chapter 5, and Chapter 6. Chapter 7 considers the ANOVA findings with respect to the mean analyses to generate conclusions regarding this study.

## **2.18 CHAPTER SUMMARY**

This chapter contained a review of literature representing various domains through which organizational improvement is influenced among criminal justice entities. The reviewed literature encompassed the domains of criminal justice, police science, project management, quality management, software engineering, management, public administration, and business administration. The literature review examined facets of organizational improvement paradigms and philosophies that influence the work settings of criminal justice entities. Specifically, these paradigms and philosophies included TQM, BPM, BPR, BPI, benchmarking, standards, Six Sigma, legislation, policy, and the Compstat paradigm.

Each of these philosophies and paradigms was defined and described to establish a foundational understanding of its characteristics. Further considerations of these philosophies and paradigms were also considered from the perspective of the criminal justice domain to show various aspects of theoretical and practical applications. Within these discussions, the shortcomings of each philosophy and paradigm were established with respect to the inability of each one to facilitate organizational process improvement from the perspective of a maturity model framework that progressively matures processes through time.

Given the absence of a foundational approach to improving organizational processes via an evolutionary, progressive maturity model framework among the traditional methods of organizational improvement, the literature review also examined the characteristics of the CMMi as a process improvement resource. Given the foundational maturity model construct of the CMMi framework, the CMMi demonstrates the potential for crafting an

organizational process improvement maturity model architecture that may be useful within the criminal justice domain. Therefore, this chapter introduced the CJMM as a potential maturity model framework within the context of the criminal justice domain.

## CHAPTER 3

### DEMOGRAPHICS AND ANCILLARY ANALYSIS

#### 3.1 INTRODUCTION

This chapter discusses the findings of the research study concerning the demographics of the population and sample. The characteristics of the collected data are presented within this chapter. Additional discussions include considerations of the scope and constraints of the study, considerations of potential bias, reliability of the study, and the findings of ancillary data processing.

##### 3.1.1 Variable Motivation

Three variable perspectives comprise the basis for this study: 1) job status involving management vs. non-management personnel, 2) geography regarding Alabama vs. Mississippi personnel, and 3) organizational type with respect to urban vs. rural entities. These variables were considered with respect to respondents whom were located only in the states of Alabama and Mississippi. Therefore, with respect to these variable combinations, any generalization of the outcomes of this study for the entirety of American policing is inappropriate.

With respect to job status and CMMi, Shih, Shaw, Fu, and Cheng (2013:84) consider CMMi stage transitions involving management positions (executives and department heads) and organizational employees with respect to examining attributes of the effectiveness of organizational change. The geographic perspective of CMMi involves considerations of organizations whose operational scopes encompass multiple locations. For instance, Infotech Enterprises spans 27 different locations globally, and has achieved CMMi level 5 (Reddy, 2011:2). The urban vs. rural perspective may be considered within the context of the CMMi. Amponsah (2010:17) uses the CMMi as an assessment tool for generating recommendations for improving project management practices within the Ghanaian economy. Within this context, the urban and rural

perspectives were used when assessing the “Akpafo Odomi Cooperative Mix-Farming Association Project” that promoted “rural growth” and contributed to “urban migration” reductions (Amponsah, 2010:232). Given these writings, the literature shows uses of job status, geography, and organizational types with respect to examining the CMMi.

The job status variable may be considered within the context of law enforcement organizations. This approach involves processes that are associated with rendering decisions within the context of the CMMi. For instance, processes associated with the rendering of structured decisions are within the scope of the CMMi decision process analysis domains (Ahern, et al., 2004:138). Structured decisions are encountered by the leaders, managers, and administrators of police organizations and within the justice system (Doss, et al., 2011:11). An example of this type of structured decision is the managerial determination, rendered by “shift supervisors,” of which subordinate patrol officers are assigned to specific patrol areas during a certain patrol shift (Doss, et al., 2012:15). Thus, structured decisions involve interaction between managerial and non-managerial police personnel. Because these decisions are structured decisions, they are within the scope of the CMMi. Given that police supervisors render structured decisions that affect their subordinate personnel, the job status variable of this study may contribute toward insight regarding the CMMi, law enforcement management personnel, and law enforcement non-management personnel.

The variable of geography may be considered from the perspective of law enforcement communications that cross state lines. For instance, communication processes facilitate interactions between law enforcement organizations and external entities when performing operations involving manhunts or “missing person” searches (Doss, Glover, Goza, & Wigginton, 2015:11). Such endeavors may cross state lines. During 2014, a prisoner was extradited from Mississippi to Alabama to face murder charges (Mitchell, 2014:1). Although the crime occurred in Alabama, the arrest and initial confinement occurred in Mississippi after the perpetrator crossed the state line (Mitchell, 2014:1). Extradition represents a process that involves communication between the exchanging organizations (Hufnagel, Harfield, & Bronitt, 2012:154). Given these notions, some type of communications process occurred between the Alabama and Mississippi law enforcement entities regarding the extradition operation. The CMMi framework contributes toward crafting processes for communicating between organizations

(Greiner, 2007:1). In such cases, each organization may craft unique processes that satisfies its respective needs (Greiner, 2007:1). Thus, communications processes are accommodated within the CMMi framework. Because law enforcement organizations may enact communications processes to cooperate with their counterparts that reside in different states, the geography variable of this study may contribute toward gaining insight regarding the CMMi and law enforcement organizations.

The organizational type variable, incorporating the urban vs. rural perspective, also may be considered from the perspectives of the CMMi and law enforcement organizations. Urban and rural police models comprise the foundations of law enforcement organizations within American policing (McElreath, et al., 2013:91). Rural law enforcement entities exhibit loose organizational controls whereas urban entities exhibit much more formalized attributes (McElreath, et al., 2013:91). The types and quantities of resources possessed by urban and rural police organizations, such as patrol cars, bikes, and helicopters, also differ because of a variety of reasons ranging from the availability of funding to the types of criminality encountered by the department (McElreath, et al., 2013:86). Given these notions, regardless of organizational type, law enforcement entities must craft administrative processes for controlling resource acquisitions that are necessary for performing their respective missions.

Among law enforcement organizations, acquisitions may involve considerations of leasing versus purchasing resources (Doss, et al., 2014:461). For instance, a police organization may contemplate either leasing or purchasing a new computer system (Doss, et al., 2014:461). Within the context of the CMMi, acquisitions processes represent the obtaining of services and products (Mutafelija & Stromberg, 2009:86). Acquisitions processes include activities ranging from agreement negotiations to the disbursing of payments for services and products (Mutafelija & Stromberg, 2009:86). Within Chapter 2, Table 2.3 shows an acquisitions variant of the CMMi. Given these notions, the CMMi accommodates resource acquisition processes whereby both urban and rural law enforcement entities may obtain services and products. Therefore, the variable regarding organizational type may contribute toward insight regarding administrative organizational processes and the CMMi within the settings of urban and rural law enforcement organizations.



Within this study, selecting the variables of job status, geography, and organizational type perspectives provides additional insight regarding the CMMi from the context of law enforcement organizations. The managers versus non-managers perspective may reveal insight regarding personnel and human resources processes. The geographic perspective may reveal insight regarding processes between different states. The urban versus rural perspective may reveal insight regarding unique administrative processes organizationally. Regarding the importance of these variables for law enforcement organizations that may be contemplating process maturity implementation, benefits may be gleaned with respect to generating process improvements among personnel processes, processes between states, and organizational processes administratively.

### **3.2 SCOPE AND CONSTRAINTS**

This study was constrained solely to examining facets of perceptions regarding the work settings of organizations that existed within the criminal justice domain that encompassed the polled entities within Alabama and Mississippi. Therefore, this study may not be applicable to unrelated domains. Because the scope of this study was constrained to only the states of Alabama and Mississippi, generalization of this study for the remainder of the nation is inappropriate.

The demographic constraints limited this research solely to respondents within the states of Alabama and Mississippi. Therefore, its findings, conclusions, and recommendations are not applicable to any other entities, and should not be generalized for the entirety of American policing within the United States.

This study examined facets of both historical and current process improvement initiatives among justice system entities in Alabama and Mississippi. It is beyond the scope of this research to consider any facets of future endeavors that may be contemplated among such justice system entities.

Stratification involved segregating the received survey responses to facilitate the following ANOVA investigations within this study: perceptions of management versus non-management personnel, perceptions of urban versus rural personnel, and

perceptions of Alabama versus Mississippi personnel. It is beyond the scope of this research to investigate any other comparisons.

### 3.3 POTENTIAL BIAS

The  $\chi^2$  test of independence was used to investigate if there was a regional bias on the survey response rate. In other words, the  $\chi^2$  test of independence was used to investigate whether the survey response rate was associated with geographic location (Alabama, Mississippi). For p-value < 0.05, the test rejects the null hypothesis in favor of the alternative hypothesis of general association (Howell, 2011:139).

The null and alternative hypothesis statements for investigating the potential of bias are stated as follows:

H<sub>0</sub>: There was no relationship between response rate and geographic location;

H<sub>a</sub>: There was a relationship between response rate and geographic location.

Table 3.1 shows the two-way contingency table of region by survey response.

Table 3.1 - Two-Way Contingency Table of Region (Alabama and Mississippi) Survey Response

\*Percentages in parenthesis.

	Not received	Received	Total
Alabama	148(55)	120(45)	268
Mississippi	123(60)	81(40)	204
Total	271	201	472

There were 268 survey questionnaires distributed in the state of Alabama. Among them, an amount of 55% did not return the survey questionnaires whereas an amount of 45% returned the survey questionnaires. There were 204 survey questionnaires distributed in the state of Mississippi. Among them, an amount of 60% did not return the survey questionnaires whereas an amount of 40% returned the survey questionnaires. The

results of the  $\chi^2$  test of independence suggest that there was no relationship between response proportion and geographic location,  $\chi^2(1, N = 472) = 1.22, p = 0.270$ . Thus, there was no potential bias for region.

### **3.4 SURVEY INSTRUMENT DESCRIPTION**

The survey questionnaire data collection instrument was separated into eight sections. These sections are described as follows:

Section 1: This section of the survey instrument queried personnel perceptions regarding the characteristics of organizational processes within the context of the basic maturity model framework. The primary concepts polled represented the primary five stages of maturity encompassing random, managed, defined, quantitatively managed, and optimized processes. This section represented question 1 through question 5 of the survey questionnaire instrument.

Section 2: This section of the survey instrument queried personnel perceptions regarding the characteristics of organizational processes within the context of the first level of process maturity. The primary concepts polled represented unpredictable, reactive, and uncoordinated processes. This section represented question 6 through question 8 of the survey questionnaire instrument.

Section 3: This section of the survey instrument queried personnel perceptions regarding the characteristics of organizational processes within the context of the second level of process maturity. The primary concepts polled represented planned, managed, and controlled processes. This section represented question 9 through question 11 of the survey questionnaire instrument.

Section 4: This section of the survey instrument queried personnel perceptions regarding the characteristics of organizational processes within the context of the third level of process maturity. The primary concepts polled represented well-defined, consistent, and followed processes. This section represented question 12 through question 14 of the survey questionnaire instrument.

Section 5: This section of the survey instrument queried personnel perceptions regarding the characteristics of organizational processes within the context of the fourth level of process maturity. The primary concepts polled represented quantitative objectives, metrics analysis, and statistical analysis with respect to organizational processes. This section represented question 15 through question 17 of the survey questionnaire instrument.

Section 6: This section of the survey instrument queried personnel perceptions regarding the characteristics of organizational processes within the context of the fifth level of process maturity. The primary concepts polled represented incremental process improvement, process efficiency, and process effectiveness. This section represented question 18 through question 20 of the survey questionnaire instrument.

Section 7: This section of the survey instrument queried personnel perceptions regarding the characteristics of organizational processes within the context of managerial practices that exist within the work setting. The primary concepts polled represented process improvement, process grouping, process tracking, process maturity perspectives, process change, efficiency, effectiveness, and process training. This section represented question 21 through question 33 of the survey questionnaire instrument.

Section 8: This section of the survey instrument queried personnel perceptions regarding the characteristics of organizational demographics. The primary concepts polled represented geographic location, urban versus rural classification, management versus non-management job category, types of historical process improvement initiatives sponsored, types of current process improvement initiatives sponsored, organizational size based on the quantity of personnel employed, type of agency (e.g., state, federal, local, tribal, regional, and private), and for-profit versus non-profit status. This section represented question 34 through question 41 of the survey questionnaire instrument.

Within the data collection instrument, the question items 1 through 33 are categorized into the following subscales:

- Basic framework: question 1 through question 5
- First maturity level: question 6 through question 8
- Second maturity level: question 9 through question 11
- Third maturity level: question 12 through question 14
- Fourth maturity level: question 15 through question 17
- Fifth maturity level: question 18 through question 20
- Tertiary Queries: organizational characteristics consisting of
  - Process Improvement Characteristics: question 21 through question 23
  - Process grouping and maturity characteristics: question 24 through question 26
  - Organizational process Characteristics: question 27 through question 33

Within the data collection instrument, the question items 34 through 41 contain demographics, including:

- Question 34: In which state is your agency located? (1 = Alabama, 2 = Mississippi)
- Question 35: My agency is best described as: (1 = Urban, 2 = Rural)
- Question 36: My job type is classified as: (1 = Management, 2 = Non-management)
- Question 37: Our previous improvement initiatives consisted of: (1 = No previous initiative, 2 = Compstat, 3 = Total quality management (TQM), 4 = Business process reengineering (BPR), 5 = Business process improvement (BPI), 6 = Business process management (BPM), 7 = Benchmarking, 8 = Six-sigma, 9 = Regulation, 10 = ISO standards, 11 = Process maturity modeling, 12 = Proprietary initiative)
- Question 38: Our current improvement initiatives consist of: (1 = No previous initiative, 2 = Compstat, 3 = Total quality management (TQM), 4 = Business process reengineering (BPR), 5 = Business process improvement (BPI), 6 = Business process management, 7 = Benchmarking, 8 = Six-sigma, 9 = Regulation, 10 = ISO standards, 11 = Process maturity modeling, 12 = Proprietary initiative)

- Question 39: How many employees does your agency have? (1 = 1-10, 2 = 11-19, 3 = 20-29, 4 = 30-39, 5 = 40-49, 6 = 50-59, 7 = 60-69, 8 = 70-79, 9 = 80-89, 10 = 90-100, 11 = over 100)
- Question 40: Which of the following best describes your agency? (1 = federal, 2 = regional, 3 = state, 4 = local, 5 = tribal, 6 = private, 7 = commercial)
- Question 41: My agency is best described as: (1 = for profit, 2 = non-profit)

### **3.5 RESPONSE RATE CHARACTERISTICS**

According to Zikmund and Babin (2010:169), survey responses rarely exceed a 50% or higher response rate. Frankfort-Nachmais and Nachmais (2008:213) corroborate this notion through observing that surveys often exhibit a rate of response that does not surpass 50%. Tayie (2005:80) indicates that a 47% response rate is an “average” rate of completion. According to Lewis and Slack (2003:215), social scientists disfavor surveys that exhibit any less than 40% to 60% as a rate of response.

A total of 204 usable responses were received regarding the survey data collection instrument. The value of 204 represents a response rate of 43.22%. Given the preceding discussion of response rates, this response rate conforms to the descriptions of acceptable survey rates.

### **3.6 RELIABILITY**

The overall Cronbach value was 0.81. The internal consistency, measured by Cronbach’s alpha, for each of the subscales, ranges from 0.44 to 0.92. Additionally, for each subscale, the results of corrected item-total correlation and Cronbach’s alpha after deleting a specific variable are presented below within Table 3.2 through Table 3.11. Corrected item-total correlation is the correlation between a given item and the sum score of the other items. This assesses how well one item's score is internally consistent with composite scores from all other items that remain. Cronbach’s alpha, after deleting a specific variable, facilitates the possible way for identification of

dispensable variables by listing down the deleted variables in the first column together with the expected resultant Cronbach's alpha.

For instance, the results of Table 3.3 and the overall Cronbach's alpha (0.81) suggest that question one through question five reliably measures a primary framework. However, the results of Table 3.4 suggest that question 7 is a somewhat different measure than question 6 and question 8, as removing question 7 from "first maturity level" improves Cronbach's alpha from 0.59 to 0.70. The results of the remaining tables could be illustrated in the similar pattern.

Additional attention should be paid to the subscale, process grouping, and maturity characteristics, as the Cronbach's alpha was merely 0.44. The results of negative Cronbach's alpha presented in Table 3.10 suggest that there may be some inconsistency in the responses of the three questions. Indeed, after removing question 24 from "Process grouping and maturity characteristics," the Cronbach's alpha becomes 0.68 thereby showing a significant improvement compared to 0.44. This observation suggests that question 24 is a somewhat different measure than question 25 and question 26.

Tables 3.2 through 3.11 show the outcomes of the Cronbach calculations.

Table 3.2 - Cronbach's Alpha

Survey subscale	Cronbach's Alpha
Basic framework: Q1-Q5	0.81
First maturity level: Q6-Q8	0.59
Second maturity level: Q9-Q11	0.83
Third maturity level: Q12-Q14	0.83
Fourth maturity level: Q15-Q17	0.92
Fifth maturity level: Q18-Q20	0.77
Process Improvement Characteristics: Q21-Q23	0.56
Process grouping and maturity characteristics: Q24-Q26	0.44
Organizational process Characteristics: Q27-Q33	0.73

Table 3.3 represents the scaling of the cumulative maturity model framework. This maturity model framework contains questions addressing the first, second, third, fourth, and fifth levels of maturity.

Table 3.3 - Results of the Corrected Item-Total Correlation and the Cronbach's Alpha after Deleting a Specific Variable, Basic Framework (Questions 1 – 5)

\*indicates item was reverse scored in order to adequately compute Cronbach's alpha.

Item	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Q1*	0.50	0.80
Q2	0.69	0.74
Q3	0.55	0.79
Q4	0.65	0.75
Q5	0.62	0.76

Table 3.4 represents the first level of the maturity model framework. This level of process maturity is generally depicted as an organizational state of ad hoc and random processes.

Table 3.4: Results of the Corrected Item-Total Correlation and the Cronbach's Alpha after Deleting a Specific Variable, First Maturity Level (Questions 6 – 8)

Item	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Q6	0.50	0.35
Q7	0.25	0.70
Q8	0.48	0.38

Table 3.5 represents the second level of the maturity model framework. This level of process maturity is generally depicted as an organizational state of processes that are planned, managed, and controlled.



Table 3.5: Results of the Corrected Item-Total Correlation and the Cronbach's Alpha after Deleting a Specific Variable, Second Maturity Level (Questions 9 – 11)

Item	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Q9	0.70	0.77
Q10	0.74	0.72
Q11	0.66	0.80

Table 3.6 represents the third level of the maturity model framework. This level of process maturity is generally depicted as an organizational state of processes that are well-defined, consistent, and followed.

Table 3.6: Results of the Corrected Item-Total Correlation and the Cronbach's Alpha after Deleting a Specific Variable, Third Maturity Level (Questions 12 – 14)

Item	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Q12	0.66	0.81
Q13	0.77	0.70
Q14	0.67	0.79

Table 3.7 represents the fourth level of the maturity model framework. This level of process maturity is generally depicted as an organizational state of processes that involve quantitative objectives, metrics analysis, and statistical analysis.

Table 3.7: Results of the Corrected Item-Total Correlation and the Cronbach's Alpha after Deleting a Specific Variable, Fourth Maturity Level (Questions 15 – 17)

Item	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Q15	0.83	0.89
Q16	0.88	0.85
Q17	0.80	0.91

Table 3.8 represents the fifth level of the maturity model framework. This level of process maturity is generally depicted as an organizational state of processes that are improved incrementally, efficient, and effective.

Table 3.8 - Results of the Corrected Item-Total Correlation and the Cronbach's Alpha after Deleting a Specific Variable, Fifth Maturity Level (Questions 18- 20)

Item	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Q18	0.63	0.65
Q19	0.68	0.59
Q20	0.51	0.78

Table 3.9 represents attributes of the work environment. These survey questions examined perceptions regarding whether process maturity was addressed by current process improvement initiatives, whether process improvement was advocated within the organization, and whether process initiatives were tracked to examine process performance.

Table 3.9 - Results of the Corrected Item-Total Correlation and the Cronbach's Alpha after Deleting a Specific Variable, Process Improvement Characteristics (Questions 21 – 23)

\* indicates item was reverse scored in order to adequately compute Cronbach's alpha.

Item	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Q21*	0.30	0.56
Q22	0.33	0.52
Q23	0.52	0.17

Table 3.10 represents attributes of the work environment. These survey questions examined perceptions regarding process grouping within the organization and whether process maturity contributed to successful process outputs within the organization.

Table 3.10 - Results of the Corrected Item-Total Correlation and the Cronbach's Alpha after Deleting a Specific Variable, Process Grouping and Maturity Characteristics (Questions 24 – 26)

Item	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Q24	0.01	0.68
Q25	0.45	-0.11
Q26	0.38	0.12

Table 3.11 represents attributes of the work environment. These survey questions examined perceptions regarding process formality, efficiency, organizational policy, process management methods, process change, and process training.

Table 3.11 - Results of the Corrected Item-Total Correlation and the Cronbach's Alpha after Deleting a Specific Variable, Organizational Process Characteristics (Questions 27 – 33)

\* indicates item was reverse scored in order to adequately compute Cronbach's alpha.

Item	Corrected Item-Total Correlation	Cronbach's Alpha If Item Deleted
Q27	0.43	0.71
Q28*	0.49	0.69
Q29	0.21	0.76
Q30	0.56	0.67
Q31	0.53	0.69
Q32	0.54	0.67
Q33*	0.44	0.70

### 3.7 SECTION ONE: BASIC FRAMEWORK

The first section of the survey questionnaire queried personnel perceptions regarding the basic characteristics of the process maturity framework. The following table describes the received responses that were affiliated with this section.

Table 3.12 -- Frequency Counts, Percentage, Mean, Standard Deviation (SD) and Mode of the Responses for Questions under Basic Framework.

\*Percentages are in parentheses.

Item	Frequency counts and percentages					Mean(SD)	Mode
	1 = strongly disagree	2 = disagree	3 = no judgment	4 = agree	5 = strongly agree		
Q1	16(8)	116(60)	36(18)	30(15)	6(3)	2.48(0.94)	2
Q2	2(1)	28(14)	22(11)	140(69)	12(6)	3.65(0.83)	4
Q3	1(1)	17(8)	19(9)	155(76)	12(6)	3.78(0.70)	4
Q4	15(7)	61(30)	26(13)	97(48)	5(2)	3.08(1.08)	4
Q5	14(7)	49(24)	42(21)	95(47)	4(2)	3.13(1.02)	4

### 3.8 SECTION TWO: FIRST MATURITY LEVEL

The second section of the survey questionnaire queried personnel perceptions regarding the first maturity level of the process maturity framework. The following table describes the received responses that were affiliated with this section.

Table 3.13 -- Frequency Counts, Percentage, Mean, Standard Deviation (SD) and Mode of the Responses for Questions under First Maturity Level.

\*Percentages are in parentheses.

Item	Frequency counts and percentages					Mean(SD)	Mode
	1 = strongly disagree	2 = disagree	3 = no judgment	4 = agree	5 = strongly agree		
Q6	13(6)	124(61)	17(8)	49(24)	1(1)	2.51(0.94)	2
Q7	3(1)	46(23)	13(6)	124(61)	18(9)	3.53(0.99)	4
Q8	13(6)	112(55)	23(11)	53(26)	3(2)	2.61(0.99)	2

### 3.9 SECTION THREE: SECOND MATURITY LEVEL

The third section of the survey questionnaire queried personnel perceptions regarding the second maturity level of the process maturity framework. The following table describes the received responses that were affiliated with this section.

Table 3.14 -- Frequency Counts, Percentage, Mean, Standard Deviation (SD) and Mode of the Responses for Questions under Second Maturity Level.

\*Percentages are in parentheses.

Item	Frequency counts and percentages					Mean(SD)	Mode
	1 = strongly disagree	2 = disagree	3 = no judgment	4 = agree	5 = strongly agree		
Q9	0	11(5)	16(8)	160(78)	17(8)	3.90(0.61)	4
Q10	1(1)	18(9)	18(9)	153(75)	14(7)	3.79(0.72)	4
Q11	1(1)	20(10)	18(9)	153(75)	12(6)	3.76(0.73)	4

### 3.10 SECTION FOUR: THIRD MATURITY LEVEL

The fourth section of the survey questionnaire queried personnel perceptions regarding the third maturity level of the process maturity framework. The following table describes the received responses that were affiliated with this section.

Table 3.15 -- Frequency Counts, Percentage, Mean, Standard Deviation (SD) and Mode of the Responses for Questions under Third Maturity Level.

\*Percentages are in parentheses.

Item	Frequency counts and percentages					Mean(SD)	Mode
	1 = strongly disagree	2 = disagree	3 = no judgment	4 = agree	5 = strongly agree		
Q12	3(1)	28(14)	17(8)	146(72)	10(5)	3.65(0.83)	4
Q13	1(1)	23(11)	18(9)	153(75)	9(4)	3.72(0.74)	4
Q14	1(1)	14(7)	18(9)	154(75)	17(8)	3.84(0.68)	4

### 3.11 SECTION FIVE: FOURTH MATURITY LEVEL

The fifth section of the survey questionnaire queried personnel perceptions regarding the fourth maturity level of the process maturity framework. The following table describes the received responses that were affiliated with this section.

Table 3.16 -- Frequency Counts, Percentage, Mean, Standard Deviation (SD) and Mode of the Responses for Questions under Fourth Maturity Level.

\*Percentages are in parentheses.

Item	Frequency counts and percentages					Mean(SD)	Mode
	1 = strongly disagree	2 = disagree	3 = no judgment	4 = agree	5 = strongly agree		
Q15	19(9)	64(31)	20(10)	97(48)	4(2)	3.01(1.12)	4
Q16	20(10)	61(30)	21(10)	94(46)	8(4)	3.04(1.15)	4
Q17	18(9)	51(25)	17(8)	104(51)	14(7)	3.22(1.16)	4

### 3.12 SECTION SIX: FIFTH MATURITY LEVEL

The sixth section of the survey questionnaire queried personnel perceptions regarding the fifth maturity level of the process maturity framework. The following table describes the received responses that were affiliated with this section.

Table 3.17 -- Frequency Counts, Percentage, Mean, Standard Deviation (SD) and Mode of the Responses for Questions under Fifth Maturity Level.

\*Percentages are in parentheses.

Item	Frequency counts and percentages					Mean(SD)	Mode
	1 = strongly disagree	2 = disagree	3 = no judgment	4 = agree	5 = strongly agree		
Q18	4(2)	26(13)	37(18)	131(64)	6(3)	3.53(0.83)	4
Q19	4(2)	30(15)	44(22)	123(60)	3(1)	3.45(0.83)	4
Q20	0	14(7)	23(11)	152(75)	15(7)	3.82(0.66)	4

### 3.13 SECTION SEVEN: ORGANIZATIONAL CHARACTERISTICS

The seventh section of the survey questionnaire queried personnel perceptions regarding the various aspects of process improvement and management functions. Within the survey questionnaire, question 21 through question 33 queried these managerial functions. A five-point Likert-scale was used to collect this data. The succeeding sub-headings describe the characteristics of the seventh section.

#### 3.13.1 Process Improvement Characteristics

Within the seventh section of the survey, regarding various aspects of process improvement and managerial functions, question 21 through question 23 queried aspects of process improvement initiatives. These queries investigated the attributes of the existing work environment. The following table describes the received responses that were affiliated with these items.

Table 3.18 -- Frequency Counts, Percentage, Mean, Standard Deviation (SD) and Mode of the Responses for Questions under Process Improvement Characteristics.

\*Percentages are in parentheses.

Item	Frequency counts and percentages					Mean(SD)	Mode
	1 = strongly disagree	2 = disagree	3 = no judgment	4 = agree	5 = strongly agree		
Q21	2(1)	23(11)	25(12)	137(67)	17(8)	3.71(0.81)	4
Q22	3(1)	17(8)	26(13)	138(68)	20(10)	3.76(0.80)	4
Q23	8(4)	58(28)	27(13)	97(48)	14(7)	3.25(1.07)	4

### 3.13.2 Process Grouping and Maturity Characteristics

Within the seventh section of the survey, regarding various aspects of process improvement and managerial functions, question 24 through question 26 queried aspects of process grouping and maturity. The following table describes the received responses that were affiliated with these items.

Table 3.19 -- Frequency Counts, Percentage, Mean, Standard Deviation (SD) and Mode of Responses for Questions under Process Grouping and Maturity Characteristics.

\*Percentages are in parentheses.

Item	Frequency counts and percentages					Mean(SD)	Mode
	1 = strongly disagree	2 = disagree	3 = no judgment	4 = agree	5 = strongly agree		
Q24	1(1)	9(4)	48(23)	118(58)	28(14)	3.80(0.75)	4
Q25	18(9)	61(30)	50(25)	70(34)	5(2)	2.92(1.05)	4
Q26	18(9)	90(44)	56(27)	39(19)	1(1)	2.58(0.91)	2



### 3.13.3 Organizational Process Characteristics

Within the seventh section of the survey, regarding various aspects of process improvement and managerial functions, question 27 through question 33 queried aspects of organizational processes. The following table describes the received responses that were affiliated with these items.

Table 3.20 -- Frequency Counts, Percentage, Mean, Standard Deviation (SD) and Mode of the Responses for Questions under Organizational Process Characteristics.

\*Percentages are in parentheses.

Item	Frequency counts and percentages					Mean(SD)	Mode
	1 = strongly disagree	2 = disagree	3 = no judgment	4 = agree	5 = strongly agree		
Q27	14(7)	95(47)	25(12)	63(31)	7(3)	2.77(1.07)	4
Q28	0	19(9)	25(12)	124(61)	36(18)	3.87(0.81)	4
Q29	7(3)	60(29)	21(10)	106(52)	10(5)	3.25(1.04)	4
Q30	8(4)	122(60)	40(20)	31(15)	3(1)	2.50(0.85)	2
Q31	15(7)	145(71)	27(13)	14(7)	3(1)	2.24(0.75)	2
Q32	10(5)	104(51)	21(10)	62(30)	7(3)	2.76(1.05)	2
Q33	4(2)	20(10)	32(16)	131(64)	17(8)	3.67(0.84)	4

### 3.14 ORGANIZATIONAL DEMOGRAPHICS

The remaining section of the survey questionnaire queried the demographic attributes of respondent organizations. These queries consisted of questions 34 through 41.

#### 3.14.1 Geographic Location

Question 34 of the survey questionnaire queried the geographic location of the respondents. The geographic locations were categorized as either Alabama or Mississippi. A total of 58.82% of the respondents indicated that their geographic location

was Alabama. A total of 39.71% of the respondents indicated that their geographic location was Mississippi. A total of 1.47% of the respondents failed to reveal their geographic location. The following table describes the received data associated with this question.

Table 3.21 – Geographic Locations

Location	Responses	Response Percentage
Alabama	120	58.82%
Mississippi	81	39.71%
Missing Response	3	1.47%

The following figure shows these attributes graphically:

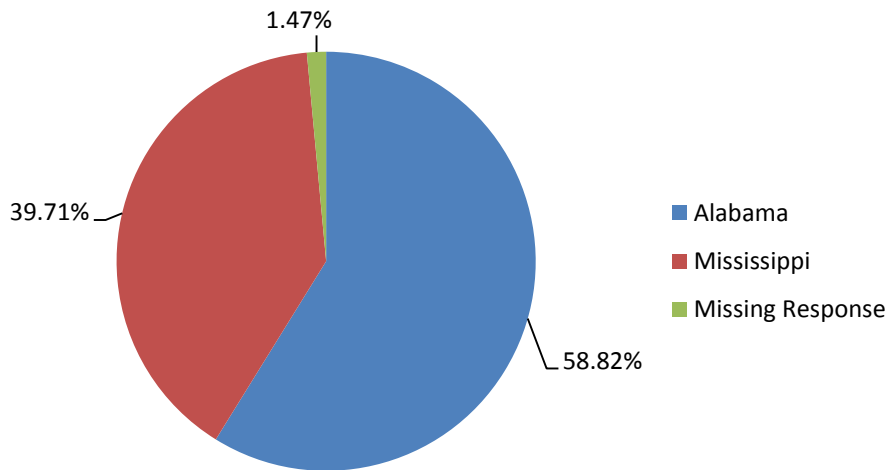


Figure 3.1 – Geographic Location

### 3.14.2 Urban vs. Rural Classification

Question 35 of the survey questionnaire queried the type of organization that employed the respondent. The organizations were classified as either urban or rural entities. A total of 12.25% of the respondents indicated that their organization was an urban entity. A total of 87.25% of the respondents indicated that their organization was a rural entity. A total of 0.49% of the respondents failed to reveal whether their organization was classified as either an urban or rural entity. The following table describes the received data associated with this question.

Table 3.22 – Types of Organizations

Type of Organization	Response Quantity	Response Percentage
Urban	25	12.25%
Rural	178	87.25%
Missing Response	1	0.49%

The following figure shows these relationships graphically:

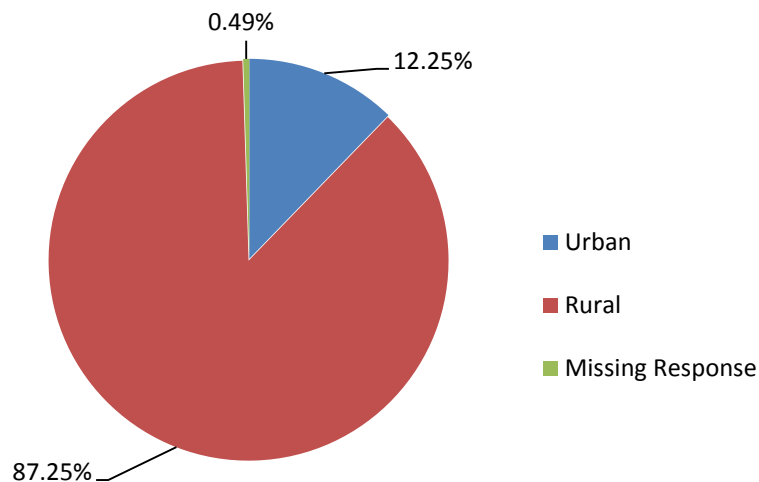


Figure 3.2 – Urban vs. Rural

### 3.14.3 Job Classification

Question 36 of the survey queried whether a respondent was either a management or non-management employee. A total of 71.08% of the respondents indicated that their job responsibility was a managerial position whereas a total of 27.45% of the respondents indicated that their job responsibilities were non-managerial. A total of 1.47% of the respondents failed to reveal whether their employment classification was either managerial or non-managerial. The following table describes the received data associated with this question.

Table 3.23 – Job Classifications

Type of Organization	Response Quantity	Response Percentage
Management	145	71.08%
Non-Management	56	27.45%
Missing Response	3	1.47%

The following figure shows these relationships graphically:

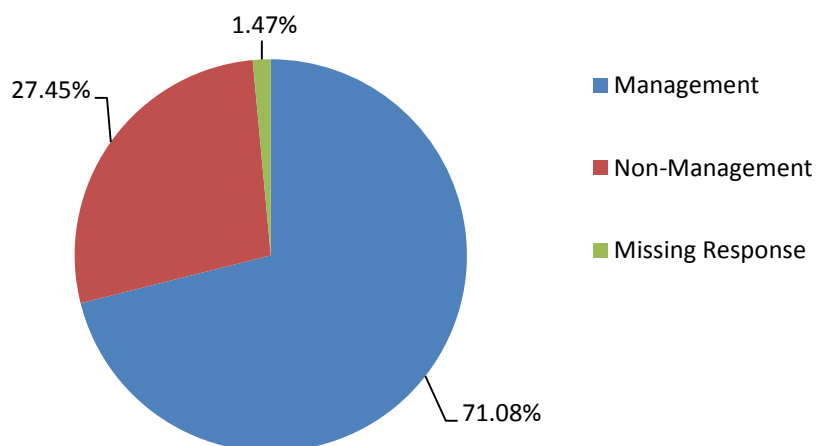


Figure 3.3 – Management vs. Non-Management

### 3.14.4 Previous Improvement Initiatives

Question 37 of the survey questionnaire queried the previous process improvement initiatives that existed within the organization. The following table describes the received data associated with this question.

Table 3.24 – Previous Process Improvement Initiatives

Previous Initiative	Responses	Response Percentage
No Previous Initiative	31	15.20%
Compstat	4	1.96%
Total Quality Management (TQM)	67	32.84%
Business Process Reengineering (BPR)	7	3.43%
Business Process Improvement (BPI)	28	13.73%
Business Process Management (BPM)	10	4.90%
Benchmarking	14	6.86%
Six-Sigma	5	2.45%
Regulation	15	7.35%
ISO Standards	3	1.47%
Process Maturity Modeling	1	0.49%
Proprietary Initiative	9	4.41%
Missing Response	10	4.90%

The following figure shows these relationships graphically:

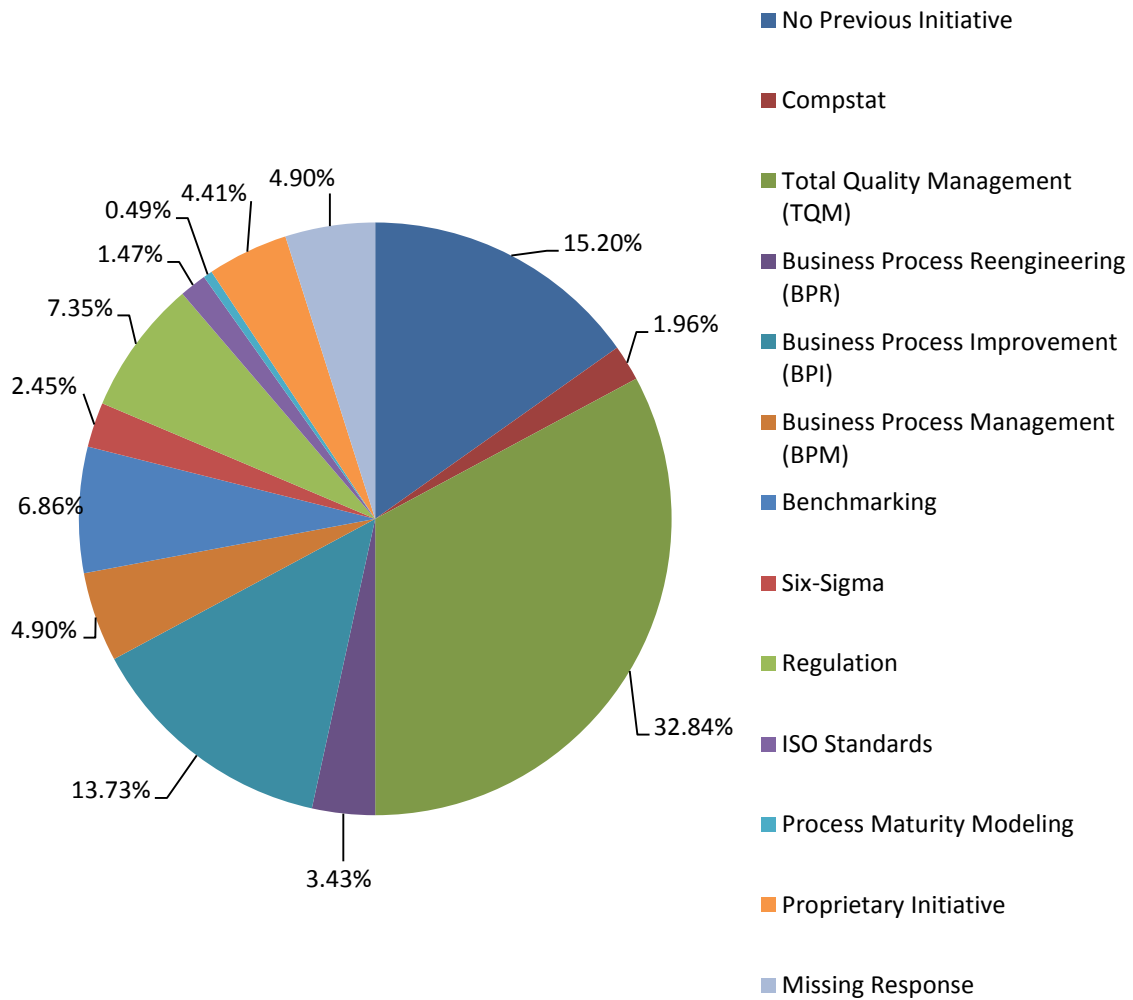


Figure 3.4 – Previous Improvement Initiatives

### 3.14.5 Current Improvement Initiatives

Question 38 of the survey questionnaire queried the previous process improvement initiatives that existed within the organization. The following table describes the received data associated with this question.

Table 3.25 – Current Process Improvement Initiatives

Current Initiative	Responses	Response Percentages
No Current Initiative	28	13.73%
Compstat	4	1.96%
Total Quality Management (TQM)	74	36.27%
Business Process Reengineering (BPR)	2	0.98%
Business Process Improvement (BPI)	30	14.71%
Business Process Management (BPM)	10	4.90%
Benchmarking	14	6.86%
Six-Sigma	5	2.45%
Regulation	12	5.88%
ISO Standards	5	2.45%
Process Maturity Modeling	1	0.49%
Proprietary Initiative	17	8.33%
Missing Response	2	0.98%

The following figure shows these relationships graphically:

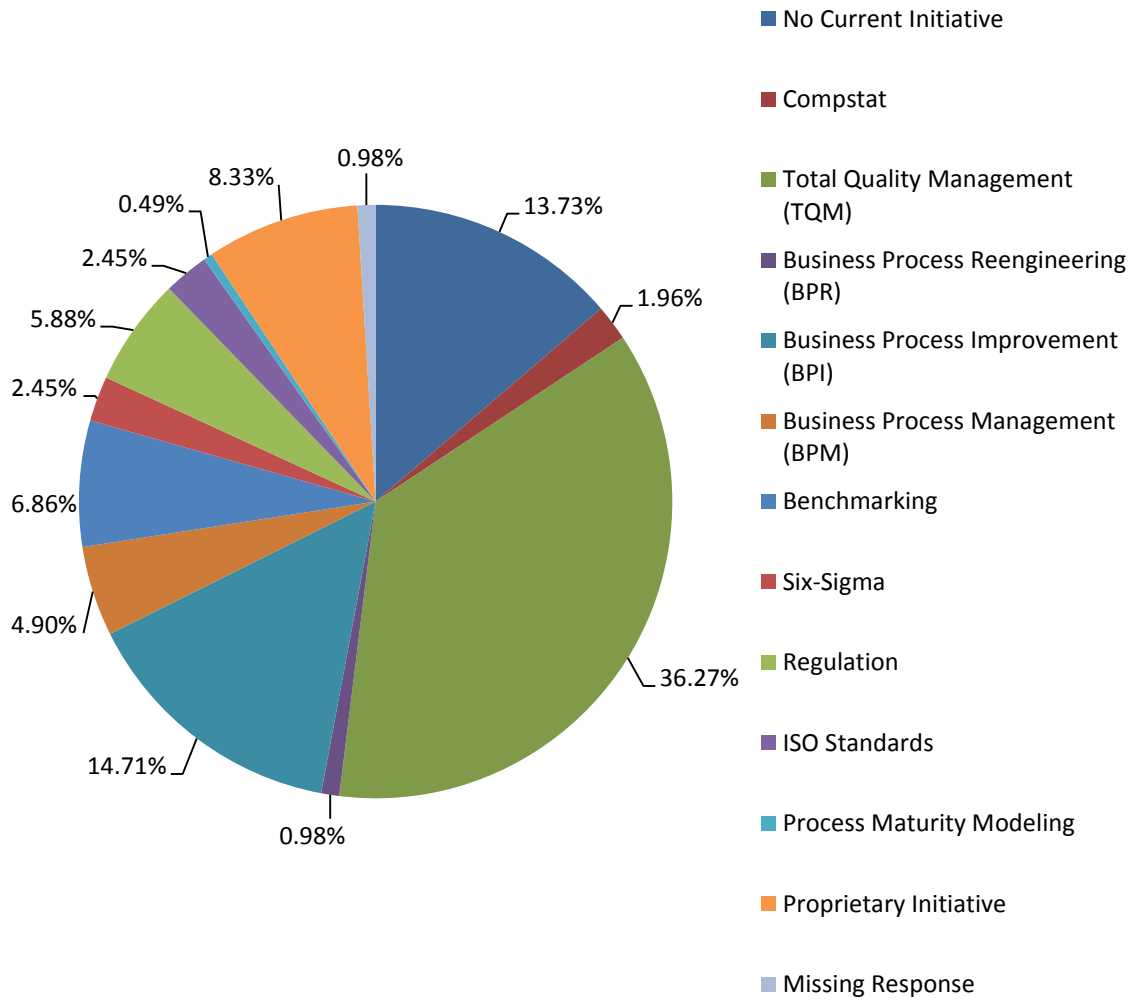


Figure 3.5 – Current Improvement Initiatives



### 3.14.6 Organizational Size

Question 39 of the survey questionnaire queried the size of the responding organization based on the quantity of personnel employed within the organization. The following table describes the received data associated with this question.

Table 3.26 – Organizational Size

Organizational Size	Responses	Response Percentage
1 -- 10	8	3.92%
11 -- 19	9	4.41%
20 -- 29	13	6.37%
30 -- 39	38	18.63%
40 -- 49	45	22.06%
50 -- 59	24	11.76%
60 -- 69	16	7.84%
70 -- 79	3	1.47%
80 -- 89	10	4.90%
90 -- 100	7	3.43%
Over 100	26	12.75%
Missing Response	5	2.45%

The following figure shows these relationships graphically:

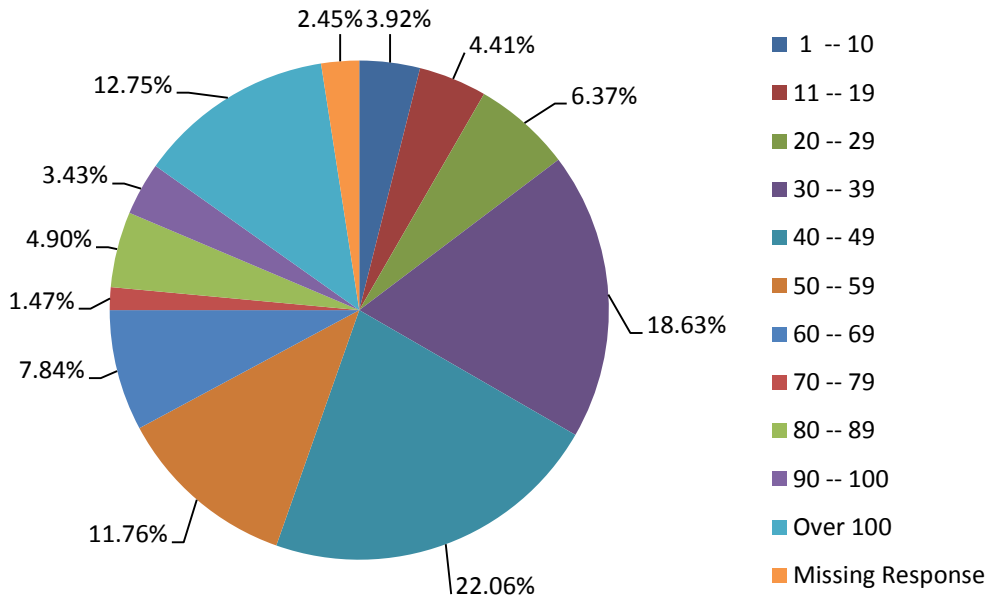


Figure 3.6 – Organizational Size Using Personnel Quantities

### 3.14.7 Organizational Scope

Question 40 queried the scope of the organization regarding whether it had federal, regional, state, local, tribal, or commercial responsibilities. The following table describes the received data associated with this question.

Table 3.27 – Organizational Scope

Scope	Responses	Response Percentages
Federal	2	0.98%
Regional	8	3.92%
State	25	12.25%
Local	123	60.29%
Tribal	1	0.49%
Private	32	15.69%
Commercial	11	5.39%
Missing Response	2	0.98%

The following figure shows these relationships graphically:

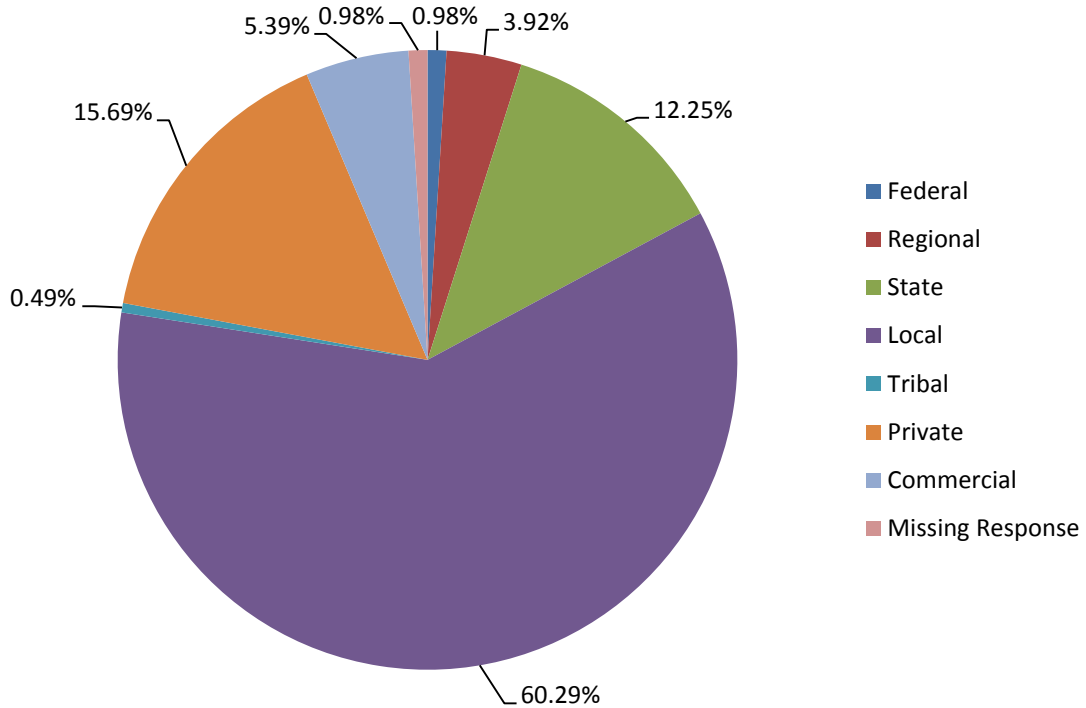


Figure 3.7 – Organizational Scope

### 3.14.8 Organizational Status

Question 41 queried the status of the organization regarding whether it was either a for-profit or a non-profit entity. The following table describes the received data associated with this question.

Table 3.28 – Organizational Status

Category	Responses	Response Percentage
For-Profit	40	19.61%
Non-Profit	164	80.39%
Missing Response	0	0.00%

The following figure shows these relationships graphically:

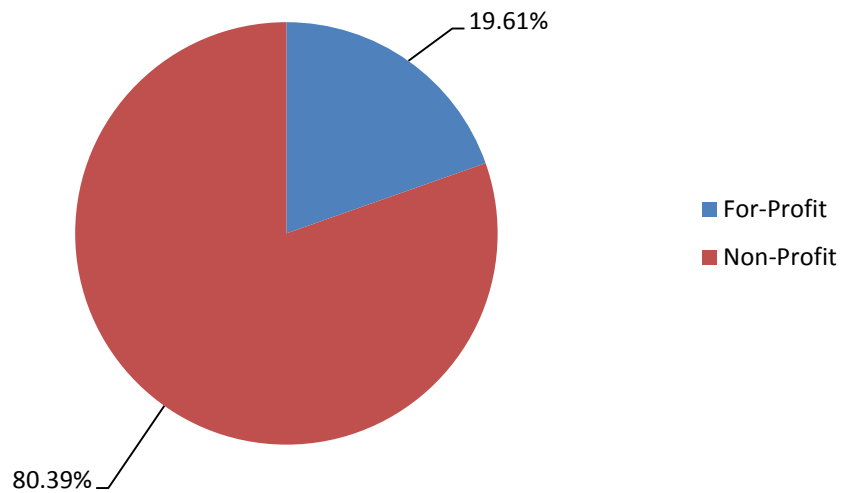


Figure 3.8 – For-Profit vs. Non-Profit Organizations

### 3.15 MEAN CONSIDERATIONS OF THE SCALES

A consideration of the means facilitates an examination of directionality regarding the received responses within the survey questionnaire data collection instrument. The determination and use of cut-off points is subjective (McNabb, 2010:207). Within this examination, boundaries are established and used regarding directionality with respect to the response categories of the survey questionnaire. These boundaries are: 1) if  $M < 2.5$ , then disagreeing; 2) if  $2.5 \leq M \leq 3.5$ , then neither agreeing nor disagreeing; and 3) if  $M > 3.5$ , then agreeing.

This section contains a consideration of the means for the following scaled groupings: 1) management versus non-management personnel, 2) urban versus rural personnel, and 3) Alabama versus Mississippi personnel.

#### 3.15.1 Mean Consideration: Management vs. Non-Management

Questions 1 through 5 were scaled regarding the basic maturity model framework. This scaling of questions represented the notion “organizational evidence of the process maturity model framework exists.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.30$ ,  $SD = 1.02$ )

Non-management personnel ( $M = 3.04$ ,  $SD = 1.02$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 6 through 8 were scaled regarding the first level of the maturity model framework. This scaling of questions represented the notion “evidence of the first level of the process maturity framework exists.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.80$ ,  $SD = 1.08$ )

Non-management personnel ( $M = 3.11$ ,  $SD = 1.03$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 9 through 11 were scaled regarding the second level of the maturity model framework. This scaling of questions represented the notion “evidence of the second level of the process maturity framework exists.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.85$ ,  $SD = 0.69$ )

Non-management personnel ( $M = 3.74$ ,  $SD = 0.66$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Questions 12 through 14 were scaled regarding the third level of the maturity model framework. This scaling of questions represented the notion “evidence of the third level of the process maturity framework exists.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.77$ ,  $SD = 0.77$ )

Non-management personnel ( $M = 3.65$ ,  $SD = 0.75$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Questions 15 through 17 were scaled regarding the fourth level of the maturity model framework. This scaling of questions represented the notion “evidence of the fourth level of the process maturity framework exists.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.38$ ,  $SD = 1.03$ )

Non-management personnel ( $M = 2.38$ ,  $SD = 1.11$ )

Based on these means and standard deviations, management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and non-management personnel exhibited direction toward disagreement.

Questions 18 through 20 were scaled regarding the fifth level of the maturity model framework. This scaling of questions represented the notion “evidence of the fifth level of the process maturity framework exists.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.69$ ,  $SD = 0.73$ )

Non-management personnel ( $M = 3.36$ ,  $SD = 0.89$ )

Based on these means and standard deviations, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 21 through 23 were scaled regarding processes in the work setting. This scaling of questions represented the notion “evidence of process improvement exists among work settings.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.66$ ,  $SD = 0.88$ )

Non-management personnel ( $M = 3.34$ ,  $SD = 1.00$ )

Based on these means and standard deviations, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 24 through 26 were scaled regarding processes in the work setting. This scaling of questions represented the notion “evidence of process organization exists

among work settings.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.19$ ,  $SD = 1.01$ )

Non-management personnel ( $M = 2.88$ ,  $SD = 1.12$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 27 through 33 were scaled regarding processes in the work setting. This scaling of questions represented the notion “evidence of process volatility exists among work settings.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.95$ ,  $SD = 1.09$ )

Non-management personnel ( $M = 3.19$ ,  $SD = 1.02$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

### **3.15.2 Mean Consideration: Urban vs. Rural**

Questions 1 through 5 were scaled regarding the basic maturity model framework. This scaling of questions represented the notion “organizational evidence of the process maturity model framework exists.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.16$ ,  $SD = 0.98$ )

Rural personnel ( $M = 3.24$ ,  $SD = 1.04$ )



Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 6 through 8 were scaled regarding the first level of the maturity model framework. This scaling of questions represented the notion “evidence of the first level of the process maturity framework exists.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.96$ ,  $SD = 1.07$ )

Rural personnel ( $M = 2.87$ ,  $SD = 1.06$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 9 through 11 were scaled regarding the second level of the maturity model framework. This scaling of questions represented the notion “evidence of the second level of the process maturity framework exists.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.83$ ,  $SD = 0.78$ )

Rural personnel ( $M = 3.81$ ,  $SD = 0.68$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Questions 12 through 14 were scaled regarding the third level of the maturity model framework. This scaling of questions represented the notion “evidence of the third level of the process maturity framework exists.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.67$ ,  $SD = 0.83$ )

Rural personnel ( $M = 3.74$ ,  $SD = 0.75$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Questions 15 through 17 were scaled regarding the fourth level of the maturity model framework. This scaling of questions represented the notion “evidence of the fourth level of the process maturity framework exists.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.83$ ,  $SD = 1.13$ )

Rural personnel ( $M = 3.13$ ,  $SD = 1.14$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 18 through 20 were scaled regarding the fifth level of the maturity model framework. This scaling of questions represented the notion “evidence of the fifth level of the process maturity framework exists.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.57$ ,  $SD = 0.74$ )

Rural personnel ( $M = 3.60$ ,  $SD = 0.80$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Questions 21 through 23 were scaled regarding processes in the work setting. This scaling of questions represented the notion “evidence of process improvement exists among work settings.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.44$ ,  $SD = 0.93$ )

Rural personnel ( $M = 3.59$ ,  $SD = 0.92$ )

Based on these means and standard deviations, urban personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and rural personnel exhibited direction toward agreement.

Questions 24 through 26 were scaled regarding processes in the work setting. This scaling of questions represented the notion “evidence of process organization exists among work settings.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.01$ ,  $SD = 1.03$ )

Rural personnel ( $M = 3.11$ ,  $SD = 1.05$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 27 through 33 were scaled regarding processes in the work setting. This scaling of questions represented the notion “evidence of process volatility exists among work settings.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.91$ ,  $SD = 1.12$ )

Rural personnel ( $M = 2.90$ ,  $SD = 1.07$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

### **3.15.3 Mean Consideration: Alabama vs. Mississippi**

Questions 1 through 5 were scaled regarding the basic maturity model framework. This scaling of questions represented the notion “organizational evidence of the process maturity model framework exists.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.31$ ,  $SD = 1.00$ )

Mississippi personnel ( $M = 3.11$ ,  $SD = 1.07$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 6 through 8 were scaled regarding the first level of the maturity model framework. This scaling of questions represented the notion “evidence of the first level of the process maturity framework exists.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.83$ ,  $SD = 1.09$ )

Mississippi personnel ( $M = 2.98$ ,  $SD = 1.04$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Questions 9 through 11 were scaled regarding the second level of the maturity model framework. This scaling of questions represented the notion “evidence of the second level of the process maturity framework exists.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.90$ ,  $SD = 0.62$ )

Mississippi personnel ( $M = 3.70$ ,  $SD = 0.75$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Questions 12 through 14 were scaled regarding the third level of the maturity model framework. This scaling of questions represented the notion “evidence of the third level of the process maturity framework exists.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.79$ ,  $SD = 0.72$ )

Mississippi personnel ( $M = 3.67$ ,  $SD = 0.80$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Questions 15 through 17 were scaled regarding the fourth level of the maturity model framework. This scaling of questions represented the notion “evidence of the fourth level of the process maturity framework exists.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.23$ ,  $SD = 2.90$ )

Mississippi personnel ( $M = 1.08$ ,  $SD = 1.22$ )

Based on these means and standard deviations, Alabama personnel exhibited direction toward neutrality and Mississippi personnel exhibited direction toward disagreement.

Questions 18 through 20 were scaled regarding the fifth level of the maturity model framework. This scaling of questions represented the notion “evidence of the fifth level of the process maturity framework exists.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.66$ ,  $SD = 0.79$ )

Mississippi personnel ( $M = 3.52$ ,  $SD = 0.79$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Questions 21 through 23 were scaled regarding processes in the work setting. This scaling of questions represented the notion “evidence of process improvement exists among work settings.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.59$ ,  $SD = 0.93$ )

Mississippi personnel ( $M = 3.55$ ,  $SD = 0.93$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Questions 24 through 26 were scaled regarding processes in the work setting. This scaling of questions represented the notion “evidence of process organization exists among work settings.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.16$ ,  $SD = 1.03$ )

Mississippi personnel ( $M = 3.01$ ,  $SD = 1.07$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality.

Questions 27 through 33 were scaled regarding processes in the work setting. This scaling of questions represented the notion “evidence of process volatility exists among work settings.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.99$ ,  $SD = 1.10$ )

Mississippi personnel ( $M = 3.05$ ,  $SD = 1.05$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality.

### **3.16 MEAN CONSIDERATIONS OF THE INDIVIDUAL QUESTIONS**

This section considers examinations of the means that were associated with the individual survey question items.

### **3.16.1 Mean Consideration: Management vs. Non-Management**

Question 1 of the survey questionnaire data collection instrument represented the notion “agency processes may be defined as ad hoc, chaotic, or random.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.29$ ,  $SD = 0.82$ )

Non-management personnel ( $M = 2.98$ ,  $SD = 1.05$ )

Based on these means and standard deviations, management personnel exhibited direction toward disagreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 2 of the survey questionnaire data collection instrument represented the notion “agency processes are managed.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.78$ ,  $SD = 0.72$ )

Non-management personnel ( $M = 3.30$ ,  $SD = 0.99$ )

Based on these means and standard deviations, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 3 of the survey questionnaire data collection instrument represented the notion “agency processes are defined/specific.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.81$ ,  $SD = 0.69$ )

Non-management personnel ( $M = 3.71$ ,  $SD = 0.73$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Question 4 of the survey questionnaire data collection instrument represented the notion “agency processes are quantitatively managed.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.29$ ,  $SD = 1.02$ )

Non-management personnel ( $M = 2.55$ ,  $SD = 1.08$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 5 of the survey questionnaire data collection instrument represented the notion “agency processes are optimized.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.33$ ,  $SD = 0.97$ )

Non-management personnel ( $M = 2.61$ ,  $SD = 0.99$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 6 of the survey questionnaire data collection instrument represented the notion “agency processes are unpredictable.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.35$ ,  $SD = 0.86$ )

Non-management personnel ( $M = 2.96$ ,  $SD = 1.03$ )

Based on these means and standard deviations, management personnel exhibited direction toward disagreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).



Question 7 of the survey questionnaire data collection instrument represented the notion “agency processes are reactive.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.58$ ,  $SD = 0.98$ )

Non-management personnel ( $M = 3.41$ ,  $SD = 1.01$ )

Based on these means and standard deviations, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 8 of the survey questionnaire data collection instrument represented the notion “agency processes are uncoordinated.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.48$ ,  $SD = 0.94$ )

Non-management personnel ( $M = 2.93$ ,  $SD = 1.02$ )

Based on these means and standard deviations, management personnel exhibited direction toward disagreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 9 of the survey questionnaire data collection instrument represented the notion “agency processes are planned.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.91$ ,  $SD = 0.62$ )

Non-management personnel ( $M = 3.86$ ,  $SD = 0.59$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Question 10 of the survey questionnaire data collection instrument represented the notion: “agency processes are managed.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.82$ ,  $SD = 0.72$ )

Non-management personnel ( $M = 3.73$ ,  $SD = 0.67$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Question 11 of the survey questionnaire data collection instrument represented the notion “agency processes are controlled.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.81$ ,  $SD = 0.73$ )

Non-management personnel ( $M = 3.66$ ,  $SD = 0.70$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Question 12 of the survey questionnaire data collection instrument represented the notion “agency processes are defined.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.68$ ,  $SD = 0.84$ )

Non-management personnel ( $M = 3.57$ ,  $SD = 0.81$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Question 13 of the survey questionnaire data collection instrument represented the notion “agency processes are consistent.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.74$ ,  $SD = 0.75$ )

Non-management personnel ( $M = 3.68$ ,  $SD = 0.72$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Question 14 of the survey questionnaire data collection instrument represented the notion “agency processes are followed.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.88$ ,  $SD = 0.70$ )

Non-management personnel ( $M = 3.77$ ,  $SD = 0.66$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Question 15 of the survey questionnaire data collection instrument represented the notion “agency processes involve quantitative objectives.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.27$ ,  $SD = 1.02$ )

Non-management personnel ( $M = 2.34$ ,  $SD = 1.10$ )

Based on these means and standard deviations, management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and non-management personnel exhibited direction toward disagreement.

Question 16 of the survey questionnaire data collection instrument represented the notion “agency processes involve metrics analysis.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.34$ ,  $SD = 1.04$ )

Non-management personnel ( $M = 2.30$ ,  $SD = 1.09$ )

Based on these means and standard deviations, management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and non-management personnel exhibited direction toward disagreement.

Question 17 of the survey questionnaire data collection instrument represented the notion “agency processes involve statistical analysis.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.54$ ,  $SD = 1.01$ )

Non-management personnel ( $M = 2.41$ ,  $SD = 1.13$ )

Based on these means and standard deviations, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward disagreement.

Question 18 of the survey questionnaire data collection instrument represented the notion “agency processes are improved incrementally.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.66$ ,  $SD = 0.77$ )

Non-management personnel ( $M = 3.20$ ,  $SD = 0.90$ )

Based on these means and standard deviations, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 19 of the survey questionnaire data collection instrument represented the notion “agency processes are efficient.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.56$ ,  $SD = 0.77$ )

Non-management personnel ( $M = 3.16$ ,  $SD = 0.91$ )

Based on these means and standard deviations, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 20 of the survey questionnaire data collection instrument represented the notion “agency processes are effective.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.86$ ,  $SD = 0.62$ )

Non-management personnel ( $M = 3.73$ ,  $SD = 0.75$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement

Question 21 of the survey questionnaire data collection instrument represented the notion “process maturity is not addressed by our current process improvement initiatives.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.65$ ,  $SD = 0.83$ )

Non-management personnel ( $M = 3.86$ ,  $SD = 0.77$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement

Question 22 of the survey questionnaire data collection instrument represented the notion “process improvement is advocated within my agency.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.86$ ,  $SD = 0.77$ )

Non-management personnel ( $M = 3.50$ ,  $SD = 0.81$ )

Based on these means and standard deviations, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 23 of the survey questionnaire data collection instrument represented the notion “process initiatives are tracked to examine process performance.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.48$ ,  $SD = 1.00$ )

Non-management personnel ( $M = 2.66$ ,  $SD = 1.01$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality.

Question 24 of the survey questionnaire data collection instrument represented the notion “grouping of processes, according to maturity level, would improve the outcomes of our processes.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.80$ ,  $SD = 0.75$ )

Non-management personnel ( $M = 3.82$ ,  $SD = 0.74$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Question 25 of the survey questionnaire data collection instrument represented the notion “categorical process grouping is advocated within my agency.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.08$ ,  $SD = 1.02$ )

Non-management personnel ( $M = 2.50$ ,  $SD = 1.01$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 26 of the survey questionnaire data collection instrument represented the notion “process maturity is a contributor to successful process outputs within my agency.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.68$ ,  $SD = 0.90$ )

Non-management personnel ( $M = 2.32$ ,  $SD = 0.94$ )

Based on these means and standard deviations, management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and non-management personnel exhibited direction toward disagreement.

Question 27 of the survey questionnaire data collection instrument represented the notion “processes are informal within my agency.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.62$ ,  $SD = 1.06$ )

Non-management personnel ( $M = 3.20$ ,  $SD = 1.00$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 28 of the survey questionnaire data collection instrument represented the notion “agency policies influence processes.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.83$ ,  $SD = 0.80$ )

Non-management personnel ( $M = 3.96$ ,  $SD = 0.81$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

Question 29 of the survey questionnaire data collection instrument represented the notion “methods of managing processes vary within my agency.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.23$ ,  $SD = 1.09$ )

Non-management personnel ( $M = 3.38$ ,  $SD = 0.93$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 30 of the survey questionnaire data collection instrument represented the notion “agency processes are inefficient.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.37$ ,  $SD = 0.82$ )

Non-management personnel ( $M = 2.86$ ,  $SD = 0.84$ )

Based on these means and standard deviations, management personnel exhibited direction toward disagreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).



Question 31 of the survey questionnaire data collection instrument represented the notion “agency processes are ineffective.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.20$ ,  $SD = 0.72$ )

Non-management personnel ( $M = 2.34$ ,  $SD = 0.82$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward disagreement.

Question 32 of the survey questionnaire data collection instrument represented the notion “agency processes change frequently.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 2.68$ ,  $SD = 1.05$ )

Non-management personnel ( $M = 2.95$ ,  $SD = 1.03$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 33 of the survey questionnaire data collection instrument represented the notion “my agency advocates process training.” The mean responses of management and non-management personnel are given as follows:

Management personnel ( $M = 3.68$ ,  $SD = 0.84$ )

Non-management personnel ( $M = 3.64$ ,  $SD = 0.86$ )

Based on these means and standard deviations, management personnel and non-management personnel exhibited direction toward agreement.

### 3.16.2 Mean Consideration: Urban vs. Rural

Question 1 of the survey questionnaire data collection instrument represented the notion “agency processes may be defined as ad hoc, chaotic, or random.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.48$ ,  $SD = 0.87$ )

Rural personnel ( $M = 2.48$ ,  $SD = 0.95$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward disagreement.

Question 2 of the survey questionnaire data collection instrument represented the notion “agency processes are managed.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.64$ ,  $SD = 0.70$ )

Rural personnel ( $M = 3.65$ ,  $SD = 0.85$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 3 of the survey questionnaire data collection instrument represented the notion “agency processes are defined/specific.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.84$ ,  $SD = 0.62$ )

Rural personnel ( $M = 3.78$ ,  $SD = 0.71$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 4 of the survey questionnaire data collection instrument represented the notion “agency processes are quantitatively managed.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.88$ ,  $SD = 1.01$ )

Rural personnel ( $M = 3.11$ ,  $SD = 1.09$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 5 of the survey questionnaire data collection instrument represented the notion “agency processes are optimized.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.24$ ,  $SD = 0.97$ )

Rural personnel ( $M = 3.12$ ,  $SD = 1.03$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 6 of the survey questionnaire data collection instrument represented the notion “agency processes are unpredictable.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.68$ ,  $SD = 0.95$ )

Rural personnel ( $M = 2.49$ ,  $SD = 0.95$ )

Based on these means and standard deviations, urban personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and rural personnel exhibited direction toward disagreement.

Question 7 of the survey questionnaire data collection instrument represented the notion “agency processes are reactive.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.36$ ,  $SD = 1.08$ )

Rural personnel ( $M = 3.55$ ,  $SD = 0.97$ )

Based on these means and standard deviations, urban personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and rural personnel exhibited direction toward agreement.

Question 8 of the survey questionnaire data collection instrument represented the notion “agency processes are uncoordinated.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.84$ ,  $SD = 1.11$ )

Rural personnel ( $M = 2.57$ ,  $SD = 0.97$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 9 of the survey questionnaire data collection instrument represented the notion “agency processes are planned.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.84$ ,  $SD = 0.68$ )

Rural personnel ( $M = 3.90$ ,  $SD = 0.60$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 10 of the survey questionnaire data collection instrument represented the notion “agency processes are managed.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.84$ ,  $SD = 0.80$ )

Rural personnel ( $M = 3.78$ ,  $SD = 0.71$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 11 of the survey questionnaire data collection instrument represented the notion “agency processes are controlled.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.80$ ,  $SD = 0.87$ )

Rural personnel ( $M = 3.75$ ,  $SD = 0.71$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 12 of the survey questionnaire data collection instrument represented the notion “agency processes are defined.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.56$ ,  $SD = 0.96$ )

Rural personnel ( $M = 3.66$ ,  $SD = 0.82$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 13 of the survey questionnaire data collection instrument represented the notion “agency processes are consistent.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.68$ ,  $SD = 0.80$ )

Rural personnel ( $M = 3.72$ ,  $SD = 0.74$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 14 of the survey questionnaire data collection instrument represented the notion “agency processes are followed.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.76$ ,  $SD = 0.72$ )

Rural personnel ( $M = 3.85$ ,  $SD = 0.68$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 15 of the survey questionnaire data collection instrument represented the notion “agency processes involve quantitative objectives.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.64$ ,  $SD = 1.08$ )

Rural personnel ( $M = 3.06$ ,  $SD = 1.12$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 16 of the survey questionnaire data collection instrument represented the notion “agency processes involve metrics analysis.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.80$ ,  $SD = 1.16$ )

Rural personnel ( $M = 3.08$ ,  $SD = 1.14$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 17 of the survey questionnaire data collection instrument represented the notion “agency processes involve statistical analysis.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.04$ ,  $SD = 1.17$ )

Rural personnel ( $M = 3.25$ ,  $SD = 1.16$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 18 of the survey questionnaire data collection instrument represented the notion “agency processes are improved incrementally.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.48$ ,  $SD = 0.77$ )

Rural personnel ( $M = 3.54$ ,  $SD = 0.84$ )

Based on these means and standard deviations, urban personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and rural personnel exhibited direction toward agreement.

Question 19 of the survey questionnaire data collection instrument represented the notion “agency processes are efficient.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.44$ ,  $SD = 0.82$ )

Rural personnel ( $M = 3.44$ ,  $SD = 0.84$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 20 of the survey questionnaire data collection instrument represented the notion “agency processes are effective.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.80$ ,  $SD = 0.58$ )

Rural personnel ( $M = 3.83$ ,  $SD = 0.67$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 21 of the survey questionnaire data collection instrument represented the notion “process maturity is not addressed by our current process improvement initiatives.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.48$ ,  $SD = 0.92$ )

Rural personnel ( $M = 3.74$ ,  $SD = 0.80$ )

Based on these means and standard deviations, urban personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and rural personnel exhibited direction toward agreement.

Question 22 of the survey questionnaire data collection instrument represented the notion “process improvement is advocated within my agency.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.64$ ,  $SD = 0.76$ )

Rural personnel ( $M = 3.77$ ,  $SD = 0.80$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 23 of the survey questionnaire data collection instrument represented the notion “process initiatives are tracked to examine process performance.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.20$ ,  $SD = 1.08$ )

Rural personnel ( $M = 3.26$ ,  $SD = 1.07$ )



Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 24 of the survey questionnaire data collection instrument represented the notion “grouping of processes, according to maturity level, would improve the outcomes of our processes.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.80$ ,  $SD = 0.71$ )

Rural personnel ( $M = 3.80$ ,  $SD = 0.75$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 25 of the survey questionnaire data collection instrument represented the notion “categorical process grouping is advocated within my agency.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.72$ ,  $SD = 0.98$ )

Rural personnel ( $M = 2.94$ ,  $SD = 1.06$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 26 of the survey questionnaire data collection instrument represented the notion “process maturity is a contributor to successful process outputs within my agency.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.52$ ,  $SD = 0.92$ )

Rural personnel ( $M = 2.59$ ,  $SD = 0.92$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 27 of the survey questionnaire data collection instrument represented the notion “processes are informal within my agency.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.72$ ,  $SD = 1.14$ )

Rural personnel ( $M = 2.78$ ,  $SD = 1.06$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 28 of the survey questionnaire data collection instrument represented the notion “agency policies influence processes.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.72$ ,  $SD = 0.84$ )

Rural personnel ( $M = 3.88$ ,  $SD = 0.80$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward agreement.

Question 29 of the survey questionnaire data collection instrument represented the notion “methods of managing processes vary within my agency.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.84$ ,  $SD = 1.07$ )

Rural personnel ( $M = 3.32$ ,  $SD = 1.03$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 30 of the survey questionnaire data collection instrument represented the notion “agency processes are inefficient.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.52$ ,  $SD = 0.96$ )

Rural personnel ( $M = 2.51$ ,  $SD = 0.84$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 31 of the survey questionnaire data collection instrument represented the notion “agency processes are ineffective.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 2.40$ ,  $SD = 0.91$ )

Rural personnel ( $M = 2.22$ ,  $SD = 0.72$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward disagreement.

Question 32 of the survey questionnaire data collection instrument represented the notion “agency processes change frequently.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.28$ ,  $SD = 1.24$ )

Rural personnel ( $M = 2.70$ ,  $SD = 1.00$ )

Based on these means and standard deviations, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 33 of the survey questionnaire data collection instrument represented the notion “my agency advocates process training.” The mean responses of urban and rural personnel are given as follows:

Urban personnel ( $M = 3.40$ ,  $SD = 1.00$ )

Rural personnel ( $M = 3.71$ ,  $SD = 0.81$ )

Based on these means and standard deviations, urban personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and rural personnel exhibited direction toward agreement.

### **3.16.3 Mean Consideration: Alabama vs. Mississippi**

Question 1 of the survey questionnaire data collection instrument represented the notion “agency processes may be defined as ad hoc, chaotic, or random.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.46$ ,  $SD = 0.89$ )

Mississippi personnel ( $M = 2.52$ ,  $SD = 1.03$ )

Based on these means and standard deviations, Alabama personnel exhibited direction toward disagreement and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 2 of the survey questionnaire data collection instrument represented the notion “agency processes are managed.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.75$ ,  $SD = 0.77$ )

Mississippi personnel ( $M = 3.49$ ,  $SD = 0.90$ )

Based on these means and standard deviations, Alabama personnel exhibited direction toward agreement and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 3 of the survey questionnaire data collection instrument represented the notion “agency processes are defined/specific.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.87$ ,  $SD = 0.62$ )

Mississippi personnel ( $M = 3.67$ ,  $SD = 0.79$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Question 4 of the survey questionnaire data collection instrument represented the notion “agency processes are quantitatively managed.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.21$ ,  $SD = 1.02$ )

Mississippi personnel ( $M = 2.90$ ,  $SD = 1.16$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 5 of the survey questionnaire data collection instrument represented the notion “agency processes are optimized.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.24$ ,  $SD = 1.00$ )

Mississippi personnel ( $M = 2.96$ ,  $SD = 1.04$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 6 of the survey questionnaire data collection instrument represented the notion “agency processes are unpredictable.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.43$ ,  $SD = 0.92$ )

Mississippi personnel ( $M = 2.67$ ,  $SD = 0.98$ )

Based on these means and standard deviations, Alabama personnel exhibited direction toward disagreement and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 7 of the survey questionnaire data collection instrument represented the notion “agency processes are reactive.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.54$ ,  $SD = 1.00$ )

Mississippi personnel ( $M = 3.52$ ,  $SD = 0.98$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Question 8 of the survey questionnaire data collection instrument represented the notion “agency processes are uncoordinated.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.51$ ,  $SD = 0.99$ )

Mississippi personnel ( $M = 2.74$ ,  $SD = 0.97$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 9 of the survey questionnaire data collection instrument represented the notion “agency processes are planned.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.98$ ,  $SD = 0.58$ )

Mississippi personnel ( $M = 3.77$ ,  $SD = 0.64$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Question 10 of the survey questionnaire data collection instrument represented the notion “agency processes are managed.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.85$ ,  $SD = 0.66$ )

Mississippi personnel ( $M = 3.72$ ,  $SD = 0.78$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Question 11 of the survey questionnaire data collection instrument represented the notion “agency processes are controlled.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.86$ ,  $SD = 0.63$ )

Mississippi personnel ( $M = 3.63$ ,  $SD = 0.83$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Question 12 of the survey questionnaire data collection instrument represented the notion “agency processes are defined.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.73$ ,  $SD = 0.78$ )

Mississippi personnel ( $M = 3.54$ ,  $SD = 0.90$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Question 13 of the survey questionnaire data collection instrument represented the notion “agency processes are consistent.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.78$ ,  $SD = 0.70$ )

Mississippi personnel ( $M = 3.63$ ,  $SD = 0.78$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Question 14 of the survey questionnaire data collection instrument represented the notion “agency processes are followed.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.86$ ,  $SD = 0.68$ )

Mississippi personnel ( $M = 3.83$ ,  $SD = 0.70$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

Question 15 of the survey questionnaire data collection instrument represented the notion “agency processes involve quantitative objectives.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.15$ ,  $SD = 1.03$ )

Mississippi personnel ( $M = 2.80$ ,  $SD = 1.22$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 16 of the survey questionnaire data collection instrument represented the notion “agency processes involve metrics analysis.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.18$ ,  $SD = 1.09$ )

Mississippi personnel ( $M = 2.85$ ,  $SD = 1.21$ )



Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 17 of the survey questionnaire data collection instrument represented the notion “agency processes involve statistical analysis.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.35$ ,  $SD = 1.11$ )

Mississippi personnel ( $M = 3.05$ ,  $SD = 1.22$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 18 of the survey questionnaire data collection instrument represented the notion “agency processes are improved incrementally.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.56$ ,  $SD = 0.85$ )

Mississippi personnel ( $M = 3.49$ ,  $SD = 0.81$ )

Based on these means and standard deviations, Alabama personnel exhibited direction toward agreement and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 19 of the survey questionnaire data collection instrument represented the notion “agency processes are efficient.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.52$ ,  $SD = 0.80$ )

Mississippi personnel ( $M = 3.35$ ,  $SD = 0.87$ )

Based on these means and standard deviations, Alabama personnel exhibited direction toward agreement and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 20 of the survey questionnaire data collection instrument represented the notion “agency processes are effective.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.89$ ,  $SD = 0.66$ )

Mississippi personnel ( $M = 3.73$ ,  $SD = 0.65$ )

Based on these means and standard deviations, Alabama personnel and Mississippi exhibited direction toward agreement.

Question 21 of the survey questionnaire data collection instrument represented the notion “process maturity is not addressed by our current process improvement initiatives.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.69$ ,  $SD = 0.83$ )

Mississippi personnel ( $M = 3.73$ ,  $SD = 0.81$ )

Based on these means and standard deviations, Alabama personnel and Mississippi exhibited direction toward agreement.

Question 22 of the survey questionnaire data collection instrument represented the notion “process improvement is advocated within my agency.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.81$ ,  $SD = 0.76$ )

Mississippi personnel ( $M = 3.68$ ,  $SD = 0.85$ )

Based on these means and standard deviations, Alabama personnel and Mississippi exhibited direction toward agreement.

Question 23 of the survey questionnaire data collection instrument represented the notion “process initiatives are tracked to examine process performance.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.27$ ,  $SD = 1.09$ )

Mississippi personnel ( $M = 3.23$ ,  $SD = 1.04$ )

Based on these means and standard deviations, Alabama personnel and Mississippi exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 24 of the survey questionnaire data collection instrument represented the notion “grouping of processes, according to maturity level, would improve the outcomes of our processes.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.84$ ,  $SD = 0.70$ )

Mississippi personnel ( $M = 3.75$ ,  $SD = 0.81$ )

Based on these means and standard deviations, Alabama personnel and Mississippi exhibited direction toward agreement.

Question 25 of the survey questionnaire data collection instrument represented the notion “categorical process grouping is advocated within my agency.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.00$ ,  $SD = 1.05$ )

Mississippi personnel ( $M = 2.80$ ,  $SD = 1.05$ )

Based on these means and standard deviations, Alabama personnel and Mississippi exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 26 of the survey questionnaire data collection instrument represented the notion “process maturity is a contributor to successful process outputs within my

agency.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.65$ ,  $SD = 0.92$ )

Mississippi personnel ( $M = 2.48$ ,  $SD = 0.91$ )

Based on these means and standard deviations, Alabama personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and Mississippi personnel exhibited direction toward disagreement.

Question 27 of the survey questionnaire data collection instrument represented the notion “processes are informal within my agency.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.65$ ,  $SD = 1.05$ )

Mississippi personnel ( $M = 2.98$ ,  $SD = 1.08$ )

Based on these means and standard deviations, Alabama personnel and Mississippi exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 28 of the survey questionnaire data collection instrument represented the notion “agency policies influence processes.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.97$ ,  $SD = 0.70$ )

Mississippi personnel ( $M = 3.73$ ,  $SD = 0.92$ )

Based on these means and standard deviations, Alabama personnel and Mississippi exhibited direction toward agreement.

Question 29 of the survey questionnaire data collection instrument represented the notion “methods of managing processes vary within my agency.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.30$ ,  $SD = 1.04$ )

Mississippi personnel ( $M = 3.22$ ,  $SD = 1.05$ )

Based on these means and standard deviations, Alabama personnel and Mississippi exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 30 of the survey questionnaire data collection instrument represented the notion “agency processes are inefficient.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.46$ ,  $SD = 0.85$ )

Mississippi personnel ( $M = 2.58$ ,  $SD = 0.86$ )

Based on these means and standard deviations, Alabama personnel exhibited direction toward disagreement and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 31 of the survey questionnaire data collection instrument represented the notion “agency processes are ineffective.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.19$ ,  $SD = 0.74$ )

Mississippi personnel ( $M = 2.31$ ,  $SD = 0.77$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward disagreement.

Question 32 of the survey questionnaire data collection instrument represented the notion “agency processes change frequently.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 2.68$ ,  $SD = 1.05$ )

Mississippi personnel ( $M = 2.86$ ,  $SD = 1.03$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing).

Question 33 of the survey questionnaire data collection instrument represented the notion “my agency advocates process training.” The mean responses of Alabama and Mississippi personnel are given as follows:

Alabama personnel ( $M = 3.66$ ,  $SD = 0.90$ )

Mississippi personnel ( $M = 3.69$ ,  $SD = 0.75$ )

Based on these means and standard deviations, Alabama personnel and Mississippi personnel exhibited direction toward agreement.

### **3.17 CHAPTER SUMMARY**

This chapter involved the use of both descriptive and analytical statistics. Descriptive statistics were used to show the attributes of the received data that was obtained from the survey questionnaire data collection instrument. Analytical statistics were used to facilitate investigations of bias, reliability, response rate, and ancillary investigations of issues contained within the survey questionnaire data collection instrument. Respectively, these analytical tools included the Cronbach method.

This chapter presented foundational discussions regarding the format and contents of the survey questionnaire data collection instrument, reliability of the study, potential of bias that impacted this research endeavor, the scope and constraints of the study, and the stratification of data that was employed against the received survey questionnaire responses. Demographic descriptions of the survey questionnaire data collection instrument were presented within this chapter.

Reliability was examined through the use of the Cronbach method. Regarding this study, the Cronbach Alpha value was determined to be 0.81. Given this outcome, the reliability of this study may be considered as acceptable.

Quantitative analysis was used to determine the cumulative response rate for this study. Dissemination of the survey instrument occurred commensurately with the methodological procedures delineated within Chapter 1. Duplicate recipients were disallowed. The population and sample consisted of respondents that represented entities located within the states of Alabama and Mississippi. Based upon response rate discussions found within the examined literature, the response rate for this study is deemed as acceptable.

This chapter also contained a descriptive analysis of the data sets that were derived from the received survey responses. These analytical discussions described each primary section of the survey instrument and its affiliated data responses. Specifically, these primary sections represented analytical descriptions of personnel perception data regarding the characteristics of organizational processes within the context of the basic maturity model framework; the personnel perceptions regarding the characteristics of organizational processes within the contexts of the first, second, third, fourth, and fifth levels of process maturity; personnel perceptions regarding the characteristics of organizational processes within the context of managerial practices that exist within the work setting; and personnel perceptions regarding the characteristics of organizational demographics.

The criminal justice domain encompassed entities in Alabama and Mississippi. Therefore, the analyses and findings of this chapter must be considered only from the contexts of these states. Thus, generalizations of the discussions of this chapter are inappropriate for the whole of American policing within the United States.

The trends regarding the mean considerations of managers vs. non-managers, urban vs. rural, and Alabama vs. Mississippi all exhibited neutrality. Respectively, the following figures show the trend attributes of the mean considerations of the individual responses regarding management vs. non-management, urban vs. rural, and Alabama vs. Mississippi survey responses.

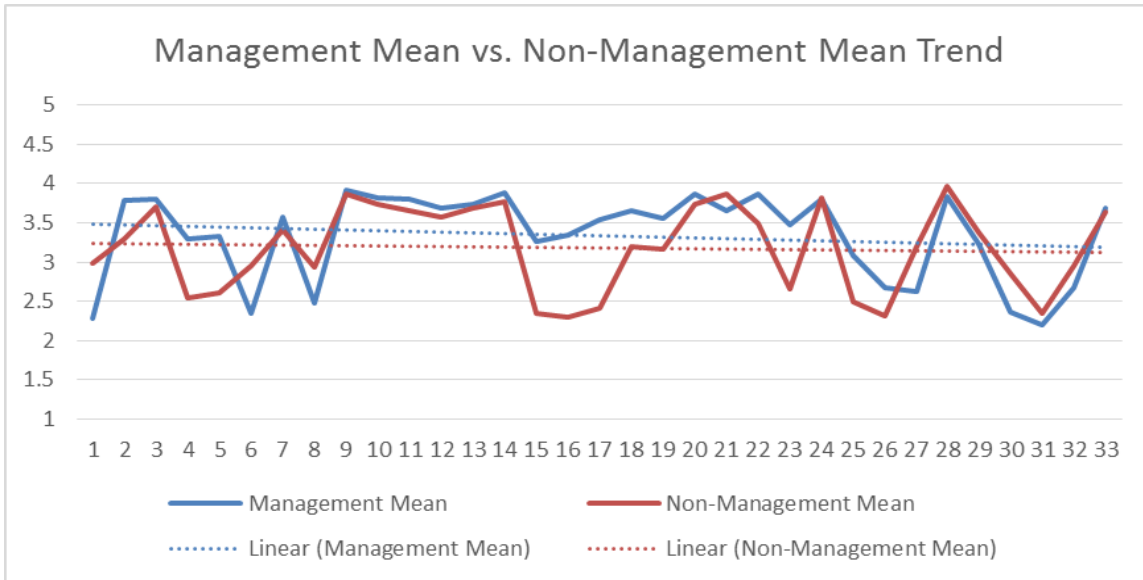


Figure 3.9 – Management vs. Non-Management Trends

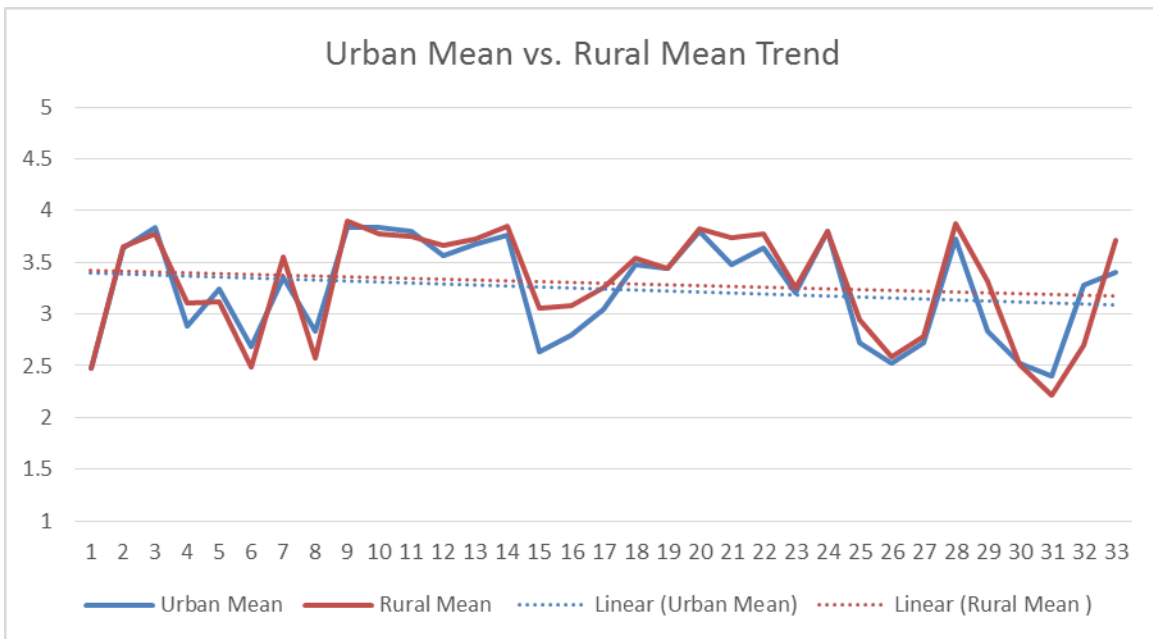


Figure 3.10 – Urban vs. Rural Trends



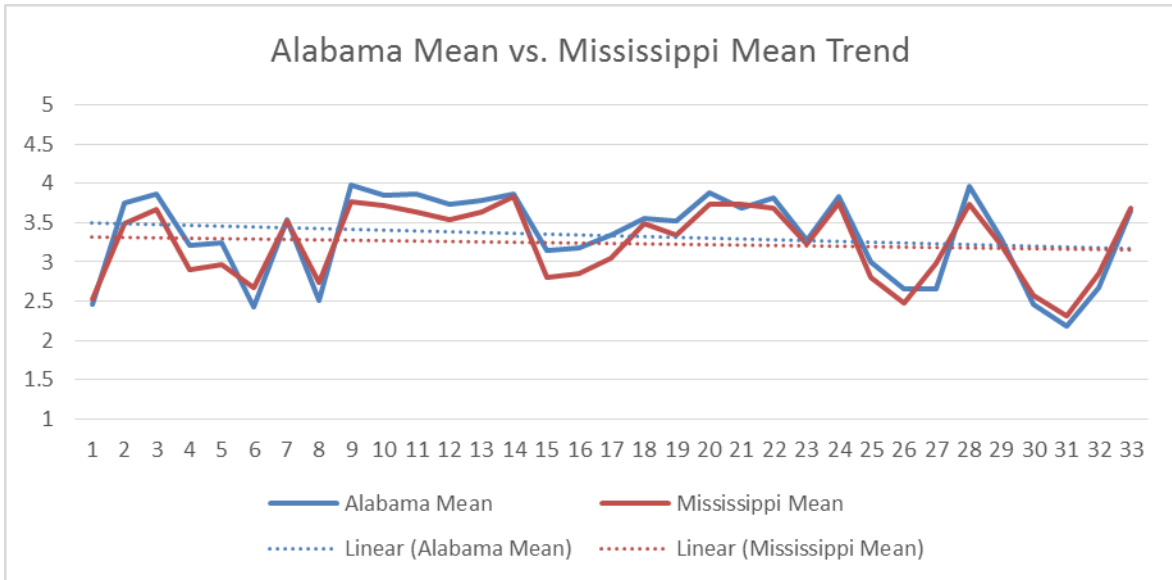


Figure 3.11 – Alabama vs. Mississippi Trends

## CHAPTER 4

### ANALYSES OF THE PERCEPTIONS OF MANAGEMENT PERSONNEL VERSUS NON-MANAGEMENT PERSONNEL

#### 4.1 INTRODUCTION

This chapter presents the findings of the analysis regarding the stratification involving the perceptions of management personnel versus the perceptions of non-management personnel that were obtained from the survey questionnaire data collection instrument. These questions encompassed question 1 through question 33. The ANOVA method was used to investigate whether there was a statistically significant difference on the perceptions of management personnel versus the perceptions of non-management personnel. These personnel perceptions represented only personnel from the states of Alabama and Mississippi. Generalizations for the entirety of American policing are inappropriate.

Scaling may be used in conjunction with hypothesis testing to examine a specific construct versus the mapping of data observations (Lewis-Beck, et al., 2004:998). Among Likert surveys, the item scaling approach may be used as a method of deriving composites for analysis. These composites are measures of underlying concepts within the examined survey (Lewis-Beck, et al., 2004:998). A composite scale represents an item grouping that may be measured empirically and that exhibits “meaning” (Lewis-Beck, et al., 2004:998). When analyzing Likert surveys, Lester and Bishop (2000:7) also indicate that grouping of related items may occur with respect to their commonness regarding a certain factor. Sarstedt and Mooi (2014:110) indicate that individual score responses may be averaged to determine a composite score for analysis. These methods were used as the basis for transformation. Composite scaling and composite scoring represents the transforming of items between the following tables: Table 4.1 and Table 4.2, Table 4.3 and 4.4, Table 4.5 and Table 4.6, Table 4.7 and Table 4.8, Table 4.9 and Table 4.10, Table 4.11 and Table 4.12, Table 4.13 and Table 4.14, Table 4.15 and Table 4.16, and Table 4.17 and Table 4.18.

## 4.2 SYNOPSIS OF THE FINDINGS

This section summarizes the findings of the analysis regarding the case of management personnel versus non-management personnel. Statistically significant outcomes were exhibited regarding the perceptions of management versus non-management personnel associated with scaled questions 1 through 5, scaled questions 6 through 8, scaled questions 15 through 17, scaled questions 18 through 20, scaled questions 21 through 23, scaled questions 24 through 26, and scaled questions 27 through 33. Respectively, these scales reflected perceptions regarding the maturity model framework, level one of the framework, level four of the framework, level five of the framework, organizational process improvement, process organization, and process volatility within the work setting.

### 4.2.1 Findings of the Basic Framework Scale

The scaled survey questions 1 through 5 represented the basic framework. A statistically significant difference was exhibited regarding the perceptions of management personnel versus non-management personnel with respect to these scaled items.

The findings of the hypothesis testing regarding the basic framework scale are given within the following table:

Table 4.1 – Basic Framework Findings (Scale)

Management	Non-Management	<i>p</i> -value	Effect Size
<i>M</i> = 3.30, <i>SD</i> = 1.02	<i>M</i> = 3.04, <i>SD</i> = 1.06	<i>p</i> = 0.000	$\omega^2 = 0.012$

Survey questions 1 through 5 represented the basic framework. Statistically significant differences were exhibited regarding the perceptions of management personnel versus non-management personnel with respect to questions 1, 2, 4, and 5.

The findings regarding the questions that were associated with the basic framework are given within the following table:

Table 4.2 – Basic Framework Findings (Questions)

Question	Management	Non-Management	ANOVA	Effect Size
1	$M = 2.29,$ $SD = 0.82$	$M = 2.98,$ $SD = 1.05$	$F(1, 199) = 24.27,$ $p = 0.000$	$\omega^2 = 0.109$
2	$M = 3.78,$ $SD = 0.72$	$M = 3.30,$ $SD = 0.99$	$F(1, 199) = 14.13,$ $p = 0.000$	$\omega^2 = 0.067$
3	$M = 3.81,$ $SD = 0.69$	$M = 3.71,$ $SD = 0.73$	$F(1, 199) = 0.82,$ $p = 0.367$	$\omega^2 = 0.004$
4	$M = 3.29,$ $SD = 1.02$	$M = 2.55,$ $SD = 1.08$	$F(1, 199) = 20.39,$ $p = 0.000$	$\omega^2 = 0.082$
5	$M = 3.33,$ $SD = 0.97$	$M = 2.61,$ $SD = 0.99$	$F(1, 199) = 22.23, p$ $= 0.000$	$\omega^2 = 0.089$

The transformation between Table 4.1 and 4.2 involved the grouping of items (based on commonness regarding the overall maturity framework) and averaging of individual item scores (from individual questions 1 through 5) to generate the composite data presented within Table 4.1.

#### 4.2.2 First Maturity Level Findings

The scaled survey questions 6 through 8 represented the first maturity level of the framework. A statistically significant difference was exhibited regarding the perceptions

of management personnel versus non-management personnel with respect to these scaled items.

The findings regarding the first maturity level scale are given within the following table:

Table 4.3 – First Maturity Level Findings (Scale)

Management	Non-Management	<i>p</i> -value	Effect Size
<i>M</i> = 2.80, <i>SD</i> = 1.08	<i>M</i> = 3.11, <i>SD</i> = 1.03	<i>p</i> = 0.0019	$\omega^2 = 0.014$

The findings regarding the individual questions associated with the first maturity level are given within the following table:

Table 4.4 – First Maturity Level Findings (Questions)

Question	Management	Non-Management	ANOVA	Effect Size
6	<i>M</i> = 2.35, <i>SD</i> = 0.86	<i>M</i> = 2.96, <i>SD</i> = 1.03	$F(1, 199) = 18.28,$ <i>p</i> = 0.000	$\omega^2 = 0.084$
7	<i>M</i> = 3.58, <i>SD</i> = 0.98	<i>M</i> = 3.41, <i>SD</i> = 1.01	$F(1, 199) = 1.19, p$ $= 0.278$	$\omega^2 = 0.006$
8	<i>M</i> = 2.48, <i>SD</i> = 0.94	<i>M</i> = 2.93, <i>SD</i> = 1.02	$F(1, 199) = 8.86, p$ $= 0.003$	$\omega^2 = 0.043$

The transformation between Table 4.3 and 4.4 involved the grouping of items (based on commonness regarding the first maturity level) and averaging of individual item scores (from individual questions 6 through 8) to generate the composite data presented within Table 4.3.

### 4.2.3 Second Maturity Level Findings

The scaled survey questions 9 through 11 represented the second maturity level. A statistically significant difference was not exhibited regarding the perceptions of management personnel versus non-management personnel with respect to these scaled items.

The findings regarding the second maturity level scale are given within the following table:

Table 4.5 – Second Maturity Level Findings (Scale)

Management	Non-Management	<i>p</i> -value	Effect Size
<i>M</i> = 3.85, <i>SD</i> = 0.69	<i>M</i> = 3.74, <i>SD</i> = 0.66	<i>p</i> = 0.1125	$\omega^2 = 0.002$

The findings regarding individual questions associated with the second maturity level are given within the following table:

Table 4.6 – Second Maturity Level Findings (Questions)

Question	Management	Non-Management	ANOVA	Effect Size
9	<i>M</i> = 3.91, <i>SD</i> = 0.62	<i>M</i> = 3.86, <i>SD</i> = 0.59	$F(1, 199) = 0.31,$ <i>p</i> = 0.582	$\omega^2 = 0.002$
10	<i>M</i> = 3.82, <i>SD</i> = 0.72	<i>M</i> = 3.73, <i>SD</i> = 0.67	$F(1, 199) = 0.63,$ <i>p</i> = 0.429	$\omega^2 = 0.003$
11	<i>M</i> = 3.81, <i>SD</i> = 0.73	<i>M</i> = 3.66, <i>SD</i> = 0.70	$F(1, 199) = 1.67,$ <i>p</i> = 0.198	$\omega^2 = 0.008$

The transformation between Table 4.5 and 4.6 involved the grouping of items (based on commonness regarding the second maturity level) and averaging of individual item scores (from individual questions 9 through 11) to generate the composite data presented within Table 4.5.

#### 4.2.4 Third Maturity Level Findings

The scaled survey questions 12 through 14 represented the third maturity level. A statistically significant difference was not exhibited regarding the perceptions of management personnel versus non-management personnel with respect to these scaled items.

The findings regarding the third maturity level scale are given within the following table:

Table 4.7 – Third Maturity Level Findings (Scale)

Management	Non-Management	<i>p</i> -value	Effect Size
<i>M</i> = 3.77, <i>SD</i> = 0.77	<i>M</i> = 3.65, <i>SD</i> = 0.75	<i>p</i> = 0.1235	$\omega^2 = 0.002$

The findings regarding the individual questions that were associated with the third maturity level are given within the following table:

Table 4.8 – Third Maturity Level Findings (Questions)

Question	Management	Non-Management	ANOVA	Effect Size
12	<i>M</i> = 3.68, <i>SD</i> = 0.84	<i>M</i> = 3.57, <i>SD</i> = 0.81	$F(1, 199) = 0.73,$ <i>p</i> = 0.395	$\omega^2 = 0.004$
13	<i>M</i> = 3.74, <i>SD</i> = 0.75	<i>M</i> = 3.68, <i>SD</i> = 0.72	$F(1, 199) = 0.26,$ <i>p</i> = 0.610	$\omega^2 = 0.001$

14	$M = 3.88,$ $SD = 0.70$	$M = 3.77,$ $SD = 0.66$	$F(1, 199) = 1.00,$ $p = 0.318$	$\omega^2 = 0.005$
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The transformation between Table 4.7 and 4.8 involved the grouping of items (based on commonness regarding the third maturity level) and averaging of individual item scores (from individual questions 12 through 14) to generate the composite data presented within Table 4.7.

#### 4.2.5 Fourth Maturity Level Findings

The scaled survey questions 15 through 17 represented the fourth maturity level. A statistically significant difference was exhibited regarding the perceptions of management personnel versus non-management personnel with respect to these scaled items.

The findings regarding the fourth maturity level scale are given within the following table:

Table 4.9 – Fourth Maturity Level Findings (Scale)

Management	Non-Management	$p$ -value	Effect Size
$M = 3.38,$ $SD = 1.03$	$M = 2.38,$ $SD = 1.11$	$p = 0.000$	$\omega^2 = 0.154$

The findings regarding the individual questions that were associated with the fourth maturity level are given within the following table.



Table 4.10 – Fourth Maturity Level Findings (Questions)

Question	Management	Non-Management	ANOVA	Effect Size
15	$M = 3.27,$ $SD = 1.02$	$M = 2.34,$ $SD = 1.10$	$F(1, 199) = 32.31,$ $p = 0.000$	$\omega^2 = 0.140$
16	$M = 3.34,$ $SD = 1.04$	$M = 2.30,$ $SD = 1.09$	$F(1, 199) = 39.05,$ $p = 0.000$	$\omega^2 = 0.164$
17	$M = 3.54,$ $SD = 1.01$	$M = 2.41,$ $SD = 1.13$	$F(1, 199) = 47.54,$ $p = 0.000$	$\omega^2 = 0.193$

The transformation between Table 4.9 and 4.10 involved the grouping of items (based on commonness regarding the fourth maturity level) and averaging of individual item scores (from individual questions 15 through 17) to generate the composite data presented within Table 4.9.

#### 4.2.6 Fifth Maturity Level Findings

The scaled survey questions 18 through 20 represented the fifth maturity level. A statistically significant difference was exhibited regarding the perceptions of management personnel versus non-management personnel with respect to these scaled items.

The findings regarding the fourth maturity level scale are given within the following table:

Table 4.11 – Fifth Maturity Level Findings (Scale)

Management	Non-Management	$p$ -value	Effect Size
$M = 3.69,$ $SD = 0.73$	$M = 3.36,$ $SD = 0.89$	$p = 0.000$	$\omega^2 = 0.033$

The findings regarding the individual questions that were associated with the fifth maturity level are given within the following table:

Table 4.12 – Fifth Maturity Level Findings (Questions)

Question	Management	Non- Management	ANOVA	Effect Size
18	$M = 3.66,$ $SD = 0.77$	$M = 3.20,$ $SD = 0.90$	$F(1, 199) = 13.48,$ $p = 0.000$	$\omega^2 = 0.063$
19	$M = 3.56,$ $SD = 0.77$	$M = 3.16,$ $SD = 0.91$	$F(1, 199) = 9.69,$ $p = 0.002$	$\omega^2 = 0.046$
20	$M = 3.86,$ $SD = 0.62$	$M = 3.73,$ $SD = 0.75$	$F(1, 199) = 1.57,$ $p = 0.211$	$\omega^2 = 0.008$

The transformation between Table 4.11 and 4.12 involved the grouping of items (based on commonness regarding the fifth maturity level) and averaging of individual item scores (from individual questions 18 through 20) to generate the composite data presented within Table 4.11.

#### 4.2.7 Process Improvement Characteristics Findings

The scaled survey questions 21 through 23 represented organizational process improvement characteristics. A statistically significant difference was exhibited regarding the perceptions of management personnel versus non-management personnel with respect to these scaled items.

The findings regarding the process improvement characteristics scale are given within the following table:

Table 4.13 – Process Improvement Characteristics Findings (Scale)

Management	Non-Management	<i>p</i> -value	Effect Size
<i>M</i> = 3.66, <i>SD</i> = 0.88	<i>M</i> = 3.34, <i>SD</i> = 1.00	<i>p</i> = 0.0001	$\omega^2 = 0.022$

The findings regarding the individual questions associated with the process improvement characteristics are given within the following table:

Table 4.14 – Process Improvement Characteristics Findings (Questions)

Question	Management	Non-Management	ANOVA	Effect Size
21	<i>M</i> = 3.65, <i>SD</i> = 0.83	<i>M</i> = 3.86, <i>SD</i> = 0.77	$F(1, 199) = 2.66,$ <i>p</i> = 0.105	$\omega^2 = 0.013$
22	<i>M</i> = 3.86, <i>SD</i> = 0.77	<i>M</i> = 3.50, <i>SD</i> = 0.81	$F(1, 199) = 8.32,$ <i>p</i> = 0.004	$\omega^2 = 0.040$
23	<i>M</i> = 3.48, <i>SD</i> = 1.00	<i>M</i> = 2.66, <i>SD</i> = 1.01	$F(1, 199) = 27.06,$ <i>p</i> = 0.000	$\omega^2 = 0.120$

The transformation between Table 4.13 and 4.14 involved the grouping of items (based on commonness regarding process improvement characteristics) and averaging of individual item scores (from individual questions 21 through 23) to generate the composite data presented within Table 4.13.

#### 4.2.8 Process Grouping and Maturity Characteristics Findings

The scaled survey questions 24 through 26 represented organizational process grouping and maturity characteristics. A statistically significant difference was exhibited regarding the perceptions of management personnel versus non-management personnel with respect to these scaled items.

The findings regarding the process grouping and maturity characteristics scale are given within the following table:

Table 4.15 – Process Grouping and Maturity Characteristics Findings (Scale)

Management	Non-Management	<i>p</i> -value	Effect Size
<i>M</i> = 3.19, <i>SD</i> = 1.01	<i>M</i> = 2.88, <i>SD</i> = 1.12	<i>p</i> = 0.0016	$\omega^2 = 0.015$

The findings regarding the individual questions that were associated with the process grouping and maturity characteristics are given within the following table:

Table 4.16 – Process Grouping and Maturity Characteristics Findings (Questions)

Question	Management	Non-Management	ANOVA	Effect Size
24	<i>M</i> = 3.80, <i>SD</i> = 0.75	<i>M</i> = 3.82, <i>SD</i> = 0.74	$F(1, 199) = 0.03,$ <i>p</i> = 0.856	$\omega^2 = 0.120$
25	<i>M</i> = 3.08, <i>SD</i> = 1.02	<i>M</i> = 2.50, <i>SD</i> = 1.01	$F(1, 199) = 13.19,$ <i>p</i> = 0.000	$\omega^2 = 0.000$
26	<i>M</i> = 2.68, <i>SD</i> = 0.90	<i>M</i> = 2.32, <i>SD</i> = 0.94	$F(1, 199) = 6.42,$ <i>p</i> = 0.012	$\omega^2 = 0.062$

The transformation between Table 4.15 and 4.16 involved the grouping of items (based on commonness regarding process grouping and maturity characteristics) and averaging of individual item scores (from individual questions 24 through 26) to generate the composite data presented within Table 4.15.

#### 4.2.9 Organizational Process Characteristics Findings

The scaled survey questions 27 through 33 represented organizational process characteristics. A statistically significant difference was exhibited regarding the perceptions of management personnel versus non-management personnel with respect to these scaled items. The individual questions representing this scale queried whether processes were perceived as being informal within the organization, whether organizational policies influenced processes, whether methods of process management varied within the organization, whether processes were inefficient, whether processes were ineffective, whether organizational processes changed frequently, and whether process training was advocated within the organization.

The findings regarding the organizational process characteristics scale are given within the following table:

Table 4.17 – Organizational Process Characteristics Findings (Scale)

Management	Non-Management	<i>p</i> -value	Effect Size
<i>M</i> = 2.95, <i>SD</i> = 1.09	<i>M</i> = 3.19, <i>SD</i> = 1.02	<i>p</i> = 0.0002	$\omega^2 = 0.014$

The findings regarding the individual questions that were associated with the organizational process characteristics are given within the following table:

Table 4.18 – Organizational Process Characteristics Findings (Questions)

Question	Management	Non-Management	ANOVA	Effect Size
27	<i>M</i> = 2.62, <i>SD</i> = 1.06	<i>M</i> = 3.20, <i>SD</i> = 1.00	$F(1, 199) = 12.28,$ <i>p</i> = 0.001	$\omega^2 = 0.031$
28	<i>M</i> = 3.83, <i>SD</i> = 0.80	<i>M</i> = 3.96, <i>SD</i> = 0.81	$F(1, 199) = 1.06,$ <i>p</i> = 0.305	$\omega^2 = 0.058$

29	<i>M</i> = 3.23, <i>SD</i> = 1.09	<i>M</i> = 3.38, <i>SD</i> = 0.93	<i>F</i> (1, 199) = 0.81, <i>p</i> = 0.370	$\omega^2 = 0.005$
30	<i>M</i> = 2.37, <i>SD</i> = 0.82	<i>M</i> = 2.86, <i>SD</i> = 0.84	<i>F</i> (1, 199) = 13.81, <i>p</i> = 0.000	$\omega^2 = 0.004$
31	<i>M</i> = 2.20, <i>SD</i> = 0.72	<i>M</i> = 2.34, <i>SD</i> = 0.82	<i>F</i> (1, 199) = 1.40, <i>p</i> = 0.239	$\omega^2 = 0.007$
32	<i>M</i> = 2.68, <i>SD</i> = 1.05	<i>M</i> = 2.95, <i>SD</i> = 1.03	<i>F</i> (1, 199) = 2.59, <i>p</i> = 0.109	$\omega^2 = 0.013$
33	<i>M</i> = 3.68, <i>SD</i> = 0.84	<i>M</i> = 3.64, <i>SD</i> = 0.86	<i>F</i> (1, 199) = 0.09, <i>p</i> = 0.765	$\omega^2 = 0.000$

The transformation between Table 4.17 and 4.18 involved the grouping of items (based on commonness regarding organizational process characteristics) and averaging of individual item scores (from individual questions 24 through 26) to generate the composite data presented within Table 4.17.

#### 4.2.10 Statistically Significant Different Outcomes

The findings regarding the exhibiting of statistically significant different outcomes among the scales are given within the following table:

Table 4.19 – Synopsis of Statistically Significant Different Findings (Scale)

Scale	Survey Questions	Management	Non-Management	<i>p</i> -value	Effect Size
1	1 – 5	<i>M</i> = 3.30, <i>SD</i> = 1.02	<i>M</i> = 3.04, <i>SD</i> = 1.06	0.0000	$\omega^2 = 0.012$
2	6 – 8	<i>M</i> = 2.80, <i>SD</i> = 1.08	<i>M</i> = 3.11, <i>SD</i> = 1.03	0.0019	$\omega^2 = 0.014$
5	15 – 17	<i>M</i> = 3.38, <i>SD</i> = 1.03	<i>M</i> = 2.38, <i>SD</i> = 1.11	0.0000	$\omega^2 = 0.154$

6	18 – 20	<i>M</i> = 3.69, <i>SD</i> = 0.73	<i>M</i> = 3.36, <i>SD</i> = 0.89	0.0000	$\omega^2 = 0.033$
7	21 – 23	<i>M</i> = 3.66, <i>SD</i> = 0.88	<i>M</i> = 3.34, <i>SD</i> = 1.00	0.0001	$\omega^2 = 0.022$
8	24 – 26	<i>M</i> = 3.19, <i>SD</i> = 1.01	<i>M</i> = 2.88, <i>SD</i> = 1.12	0.0016	$\omega^2 = 0.015$
9	27 – 33	<i>M</i> = 2.95, <i>SD</i> = 1.09	<i>M</i> = 3.19, <i>SD</i> = 1.02	0.0002	$\omega^2 = 0.014$

The findings regarding the exhibiting of statistically significant different outcomes among the individual questions are given within the following table:

Table 4.20 – Synopsis of Statistically Significant Different Findings (Questions)

Question	Management	Non-Management	ANOVA Values	Effect Size
1	<i>M</i> = 2.29, <i>SD</i> = 0.82	<i>M</i> = 2.98, <i>SD</i> = 1.05	$F(1, 199) = 24.27,$ $p = 0.000$	$\omega^2 = 0.109$
2	<i>M</i> = 3.78, <i>SD</i> = 0.72	<i>M</i> = 3.30, <i>SD</i> = 0.99	$F(1, 199) = 14.13,$ $p = 0.000$	$\omega^2 = 0.067$
4	<i>M</i> = 3.29, <i>SD</i> = 1.02	<i>M</i> = 2.55, <i>SD</i> = 1.08	$F(1, 199) = 20.39,$ $p = 0.000$	$\omega^2 = 0.082$
5	<i>M</i> = 3.33, <i>SD</i> = 0.97	<i>M</i> = 2.61, <i>SD</i> = 0.99	$F(1, 199) = 22.23,$ $p = 0.000$	$\omega^2 = 0.089$
6	<i>M</i> = 2.35, <i>SD</i> = 0.86	<i>M</i> = 2.96, <i>SD</i> = 1.03	$F(1, 199) = 18.28,$ $p = 0.000$	$\omega^2 = 0.084$
8	<i>M</i> = 2.48, <i>SD</i> = 0.94	<i>M</i> = 2.93, <i>SD</i> = 1.02	$F(1, 199) = 8.86,$ $p = 0.003$	$\omega^2 = 0.043$
15	<i>M</i> = 3.27, <i>SD</i> = 1.02	<i>M</i> = 2.34, <i>SD</i> = 1.10	$F(1, 199) = 32.31,$ $p = 0.000$	$\omega^2 = 0.140$
16	<i>M</i> = 3.34, <i>SD</i> = 1.04	<i>M</i> = 2.30, <i>SD</i> = 1.09	$F(1, 199) = 39.05,$ $p = 0.000$	$\omega^2 = 0.164$

17	<i>M</i> = 3.54, <i>SD</i> = 1.01	<i>M</i> = 2.41, <i>SD</i> = 1.13	<i>F</i> (1, 199) = 47.54, <i>p</i> = 0.000	$\omega^2 = 0.193$
18	<i>M</i> = 3.66, <i>SD</i> = 0.77	<i>M</i> = 3.20, <i>SD</i> = 0.90	<i>F</i> (1, 199) = 13.48, <i>p</i> = 0.000	$\omega^2 = 0.063$
19	<i>M</i> = 3.56, <i>SD</i> = 0.77	<i>M</i> = 3.16, <i>SD</i> = 0.91	<i>F</i> (1, 199) = 9.69, <i>p</i> = 0.002	$\omega^2 = 0.046$
22	<i>M</i> = 3.86, <i>SD</i> = 0.77	<i>M</i> = 3.50, <i>SD</i> = 0.81	<i>F</i> (1, 199) = 8.32, <i>p</i> = 0.004	$\omega^2 = 0.040$
23	<i>M</i> = 3.48, <i>SD</i> = 1.00	<i>M</i> = 2.66, <i>SD</i> = 1.01	<i>F</i> (1, 199) = 27.06, <i>p</i> = 0.000	$\omega^2 = 0.120$
25	<i>M</i> = 3.08, <i>SD</i> = 1.02	<i>M</i> = 2.50, <i>SD</i> = 1.01	<i>F</i> (1, 199) = 13.19, <i>p</i> = 0.000	$\omega^2 = 0.000$
26	<i>M</i> = 2.68, <i>SD</i> = 0.90	<i>M</i> = 2.32, <i>SD</i> = 0.94	<i>F</i> (1, 199) = 6.42, <i>p</i> = 0.012	$\omega^2 = 0.062$
27	<i>M</i> = 2.62, <i>SD</i> = 1.06	<i>M</i> = 3.20, <i>SD</i> = 1.00	<i>F</i> (1, 199) = 12.28, <i>p</i> = 0.001	$\omega^2 = 0.031$
30	<i>M</i> = 2.37, <i>SD</i> = 0.82	<i>M</i> = 2.86, <i>SD</i> = 0.84	<i>F</i> (1, 199) = 13.81, <i>p</i> = 0.000	$\omega^2 = 0.004$

#### 4.2.11 Reflections and Analyses of the Hypothesis Testing Outcomes

This research study was constrained solely to respondents within Alabama and Mississippi. The outcomes of this chapter should not be generalized for the whole of American policing within the United States. The outcomes of this chapter should be considered only from the perspective of the criminal justice domain representing Alabama and Mississippi entities.

With respect to the first scale, regarding survey questions 1 through 5, the individual items represented the defining characteristics of each maturity level. Specifically, these items queried whether processes were perceived as having randomness, being



managed, having specificity and definition, managed quantitatively, and exhibited optimality.

The third question queried the specificity and definition of processes. Certain organizational processes may be quite specific and defined regardless of any randomness that may exist within the organizational setting. For instance, when booking a new prisoner within a jail, the organization may exhibit strict methods whereby the intake processing of prisoners occurs. All prisoner bookings would adhere to the exact same process steps when a new prisoner is introduced within the jail setting. In such instances, process specificity and definition would exist. All officers within the organization, regardless of managerial or non-managerial status, would be aware of the existence of a standardized process for prisoner booking. Given such notions, managers and non-managers may have provided similar responses to the third query.

Within the first through fifth questions, the outcomes showing differences of statistical significance between managers and non-managers may be considered from the context of organizational information that is associated with job function. Managers have access to information pertaining to the long-term, strategic interests of the organization, and such information may be unavailable to subordinates. Patrol officers or lower supporting staff may not have access to strategic organizational information that is deemed above their rank and pay grades. Therefore, when responding to the queries, such an instantiation of information asymmetry may have influenced the responses of respondents. For instance, when considering whether processes are quantitatively managed or optimized, lower patrol officers and supporting staff may be unaware of all the forms of quantitative analysis that are conducted regarding process management and optimization. Lower patrol officers and supporting staff may also be absent a knowledge of higher mathematical methods that are necessary for the processing of data to determine whether an optimal condition exists. Lower patrol officers and supporting staff may not possess a cumulative body of information that depicts the quantitative characteristics of organizational condition regarding its managed status. Therefore, when responding to such questions, the strategic organizational knowledge and information possessed by managers would exceed and differ from the organizational knowledge and information that was possessed by lower patrol officers

and supporting staff. Such asymmetry may impact the scoring of responses regarding the first through fifth queries.

With respect to the second scale, regarding survey questions 6 through 8, the individual items represented queries regarding the first maturity level. Specifically, these items queried whether processes were unpredictable, reactive, and uncoordinated.

Policing often involves reactive endeavors. Members of the general public request police assistance after an event occurs. For instance, when a burglary occurs, a citizen contacts the police to report the crime; report any damages, harm, or missing items; and to obtain a copy of the police report. When such an event occurs, the police organization may commence its investigative and reporting processes. Within this context, both police managers and non-managers may view the enacting of organizational processes as being reactive. In other words, organizational processes are commenced only after some catalyst within society occurs. Given such notions, the survey responses between managers and non-managers may have exhibited similarity.

Within questions six through eight, the outcomes showing differences of statistical significance between managers and non-managers may be considered from the context of crime events that necessitate police responses and the invoking of processes appropriately within the organization. All acts of crime and their circumstances are unique. When addressing such issues, differences may exist regarding the perspectives of managers and non-managers. For instance, during a patrol shift, a police officer may randomly witness a crime occurring unexpectedly. The officer would respond appropriately in accordance with organizational policy, and invoke any necessary processes. In this sense, a patrol officer may view the happening and its processes with some perspective of unpredictability given the unexpected nature of the event. Contrastingly, organizational managers may have a different view of process predictableness. From the strategic management perspective, police managers may forecast the anticipated quantities of crime within their respective localities via techniques of moving averages or regression methods. In this sense, managers would have expectations regarding the invoking of organizational processes. For instance, hypothetically, if a crime forecast indicates that three burglaries are expected in the month of December, then the manager may expect the invoking of three investigations,

and may contemplate and plan for the allocating of resources organizationally. Thus, the manager would expect that investigation processes would be invoked at least three times. Such differences of perception with respect to managerial and non-managerial positions and roles may impact the scoring of responses regarding the first through fifth queries.

With respect to the fifth scale, regarding survey questions 15 through 17, the individual items represented queries regarding the fourth maturity level. Specifically, these items queried whether processes involved quantitative objectives, metrics analysis, and statistical analysis. The statistically significant outcomes may be considered from the perspective of the responsibilities, relevant information, and job functions that are associated with management versus non-management personnel. Managerial positions facilitate the leadership, guidance, and direction for the organization strategically through time. Lower patrol officers and supporting officers perform daily policing operations with respect to the near-term considerations of the organization. When crafting strategic plans, managerial factions are responsible for setting objectives and goals strategically. Lower level personnel are responsible for the implementing of the plans whereby objectives and goals are attained organizationally. Managerially, the crafting of strategy necessitates a variety of processes and endeavors that are not common among the ranks of patrol officers during their daily operations. For instance, forecasting crime and the future quantities of anticipated police resources necessitates the use of mathematical processes involving regression analysis or moving averages. Patrol officers are not tasked with such responsibilities. Instead, they daily perform processes that are necessary for patrolling streets, writing traffic tickets, directing traffic, booking inmates, and so forth. Thus, the daily tasks performed by patrol officers do not involve high-level analysis mathematically. Given such differences, managerial and non-managerial positions and roles may impact the scoring of responses regarding questions 15 through 17.

With respect to the sixth scale, regarding survey questions 18 through 20, the individual items represented queries regarding the fifth maturity level. Specifically, these items queried whether processes were improved incrementally, were efficient, and were effective.

Again, differences in job function may be considered with respect to the statistically significant different outcomes within questions 18 through 20. Measures of incremental improvement and efficiency can be calculated mathematically and used to express the quantitative characteristics of organizational change and condition. Generating these mathematical outcomes is a function of organizational management among the leadership and administrative levels of organizational hierarchy. Patrol officers perform tasks that are supportive operationally (e.g., foot patrols) and that do not involve higher mathematical analysis. Although the management factions of an organization may calculate mathematically descriptors of efficiency and incremental change, administrators may not disseminate all of the calculated values among lower, non-managerial subordinates. Administratively, some information may be shared with lower levels that impacts processes associated with the job performance of patrol officers, such as changes in response rate times to assistance calls. However, information that does not affect directly the daily tasks of patrol officers, such as efficiency values regarding the converting of physical personnel records to electronic formats through time, may not be widely published within the organization. Thus, lower patrol officers, whose jobs are non-managerial, may be unaware of the existence of all calculated values representing organizational efficiency and change. Given these notions, the differences of responsibilities and job roles associated with managers versus non-managers may impact the scoring of responses within questions 18 through 20.

Item 20 represents a query regarding process effectiveness. Both managers and non-managers may perceive processes as being effective regardless of differences in their job responsibilities, abilities to access information, and types of work tasks they perform within the organization. For instance, after a patrol officer invokes an administrative intake process for the booking of a new prisoner within a jail, the very fact that the perpetrator becomes incarcerated shows process effectiveness from the perspective of police personnel. Given this notion, the survey responses between managers and non-managers may have exhibited similarity.

With respect to the seventh scale, regarding survey questions 21 through 23, the individual items represented queries regarding attributes of process maturity frameworks. Specifically, the questions involved whether process maturity was addressed by any existing process improvement initiative, whether process improvement

was advocated within the police agency, and whether process initiatives were tracked for examining process performance.

Question 21 queried whether process maturity was unaddressed by current process improvement initiatives within the organization. Within the survey responses, a total of approximately 0.49% of the respondents indicated that process maturity modeling was a current method of performing process improvement. Because current process improvement initiatives of the organization did not encompass process maturity, both managers and non-managers would report that no emphasis regarding process maturity existed within their respective improvement initiatives. Given such notions, the survey responses between managers and non-managers may have exhibited similarity.

Statistically significant different outcomes were observed regarding questions 22 and 23. Respectively, these queries examined process improvement advocacy within the organization and the tracking of process improvement initiatives. The differences in job functions, roles, and responsibilities between managerial and non-managerial positions may provide insight regarding these outcomes. Managerial factions may craft the workings and designs of process improvement initiatives strategically whereas patrol personnel are responsible for implementing the initiatives operationally. For instance, patrol officers may be responsible for submitting reports detailing various attributes of their activities during patrols that contain various facets of information, such as quantities of arrests made or quantities of assistance calls serviced during a patrol shift. Although patrol officers may submit the reports, they may be unaware of the full use of the data contained therein by managerial factions, and may be unaware that such data is used for the purposes of process improvement. Although police managers may be completely aware of the intended use of the data, their subordinate personnel may not understand all of the managerial uses of the data contained within submitted reports. Therefore, despite the existence of any improvement initiative, differences in perceptions between managers and non-managers may exist regarding the workings of any process improvement initiative. Thus, perceptions of advocacy and tracking may exist managerially whereas such characteristics of process improvement may not be perceived or understood among non-managerial patrol officers. Given these notions, the differences of perceptions, responsibilities, understandings, and job roles associated

with managers versus non-managers may impact the scoring of responses within questions 22 and 23.

With respect to the eighth scale, regarding survey questions 24 through 26, the individual items represented queries involving attributes of process maturity frameworks. Specifically, the questions involved process grouping according to maturity level, advocacy for process grouping, and process maturity being a contributor toward successful process outputs.

Question 24 examined perceptions regarding whether process grouping, according to maturity level, would improve successful process outputs within the organization. The survey instrument defined the basic characteristics of each maturity level, and respondents were informed to be mindful of these maturity level attributes when answering the question. When comparing existing organizational processes against the specifications delineated within the survey that described maturity levels individually, it is possible that both managers and patrol officers categorized organizational processes similarly. For instance, both managers and non-managers may view any organizational processes that were undocumented or informal within the boundaries of the first maturity level. Given these notions, it is not inconceivable that both managers and non-managers exhibited similarity within their responses to this question.

Questions 25 and 26 exhibited statistically significant outcomes. Respectively, these questions examined the advocacy for categorical process grouping and whether process maturity contributed toward successful process outputs within the organization. These differences may be considered from the contexts of managerial versus non-managerial job functions, responsibilities, and roles within the organization. Although management factions of the organization may group similar processes together for metrics analysis purposes, the categories used for grouping and methods of analysis may be unknown among non-managerial personnel. Therefore, non-management personnel, such as patrol officers or dispatchers, may not possess a complete understanding of the methods, depths, and scopes of organizational process grouping. Such considerations may have affected the response scoring of the questions.

Organizational leaders, managers, and administrators are responsible for crafting strategic initiatives and plans for satisfying the long-term needs and requirements of organizational improvement. Such personnel know with specificity and clarity whether the organization incorporates process maturity among its process improvement initiatives. However, non-managerial personnel, such as desk clerks, may be unaware of process maturity within the overall organizational context. Given these notions, the differences of responsibilities and job roles associated with managers versus non-managers may also have impacted the scoring of responses within questions 25 and 26.

The ninth scale involved organizational characteristics, and encompassed questions 27 through 33. This scale queried various attributes of organizational processes with respect to policy, variance within process management, ineffectiveness, frequency of process change, and advocacy for process training. Policy represents a guiding document for the organization and its personnel. All personnel must conform to the tenets of organizational policy regardless of their managerial or non-managerial status as employees. Managers may exhibit unique management styles personally. Some individuals may exercise strict managerial controls whereas others may be less demanding of personnel. Among organizational personnel, regardless of any managerial or non-managerial status, personality conflicts or personal disputes may exist among employees. Despite conflict resolution processes, some personnel may continue to work together abrasively or may need to be separated into different organizational units. These notions may contribute toward survey response similarities regarding queries of process management variance and ineffectiveness.

Within American society, many police leaders are elected officials. For instance, counties may experience periodic elections of sheriffs and judges. When leadership changes occur, the newly elected individuals may incite organizational change thereby necessitating modifications of processes. Regardless, each state mandates the completion of a police academy before one pursues a career or vocation in policing, and requires continuing education and training periodically throughout the duration of employment. These notions may contribute to response similarities between managers and non-managers regarding process change and training within the survey.

Statistically significant different outcomes occurred regarding questions 27 and 30. Question 27 examined perceptions of process informality within the organization. Question 30 examined whether organizational processes were perceived as inefficient. Organizational policies and procedures are crafted by organizational leadership and management. Although the upper echelons of the organizational hierarchy may have a strong familiarity with policies, procedures, and processes across the enterprise, no guarantee exists that non-management personnel will have the same extensiveness of knowledge regarding such concepts. Non-management personnel may have only a limited knowledge that affects directly the performing of their jobs and duties. Such differences of knowledge and understanding between management and non-management personnel may have affected the responses to these questions.

Additionally, the performing of metrics analysis to examine efficiency versus inefficiency resides within the managerial hierarchy, and not among the lower levels of patrol officers, clerks, and dispatchers. In such cases, management personnel would have quantitative information from which to submit a survey response. Contrastingly, non-management personnel may have neither the quantitative acumen nor organizational knowledge to determine mathematically whether processes are efficient or inefficient, and may rely upon intuitive judgment when responding to the survey. Given these notions, the differences of responsibilities and job roles associated with managers versus non-managers may also have impacted the scoring of responses within questions 27 and 30.

#### **4.2.12 Considerations of the Research Question**

The primary research question of this study is stated as: “Can the basic framework of the CMMi be adapted to define a managerial process improvement framework within the criminal justice domain?” Regarding the research question, only polled environments in Alabama and Mississippi constituted the criminal justice domain. Thus, the outcomes of this chapter should be considered only from the context of Alabama and Mississippi respondents, and not generalized for the entirety of American policing within the United States. This research question must be considered with respect to the findings of the scales and the individual questions that are detailed within this chapter.



A statistically significant outcome was observed regarding the first scale representing the cumulative maturity model. The individual hypotheses for the survey question items queried whether organizational processes exhibited randomness, whether agency processes were managed, whether specificity and definition existed regarding processes, whether quantitative process management existed, and whether processes were optimized. Statistically significant outcomes occurred regarding the questions representing process randomness, whether processes were managed, whether quantitative process management existed, and whether processes were optimized. Thus, four of the five queried concepts showed a statistically significant outcome. Given these observations, insufficient evidence exists to show definitely and conclusively that the CMMi framework is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

A statistically significant outcome was observed regarding the second scale representing the first maturity level. The individual hypotheses for the survey question items queried whether organizational processes were unpredictable, reactive, and uncoordinated. A statistically significant outcome was observed regarding the issues of whether processes were perceived as being unpredictable and uncoordinated. Thus, two of the three examined issues showed statistical significance. Given these observations, insufficient evidence exists to show definitely and conclusively that the first CMMi maturity level is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

A statistically significant outcome was observed regarding the fifth scale representing the fourth maturity level. The individual hypotheses for the survey question items queried whether organizational processes involved quantitative objectives, metrics analysis, and statistical analysis. A statistically significant outcome was observed regarding each of these issues. Given these observations, insufficient evidence exists to show definitely and conclusively that the fourth CMMi maturity level is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

A statistically significant outcome was observed regarding the sixth scale representing the fifth maturity level. The individual hypotheses for the survey question items queried

whether organizational processes were improved incrementally, were efficient, and were effective. A statistically significant outcome was observed regarding the issues of whether processes were perceived as being improved incrementally and efficient. Thus, statistically significant outcomes were observed regarding two of the three issues. Given these observations, insufficient evidence exists to show definitely and conclusively that the fifth CMMi maturity level is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

Overall, statistically significant outcomes were observed regarding the scales and queries representing the cumulative maturity model framework, the first level of maturity, the fourth level of maturity, and the fifth level of maturity. However, some of the hypothesis testing outcomes showed some potential for adaptability. Specifically, no statistically significant differences were observed regarding the scales representing the second and third levels of maturity. Because of these outcomes, insufficient evidence exists to justify conclusively the notion that the CMMi basic framework is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

### **4.3 FINDINGS OF THE SCALES**

The preceding tables summarized the analysis result regarding the case of managerial personnel versus non-managerial personnel. This section contains summaries of the findings for each set of scaled questions. An outcome was deemed to be statistically significant if the p-value was less than or equal to the alpha value of 0.05.

#### **4.3.1 Analysis of Scaled Questions 1 - 5**

The hypothesis of scaled items 1 through 5 of the survey questionnaire data collection instrument was stated as follows: there is no difference in the perception of “organizational evidence of the process maturity model framework exists” between the compared groups. There was a statistically significant difference on the mean responses of the first scale between management personnel ( $M = 3.30$ ,  $SD = 1.02$ ) versus non-management personnel ( $M = 3.04$ ,  $SD = 1.06$ ). The  $p$ -value from the ANOVA was 0.000. The value of the effect size,  $\omega^2$ , was 0.012. Therefore, there was a statistically significant difference regarding the perceptions of this scale between management personnel versus non-management personnel.

#### **4.3.2 Analysis of Scaled Questions 6 - 8**

The hypothesis of scaled items 6 through 8 of the survey questionnaire data collection instrument was stated as follows: there is no difference in the perception of “evidence of the first level of the process maturity framework exists” between the compared groups. There was a statistically significant difference on the mean responses of the second scale between management personnel ( $M = 2.80$ ,  $SD = 1.08$ ) versus non-management personnel ( $M = 3.11$ ,  $SD = 1.03$ ). The  $p$ -value from the ANOVA was 0.0019. The value of the effect size,  $\omega^2$ , was 0.014. Therefore, there was a statistically significant difference regarding the perceptions of this scale between management personnel versus non-management personnel.

#### **4.3.3 Analysis of Scaled Questions 9 - 11**

The hypothesis of scaled items 9 through 11 of the survey questionnaire data collection instrument was stated as follows: there is no difference in the perception of “evidence of the second level of the process maturity framework exists” between the compared groups. There was no statistically significant difference on the mean responses of the third scale between management personnel ( $M = 3.85$ ,  $SD = 0.69$ ) versus non-management personnel ( $M = 3.74$ ,  $SD = 0.66$ ). The  $p$ -value from the ANOVA was 0.1125. The value of the effect size,  $\omega^2$ , was 0.002. Therefore, there was no statistically

significant difference regarding the perceptions of this scale between management personnel versus non-management personnel.

#### **4.3.4 Analysis of Scaled Questions 12 - 14**

The hypothesis of scaled items 12 through 14 of the survey questionnaire data collection instrument was stated as follows: there is no difference in the perception of “evidence of the third level of the process maturity framework exists” between the compared groups. There was no statistically significant difference on the mean responses of the fourth scale between management personnel ( $M = 3.77$ ,  $SD = 0.77$ ) versus non-management personnel ( $M = 3.65$ ,  $SD = 0.75$ ). The  $p$ -value from the ANOVA was 0.1235. The value of the effect size,  $\omega^2$ , was 0.002. Therefore, there was no statistically significant difference regarding the perceptions of this scale between management personnel versus non-management personnel.

#### **4.3.5 Analysis of Scaled Questions 15 - 17**

The hypothesis of scaled items 15 through 17 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the fourth level of the process maturity framework exists” between the compared groups. There was a statistically significant difference on the mean responses of the fifth scale between management personnel ( $M = 3.38$ ,  $SD = 1.03$ ) versus non-management personnel ( $M = 2.38$ ,  $SD = 1.11$ ). The  $p$ -value from the ANOVA was 0.0000. The value of the effect size,  $\omega^2$ , was 0.154. Therefore, there was a statistically significant difference regarding the perceptions of this scale between management personnel versus non-management personnel.

#### **4.3.6 Analysis of Scaled Questions 18 - 20**

The hypothesis of scaled items 18 through 20 of the survey questionnaire data collection instrument was stated as follows: there is no difference in the perception of “evidence of the fifth level of the process maturity framework exists” between the compared groups.

There was a statistically significant difference on the mean responses of the sixth scale between management personnel ( $M = 3.69$ ,  $SD = 0.73$ ) versus non-management personnel ( $M = 3.36$ ,  $SD = 0.89$ ). The  $p$ -value from the ANOVA was 0.0000. The value of the effect size,  $\omega^2$ , was 0.033. Therefore, there was a statistically significant difference regarding the perceptions of this scale between management personnel versus non-management personnel.

#### **4.3.7 Analysis of Scaled Questions 21 - 23**

The hypothesis of scaled items 21 through 23 of the survey questionnaire data collection instrument was stated as follows: there is no difference in the perception of “evidence of process improvement exists among work settings” between the compared groups. There was a statistically significant difference on the mean responses of the seventh scale between management personnel ( $M = 3.66$ ,  $SD = 0.88$ ) versus non-management personnel ( $M = 3.34$ ,  $SD = 1.00$ ). The  $p$ -value from the ANOVA was 0.0001. The value of the effect size,  $\omega^2$ , was 0.022. Therefore, there was a statistically significant difference regarding the perceptions of this scale between management personnel versus non-management personnel.

#### **4.3.8 Analysis of Scaled Questions 24 - 26**

The hypothesis of scaled items 24 through 26 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of process organization exists among work settings” between the compared groups. There was a statistically significant difference on the mean responses of the eighth scale between management personnel ( $M = 3.19$ ,  $SD = 1.01$ ) versus non-management personnel ( $M = 2.88$ ,  $SD = 1.12$ ). The  $p$ -value from the ANOVA was 0.0016. The value of the effect size,  $\omega^2$ , was 0.015. Therefore, there was a statistically significant difference regarding the perceptions of this scale between management personnel versus non-management personnel.

#### **4.3.9 Analysis of Scaled Questions 27 - 33**

The hypothesis of scaled items 27 through 33 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of process volatility exists among work settings” between the compared groups. There was a statistically significant difference on the mean responses of the ninth scale between management personnel ( $M = 2.95$ ,  $SD = 1.09$ ) versus non-management personnel ( $M = 3.19$ ,  $SD = 1.02$ ). The  $p$ -value from the ANOVA was 0.0002. The value of the effect size,  $\omega^2$ , was 0.014. Therefore, there was a statistically significant difference regarding the perceptions of this scale between management personnel versus non-management personnel.

### **4.4 FINDINGS OF THE INDIVIDUAL QUESTIONS**

The preceding discussions summarized the analysis results regarding the case of scales involving managerial personnel versus non-managerial personnel perspectives. This section contains summaries of the findings for each survey question individually.

#### **4.4.1 Analysis of Question 1**

Question 1 of the survey questionnaire data collection instrument was stated as follows: “agency processes may be defined as ad hoc, chaotic, or random.” There was a statistically significant difference on the mean responses of question 1 between management personnel ( $M = 2.29$ ,  $SD = 0.82$ ) versus non-management personnel ( $M = 2.98$ ,  $SD = 1.05$ ),  $F(1, 199) = 24.27$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.109. Therefore, there was a statistically significant difference regarding the perceptions of question 1 between management personnel versus non-management personnel.

#### **4.4.2 Analysis of Question 2**

Question 2 of the survey questionnaire data collection instrument was stated as follows: “agency processes are managed.” There was a statistically significant difference on the mean responses of question 2 between management personnel ( $M = 3.78$ ,  $SD = 0.72$ ) versus non-management personnel ( $M = 3.30$ ,  $SD = 0.99$ ),  $F(1, 199) = 14.13$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.067. Therefore, there was a statistically significant difference regarding the perceptions of question 2 between management personnel versus non-management personnel.

#### **4.4.3 Analysis of Question 3**

Question 3 of the survey questionnaire data collection instrument was stated as follows: “agency processes are defined/specific.” There was no statistically significant difference on the mean responses of question 3 between management personnel ( $M = 3.81$ ,  $SD = 0.69$ ) versus non-management personnel ( $M = 3.71$ ,  $SD = 0.73$ ),  $F(1, 199) = 0.82$ ,  $p = 0.367$ . The value of the effect size,  $\omega^2$ , was 0.004. Therefore, there was no statistically significant difference regarding the perceptions of question 3 between management personnel versus non-management personnel.

#### **4.4.4 Analysis of Question 4**

Question 4 of the survey questionnaire data collection instrument was stated as follows: “agency processes are quantitatively managed.” There was a statistically significant difference on the mean responses of question 4 between management personnel ( $M = 3.29$ ,  $SD = 1.02$ ) versus non-management personnel ( $M = 2.55$ ,  $SD = 1.08$ ),  $F(1, 199) = 20.39$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.082. Therefore, there was a statistically significant difference regarding the perceptions of question 4 between management personnel versus non-management personnel.

#### **4.4.5 Analysis of Question 5**

Question 5 of the survey questionnaire data collection instrument was stated as follows: “agency processes are optimized.” There was a statistically significant difference on the mean responses of question 5 between management personnel ( $M = 3.33$ ,  $SD = 0.97$ ) versus non-management personnel ( $M = 2.61$ ,  $SD = 0.99$ ),  $F(1, 199) = 22.23$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.089. Therefore, there was a statistically significant difference regarding the perceptions of question 5 between management personnel versus non-management personnel.

#### **4.4.6 Analysis of Question 6**

Question 6 of the survey questionnaire data collection instrument was stated as follows: “agency processes are unpredictable.” There was a statistically significant difference on the mean responses of question 6 between management personnel ( $M = 2.35$ ,  $SD = 0.86$ ) versus non-management personnel ( $M = 2.96$ ,  $SD = 1.03$ ),  $F(1, 199) = 18.28$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.084. Therefore, there was a statistically significant difference regarding the perceptions of question 6 between management personnel versus non-management personnel.

#### **4.4.7 Analysis of Question 7**

Question 7 of the survey questionnaire data collection instrument was stated as follows: “agency processes are reactive.” There was no statistically significant difference on the mean responses of question 7 between management personnel ( $M = 3.58$ ,  $SD = 0.98$ ) versus non-management personnel ( $M = 3.41$ ,  $SD = 1.01$ ),  $F(1, 199) = 1.19$ ,  $p = 0.278$ . The value of the effect size,  $\omega^2$ , was 0.006. Therefore, there was no statistically significant difference regarding the perceptions of question 7 between management personnel versus non-management personnel.



#### **4.4.8 Analysis of Question 8**

Question 8 of the survey questionnaire data collection instrument was stated as follows: “agency processes are uncoordinated.” There was a statistically significant difference on the mean responses of question 8 between management personnel ( $M = 2.48$ ,  $SD = 0.94$ ) versus non-management personnel ( $M = 2.93$ ,  $SD = 1.02$ ),  $F(1, 199) = 8.86$ ,  $p = 0.003$ . The value of the effect size,  $\omega^2$ , was 0.043. Therefore, there was a statistically significant difference regarding the perceptions of question 8 between management personnel versus non-management personnel.

#### **4.4.9 Analysis of Question 9**

Question 9 of the survey questionnaire data collection instrument was stated as follows: “agency processes are planned.” There was no statistically significant difference on the mean responses of question 9 between management personnel ( $M = 3.91$ ,  $SD = 0.62$ ) versus non-management personnel ( $M = 3.86$ ,  $SD = 0.59$ ),  $F(1, 199) = 0.31$ ,  $p = 0.582$ . The value of the effect size,  $\omega^2$ , was 0.002. Therefore, there was no statistically significant difference regarding the perceptions of question 9 between management personnel versus non-management personnel.

#### **4.4.10 Analysis of Question 10**

Question 10 of the survey questionnaire data collection instrument was stated as follows: “agency processes are managed.” There was no statistically significant difference on the mean responses of question 10 between management personnel ( $M = 3.82$ ,  $SD = 0.72$ ) versus non-management personnel ( $M = 3.73$ ,  $SD = 0.67$ ),  $F(1, 199) = 0.63$ ,  $p = 0.429$ . The value of the effect size,  $\omega^2$ , was 0.003. Therefore, there was no statistically significant difference regarding the perceptions of question 10 between management personnel versus non-management personnel.

#### **4.4.11 Analysis of Question 11**

Question 11 of the survey questionnaire data collection instrument was stated as follows: “agency processes are controlled.” There was no statistically significant difference on the mean responses of question 11 between management personnel ( $M = 3.81$ ,  $SD = 0.73$ ) versus non-management personnel ( $M = 3.66$ ,  $SD = 0.70$ ),  $F(1, 199) = 1.67$ ,  $p = 0.198$ . The value of the effect size,  $\omega^2$ , was 0.008. Therefore, there was no statistically significant difference regarding the perceptions of question 11 between management personnel versus non-management personnel.

#### **4.4.12 Analysis of Question 12**

Question 12 of the survey questionnaire data collection instrument was stated as follows: “agency processes are defined.” There was no statistically significant difference on the mean responses of question 12 between management personnel ( $M = 3.68$ ,  $SD = 0.84$ ) versus non-management personnel ( $M = 3.57$ ,  $SD = 0.81$ ),  $F(1, 199) = 0.73$ ,  $p = 0.395$ . The value of the effect size,  $\omega^2$ , was 0.004. Therefore, there was no statistically significant difference regarding the perceptions of question 12 between management personnel versus non-management personnel.

#### **4.4.13 Analysis of Question 13**

Question 13 of the survey questionnaire data collection instrument was stated as follows: “agency processes are consistent.” There was no statistically significant difference on the mean responses of question 13 between management personnel ( $M = 3.74$ ,  $SD = 0.75$ ) versus non-management personnel ( $M = 3.68$ ,  $SD = 0.72$ ),  $F(1, 199) = 0.26$ ,  $p = 0.610$ . The value of the effect size,  $\omega^2$ , was 0.001. Therefore, there was no statistically significant difference regarding the perceptions of question 13 between management personnel versus non-management personnel.

#### **4.4.14 Analysis of Question 14**

Question 14 of the survey questionnaire data collection instrument was stated as follows: “agency processes are followed.” There was no statistically significant difference on the mean responses of question 14 between management personnel ( $M = 3.88$ ,  $SD = 0.70$ ) versus non-management personnel ( $M = 3.77$ ,  $SD = 0.66$ ),  $F(1, 199) = 1.00$ ,  $p = 0.318$ . The value of the effect size,  $\omega^2$ , was 0.005. Therefore, there was no statistically significant difference regarding the perceptions of question 14 between management personnel versus non-management personnel.

#### **4.4.15 Analysis of Question 15**

Question 15 of the survey questionnaire data collection instrument was stated as follows: “agency processes involve quantitative objectives.” There was a statistically significant difference on the mean responses of question 15 between management personnel ( $M = 3.27$ ,  $SD = 1.02$ ) versus non-management personnel ( $M = 2.34$ ,  $SD = 1.10$ ),  $F(1, 199) = 32.31$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.140. Therefore, there was a statistically significant difference regarding the perceptions of question 15 between management personnel versus non-management personnel.

#### **4.4.16 Analysis of Question 16**

Question 16 of the survey questionnaire data collection instrument was stated as follows: “agency processes involve metrics analysis.” There was a statistically significant difference on the mean responses of question 16 between management personnel ( $M = 3.34$ ,  $SD = 1.04$ ) versus non-management personnel ( $M = 2.30$ ,  $SD = 1.09$ ),  $F(1, 199) = 39.05$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.164. Therefore, there was a statistically significant difference regarding the perceptions of question 16 between management personnel versus non-management personnel.

#### **4.4.17 Analysis of Question 17**

Question 17 of the survey questionnaire data collection instrument was stated as follows: “agency processes involve statistical analysis.” There was a statistically significant difference on the mean responses of question 17 between management personnel ( $M = 3.54$ ,  $SD = 1.01$ ) versus non-management personnel ( $M = 2.41$ ,  $SD = 1.13$ ),  $F(1, 199) = 47.54$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.193. Therefore, there was a statistically significant difference regarding the perceptions of question 17 between management personnel versus non-management personnel.

#### **4.4.18 Analysis of Question 18**

Question 18 of the survey questionnaire data collection instrument was stated as follows: “agency processes are improved incrementally.” There was a statistically significant difference on the mean responses of question 18 between management personnel ( $M = 3.66$ ,  $SD = 0.77$ ) versus non-management personnel ( $M = 3.20$ ,  $SD = 0.90$ ),  $F(1, 199) = 13.48$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.063. Therefore, there was a statistically significant difference regarding the perceptions of question 18 between management personnel versus non-management personnel.

#### **4.4.19 Analysis of Question 19**

Question 19 of the survey questionnaire data collection instrument was stated as follows: “agency processes are efficient.” There was a statistically significant difference on the mean responses of question 19 between management personnel ( $M = 3.56$ ,  $SD = 0.77$ ) versus non-management personnel ( $M = 3.16$ ,  $SD = 0.91$ ),  $F(1, 199) = 9.69$ ,  $p = 0.002$ . The value of the effect size,  $\omega^2$ , was 0.046. Therefore, there was a statistically significant difference regarding the perceptions of question 19 between management personnel versus non-management personnel.

#### **4.4.20 Analysis of Question 20**

Question 20 of the survey questionnaire data collection instrument was stated as follows: “agency processes are effective.” There was no statistically significant difference on the mean responses of question 20 between management personnel ( $M = 3.86$ ,  $SD = 0.62$ ) versus non-management personnel ( $M = 3.73$ ,  $SD = 0.75$ ),  $F(1, 199) = 1.57$ ,  $p = 0.211$ . The value of the effect size,  $\omega^2$ , was 0.008. Therefore, there was no statistically significant difference regarding the perceptions of question 20 between management personnel versus non-management personnel.

#### **4.4.21 Analysis of Question 21**

Question 21 of the survey questionnaire data collection instrument was stated as follows: “process maturity is not addressed by our current process improvement initiatives.” There was no statistically significant difference on the mean responses of question 21 between management personnel ( $M = 3.65$ ,  $SD = 0.83$ ) versus non-management personnel ( $M = 3.86$ ,  $SD = 0.77$ ),  $F(1, 199) = 2.66$ ,  $p = 0.105$ . The value of the effect size,  $\omega^2$ , was 0.013. Therefore, there was no statistically significant difference regarding the perceptions of question 21 between management personnel versus non-management personnel.

#### **4.4.22 Analysis of Question 22**

Question 22 of the survey questionnaire data collection instrument was stated as follows: “process improvement is advocated within my agency.” There was a statistically significant difference on the mean responses of question 22 between management personnel ( $M = 3.86$ ,  $SD = 0.77$ ) versus non-management personnel ( $M = 3.50$ ,  $SD = 0.81$ ),  $F(1, 199) = 8.32$ ,  $p = 0.004$ . The value of the effect size,  $\omega^2$ , was 0.040. Therefore, there was a statistically significant difference regarding the perceptions of question 22 between management personnel versus non-management personnel.

#### **4.4.23 Analysis of Question 23**

Question 23 of the survey questionnaire data collection instrument was stated as follows: “process initiatives are tracked to examine process performance.” There was a statistically significant difference on the mean responses of question 23 between management personnel ( $M = 3.48$ ,  $SD = 1.00$ ) versus non-management personnel ( $M = 2.66$ ,  $SD = 1.01$ ),  $F(1, 199) = 27.06$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.120. Therefore, there was a statistically significant difference regarding the perceptions of question 23 between management personnel versus non-management personnel.

#### **4.4.24 Analysis of Question 24**

Question 24 of the survey questionnaire data collection instrument was stated as follows: “grouping of processes, according to maturity level, would improve the outcomes of our processes.” There was no statistically significant difference on the mean responses of question 24 between management personnel ( $M = 3.80$ ,  $SD = 0.75$ ) versus non-management personnel ( $M = 3.82$ ,  $SD = 0.74$ ),  $F(1, 199) = 0.03$ ,  $p = 0.856$ . The value of the effect size,  $\omega^2$ , was 0.120. Therefore, there was no statistically significant difference regarding the perceptions of question 24 between management personnel versus non-management personnel.

#### **4.4.25 Analysis of Question 25**

Question 25 of the survey questionnaire data collection instrument was stated as follows: “categorical process grouping is advocated within my agency.” There was a statistically significant difference on the mean responses of question 25 between management personnel ( $M = 3.08$ ,  $SD = 1.02$ ) versus non-management personnel ( $M = 2.50$ ,  $SD = 1.01$ ),  $F(1, 199) = 13.19$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.000. Therefore, there was a statistically significant difference regarding the perceptions of question 25 between management personnel versus non-management personnel.

#### **4.4.26 Analysis of Question 26**

Question 26 of the survey questionnaire data collection instrument was stated as follows: “process maturity is a contributor to successful process outputs within my agency.” There was a statistically significant difference on the mean responses of question 26 between management personnel ( $M = 2.68$ ,  $SD = 0.90$ ) versus non-management personnel ( $M = 2.32$ ,  $SD = 0.94$ ),  $F(1, 199) = 6.42$ ,  $p = 0.012$ . The value of the effect size,  $\omega^2$ , was 0.062. Therefore, there was a statistically significant difference regarding the perceptions of question 26 between management personnel versus non-management personnel.

#### **4.4.27 Analysis of Question 27**

Question 27 of the survey questionnaire data collection instrument was stated as follows: “processes are informal within my agency.” There was a statistically significant difference on the mean responses of question 27 between management personnel ( $M = 2.62$ ,  $SD = 1.06$ ) versus non-management personnel ( $M = 3.20$ ,  $SD = 1.00$ ),  $F(1, 199) = 12.28$ ,  $p = 0.001$ . The value of the effect size,  $\omega^2$ , was 0.031. Therefore, there was a statistically significant difference regarding the perceptions of question 27 between management personnel versus non-management personnel.

#### **4.4.28 Analysis of Question 28**

Question 28 of the survey questionnaire data collection instrument was stated as follows: “agency policies influence processes.” There was no statistically significant difference on the mean responses of question 28 between management personnel ( $M = 3.83$ ,  $SD = 0.80$ ) versus non-management personnel ( $M = 3.96$ ,  $SD = 0.81$ ),  $F(1, 199) = 1.06$ ,  $p = 0.305$ . The value of the effect size,  $\omega^2$ , was 0.058. Therefore, there was no statistically significant difference regarding the perceptions of question 28 between management personnel versus non-management personnel.

#### **4.4.29 Analysis of Question 29**

Question 29 of the survey questionnaire data collection instrument was stated as follows: “methods of managing processes vary within my agency.” There was no statistically significant difference on the mean responses of question 29 between management personnel ( $M = 3.23$ ,  $SD = 1.09$ ) versus non-management personnel ( $M = 3.38$ ,  $SD = 0.93$ ),  $F(1, 199) = 0.81$ ,  $p = 0.370$ . The value of the effect size,  $\omega^2$ , was 0.005. Therefore, there was no statistically significant difference regarding the perceptions of question 29 between management personnel versus non-management personnel.

#### **4.4.30 Analysis of Question 30**

Question 30 of the survey questionnaire data collection instrument was stated as follows: “agency processes are inefficient.” There was a statistically significant difference on the mean responses of question 30 between management personnel ( $M = 2.37$ ,  $SD = 0.82$ ) versus non-management personnel ( $M = 2.86$ ,  $SD = 0.84$ ),  $F(1, 199) = 13.81$ ,  $p = 0.000$ . The value of the effect size,  $\omega^2$ , was 0.004. Therefore, there was a statistically significant difference regarding the perceptions of question 30 between management personnel versus non-management personnel.

#### **4.4.31 Analysis of Question 31**

Question 31 of the survey questionnaire data collection instrument was stated as follows: “agency processes are ineffective.” There was no statistically significant difference on the mean responses of question 31 between management personnel ( $M = 2.20$ ,  $SD = 0.72$ ) versus non-management personnel ( $M = 2.34$ ,  $SD = 0.82$ ),  $F(1, 199) = 1.40$ ,  $p = 0.239$ . The value of the effect size,  $\omega^2$ , was 0.007. Therefore, there was no statistically significant difference regarding the perceptions of question 31 between management personnel versus non-management personnel.



#### 4.4.32 Analysis of Question 32

Question 32 of the survey questionnaire data collection instrument was stated as follows: “agency processes change frequently.” There was no statistically significant difference on the mean responses of question 32 between management personnel ( $M = 2.68$ ,  $SD = 1.05$ ) versus non-management personnel ( $M = 2.95$ ,  $SD = 1.03$ ),  $F(1, 199) = 2.59$ ,  $p = 0.109$ . The value of the effect size,  $\omega^2$ , was 0.013. Therefore, there was no statistically significant difference regarding the perceptions of question 32 between management personnel versus non-management personnel.

#### 4.4.33 Analysis of Question 33

Question 33 of the survey questionnaire data collection instrument was stated as follows: “my agency advocates process training.” There was no statistically significant difference on the mean responses of question 33 between management personnel ( $M = 3.68$ ,  $SD = 0.84$ ) versus non-management personnel ( $M = 3.64$ ,  $SD = 0.86$ ),  $F(1, 199) = 0.09$ ,  $p = 0.765$ . The value of the effect size,  $\omega^2$ , was 0.000. Therefore, there was no statistically significant difference regarding the perceptions of question 33 between management personnel versus non-management personnel.

### 4.5 CHAPTER SUMMARY

This chapter implemented the two-tailed, one-way ANOVA method to investigate the stratification involving the perceptions of management personnel versus the perceptions of non-management personnel that were obtained from the survey questionnaire data collection instrument. A total of seven statistically significant different findings were exhibited regarding the scaled survey questions.

The following table shows the survey scaled hypothesis statements regarding the statistically significant different findings

.

Table 4.21 – Survey Questions Involving Statistically Significant Different Findings

Scales	Scale Null Hypothesis Statement
1 – 5	There is no difference between managers versus non-managers in the perception of “organizational evidence of the complete process maturity model framework exists.”
6 – 8	There is no difference between managers versus non-managers in the perception of “evidence of the first level of the process maturity framework exists.”
15 – 17	There is no difference between managers versus non-managers in the perception of “evidence of the fourth level of the process maturity framework exists.”
18 – 20	There is no difference between managers versus non-managers in the perception of “evidence of the fifth level of the process maturity framework exists.”
21 - 23	There is no difference between managers versus non-managers in the perception of “evidence of process improvement exists among work settings.”
24 – 26	There is no difference between managers versus non-managers in the perception of “evidence of process organization exists among work settings.”
27 – 33	There is no difference between managers versus non-managers in the perception of “evidence of process volatility exists among work settings.”

These outcomes may be attributable to the differences in perceptions that are associated within managerial versus non-managerial roles within the organization. Managerial personnel may possess differing amounts of knowledge and understanding regarding organizational process improvement endeavors, especially involving strategic perspectives. Contrastingly, non-management personnel may possess operational process knowledge that affects directly their daily activities, functions, and roles. Such differences may have impacted the scoring of responses by respondents.

The primary research question of this study is expressed as: “Can the basic framework of the CMMi be adapted to define a managerial process improvement framework within the criminal justice domain?” The findings of this section did not reveal conclusively and

definitively evidence of complete adaptability regarding the CMMi framework within the context of the justice domain encompassing Alabama and Mississippi. Generalizations for policing throughout the remainder of the nation are unnecessary.

## CHAPTER 5

### ANALYSES OF THE PERCEPTIONS OF URBAN VERSUS RURAL PERSONNEL

#### 5.1 INTRODUCTION

This chapter presents the findings of the analysis regarding the stratification involving the perceptions of urban personnel versus the perceptions of rural personnel that were obtained from the survey questionnaire data collection instrument. These questions encompassed question 1 through question 33. The one-way, two-tailed ANOVA method was used to investigate whether there was a statistically significant difference on the perceptions of urban personnel versus the perceptions of rural personnel. These personnel perceptions represented only personnel from the states of Alabama and Mississippi. Therefore, the findings of this chapter should not be generalized toward the entirety of policing within the United States.

Regarding the Likert surveys, the item scaling approach was used to derive composites for analysis. These composites represent measures reflecting the underlying concepts within the survey (Lewis-Beck, et al., 2004:998). The composite scale reflects the grouping of similar items for empirical measurement and that exhibit some form of "meaning" (Lewis-Beck, et al., 2004:998). The grouped items exhibit some attributes of commonness involving certain factors (Lester & Bishop, 2000:7). The individual score responses were averaged to derive composite scores for analyses (Sarstedt & Mooi, 2014:110). These methods were used as the basis for transformation. Composite scaling and composite scoring represents the transforming of items between the following tables: Table 5.1 and Table 5.2, Table 5.3 and 5.4, Table 5.5 and Table 5.6, Table 5.7 and Table 5.8, Table 5.9 and Table 5.10, Table 5.11 and Table 5.12, Table 5.13 and Table 5.14, Table 5.15 and Table 5.16, and Table 5.17 and Table 5.18.

## 5.2 SYNOPSIS OF THE FINDINGS

This section summarizes the findings of the analysis regarding the case of urban personnel versus rural personnel. A statistically significant outcome was exhibited regarding the perceptions of urban versus rural personnel associated with scaled questions 15 through 17. Respectively, this scale reflected perceptions regarding the fourth level of the framework. Regarding the individual findings, statistically significant outcomes were observed for questions 29 and 32.

### 5.2.1 Findings of the Basic Framework

The scaled survey questions 1 through 5 represented the basic framework. A statistically significant difference was not exhibited regarding the perceptions of urban personnel versus rural personnel with respect to these scaled items.

The findings of the hypothesis testing regarding the basic framework are given within the following table:

Table 5.1 – Basic Framework Findings (Scale)

Urban	Rural	<i>p</i> -value	Effect Size
<i>M</i> = 3.16, <i>SD</i> = 0.98	<i>M</i> = 3.24, <i>SD</i> = 1.04	<i>p</i> = 0.4143	$\omega^2 = -0.0003$

The findings regarding the individual survey questions associated with the basic framework are given within the following table:

Table 5.2 – Basic Framework Findings (Questions)

Question	Urban	Rural	ANOVA	Effect Size
1	$M = 2.48,$ $SD = 0.87$	$M = 2.48,$ $SD = 0.95$	$F(1, 201) = 0.00,$ $p = 0.988$	$\omega^2 = 0.000$
2	$M = 3.64,$ $SD = 0.70$	$M = 3.65,$ $SD = 0.85$	$F(1, 201) = 0.00,$ $p = 0.973$	$\omega^2 = 0.000$
3	$M = 3.84,$ $SD = 0.62$	$M = 3.78,$ $SD = 0.71$	$F(1, 201) = 0.19,$ $p = 0.665$	$\omega^2 = 0.001$
4	$M = 2.88,$ $SD = 1.01$	$M = 3.11,$ $SD = 1.09$	$F(1, 201) = 1.02,$ $p = 0.315$	$\omega^2 = 0.005$
5	$M = 3.24,$ $SD = 0.97$	$M = 3.12,$ $SD = 1.03$	$F(1, 201) = 0.31,$ $p = 0.578$	$\omega^2 = 0.002$

The transformation between Table 5.1 and 5.2 involved the grouping of items (based on commonness regarding the overall maturity framework) and averaging of individual item scores (from individual questions 1 through 5) to generate the composite data presented within Table 5.1.

### 5.2.2 First Maturity Level Findings

The scaled survey questions 6 through 8 represented the first maturity level of the framework. A statistically significant difference was not exhibited regarding the perceptions of urban personnel versus rural personnel with respect to these scaled items.

The findings regarding the first maturity level are given within the following table:

Table 5.3 – First Maturity Level Findings (Scale)

Urban	Rural	<i>p</i> -value	Effect Size
<i>M</i> = 2.96, <i>SD</i> = 1.07	<i>M</i> = 2.87, <i>SD</i> = 1.06	<i>p</i> = 0.5099	$\omega^2 = -0.0009$

The findings regarding the individual survey questions associated with the first maturity level are given within the following table:

Table 5.4 – First Maturity Level Findings (Questions)

Question	Urban	Rural	ANOVA	Effect Size
6	<i>M</i> = 2.68, <i>SD</i> = 0.95	<i>M</i> = 2.49, <i>SD</i> = 0.95	$F(1, 201) = 0.84,$ <i>p</i> = 0.359	$\omega^2 = 0.002$
7	<i>M</i> = 3.36, <i>SD</i> = 1.08	<i>M</i> = 3.55, <i>SD</i> = 0.97	$F(1, 201) = 0.82,$ <i>p</i> = 0.367	$\omega^2 = 0.004$
8	<i>M</i> = 2.84, <i>SD</i> = 1.11	<i>M</i> = 2.57, <i>SD</i> = 0.97	$F(1, 201) = 1.61,$ <i>p</i> = 0.206	$\omega^2 = 0.004$

The transformation between Table 5.3 and 5.4 involved the grouping of items (based on commonness regarding the first maturity level) and averaging of individual item scores (from individual questions 6 through 8) to generate the composite data presented within Table 5.3.

### 5.2.3 Second Maturity Level Findings

The scaled survey questions 9 through 11 represented the second maturity level. A statistically significant difference was not exhibited regarding the perceptions of urban personnel versus rural personnel with respect to these scaled items.

The findings regarding the second maturity level are given within the following table:

Table 5.5 – Second Maturity Level Findings (Scale)

Urban	Rural	<i>p</i> -value	Effect Size
<i>M</i> = 3.83, <i>SD</i> = 0.78	<i>M</i> = 3.81, <i>SD</i> = 0.68	<i>p</i> = 0.8698	$\omega^2 = -0.0016$

The findings regarding the individual survey questions associated with the second maturity level are given within the following table:

Table 5.6 – Second Maturity Level Findings (Questions)

Question	Urban	Rural	ANOVA	Effect Size
9	<i>M</i> = 3.84, <i>SD</i> = 0.68	<i>M</i> = 3.90, <i>SD</i> = 0.60	$F(1, 201) = 0.25,$ <i>p</i> = 0.621	$\omega^2 = 0.008$
10	<i>M</i> = 3.84, <i>SD</i> = 0.80	<i>M</i> = 3.78, <i>SD</i> = 0.71	$F(1, 201) = 0.15,$ <i>p</i> = 0.701	$\omega^2 = 0.001$
11	<i>M</i> = 3.80, <i>SD</i> = 0.87	<i>M</i> = 3.75, <i>SD</i> = 0.71	$F(1, 201) = 0.09,$ <i>p</i> = 0.762	$\omega^2 = 0.000$

The transformation between Table 5.5 and 5.6 involved the grouping of items (based on commonness regarding the second maturity level) and averaging of individual item scores (from individual questions 9 through 11) to generate the composite data presented within Table 5.5.



### 5.2.4 Third Maturity Level Findings

The scaled survey questions 12 through 14 represented the third maturity level. A statistically significant difference was not exhibited regarding the perceptions of urban personnel versus rural personnel with respect to these scaled items.

The findings regarding the third maturity level are given within the following table:

Table 5.7 – Third Maturity Level Findings (Scale)

Urban	Rural	<i>p</i> -value	Effect Size
<i>M</i> = 3.67, <i>SD</i> = 0.83	<i>M</i> = 3.74, <i>SD</i> = 0.75	<i>p</i> = 0.4129	$\omega^2 = -0.0005$

The findings regarding the individual survey questions associated with the third maturity level are given within the following table:

Table 5.8 – Third Maturity Level Findings (Questions)

Question	Urban	Rural	ANOVA	Effect Size
12	<i>M</i> = 3.56, <i>SD</i> = 0.96	<i>M</i> = 3.66, <i>SD</i> = 0.82	$F(1, 201) = 0.30,$ <i>p</i> = 0.586	$\omega^2 = 0.001$
13	<i>M</i> = 3.68, <i>SD</i> = 0.80	<i>M</i> = 3.72, <i>SD</i> = 0.74	$F(1, 201) = 0.06,$ <i>p</i> = 0.806	$\omega^2 = 0.000$
14	<i>M</i> = 3.76, <i>SD</i> = 0.72	<i>M</i> = 3.85, <i>SD</i> = 0.68	$F(1, 201) = 0.41,$ <i>p</i> = 0.523	$\omega^2 = 0.002$

The transformation between Table 5.7 and 5.8 involved the grouping of items (based on commonness regarding the third maturity level) and averaging of individual item scores

(from individual questions 12 through 14) to generate the composite data presented within Table 5.7.

### 5.2.5 Fourth Maturity Level Findings

The scaled survey questions 15 through 17 represented the fourth maturity level. A statistically significant difference was exhibited regarding the perceptions of urban personnel versus rural personnel with respect to these scaled items. This statistically significant finding represents only the scaled items, and not the individual items.

The findings regarding the fourth maturity level are given within the following table:

Table 5.9 – Fourth Maturity Level Findings (Scale)

Urban	Rural	<i>p</i> -value	Effect Size
<i>M</i> = 2.83, <i>SD</i> = 1.13	<i>M</i> = 3.13, <i>SD</i> = 1.14	<i>p</i> = 0.0296	$\omega^2 = 0.0061$

The findings regarding the fourth maturity level are given within the following table:

Table 5.10 – Fourth Maturity Level Findings (Questions)

Question	Urban	Rural	ANOVA	Effect Size
15	<i>M</i> = 2.64, <i>SD</i> = 1.08	<i>M</i> = 3.06, <i>SD</i> = 1.12	$F(1, 201) = 3.16,$ <i>p</i> = 0.077	$\omega^2 = 0.015$
16	<i>M</i> = 2.80, <i>SD</i> = 1.16	<i>M</i> = 3.08, <i>SD</i> = 1.14	$F(1, 201) = 1.35,$ <i>p</i> = 0.247	$\omega^2 = 0.007$
17	<i>M</i> = 3.04, <i>SD</i> = 1.17	<i>M</i> = 3.25, <i>SD</i> = 1.16	$F(1, 201) = 0.74,$ <i>p</i> = 0.391	$\omega^2 = 0.004$

The transformation between Table 5.9 and 5.10 involved the grouping of items (based on commonness regarding the fourth maturity level) and averaging of individual item

scores (from individual questions 15 through 17) to generate the composite data presented within Table 5.9.

### 5.2.6 Fifth Maturity Level Findings

The scaled survey questions 18 through 20 represented the fifth maturity level. A statistically significant difference was not exhibited regarding the perceptions of urban personnel versus rural personnel with respect to these scaled items.

The findings regarding the fourth maturity level are given within the following table:

Table 5.11 – Fifth Maturity Level Findings (Scale)

Urban	Rural	<i>p</i> -value	Effect Size
<i>M</i> = 3.57, <i>SD</i> = 0.74	<i>M</i> = 3.60, <i>SD</i> = 0.80	<i>p</i> = 0.7618	$\omega^2 = -0.0015$

The findings regarding the individual survey questions associated with the fifth maturity level are given within the following table:

Table 5.12 – Fifth Maturity Level Findings (Questions)

Question	Urban	Rural	ANOVA	Effect Size
18	<i>M</i> = 3.48, <i>SD</i> = 0.77	<i>M</i> = 3.54, <i>SD</i> = 0.84	$F(1, 201) = 0.11,$ <i>p</i> = 0.738	$\omega^2 = 0.001$
19	<i>M</i> = 3.44, <i>SD</i> = 0.82	<i>M</i> = 3.44, <i>SD</i> = 0.84	$F(1, 201) = 0.00,$ <i>p</i> = 0.983	$\omega^2 = 0.000$
20	<i>M</i> = 3.80, <i>SD</i> = 0.58	<i>M</i> = 3.83, <i>SD</i> = 0.67	$F(1, 201) = 0.03,$ <i>p</i> = 0.855	$\omega^2 = 0.000$

The transformation between Table 5.11 and 5.12 involved the grouping of items (based on commonness regarding the fifth maturity level) and averaging of individual item scores (from individual questions 18 through 20) to generate the composite data presented within Table 5.11.

### 5.2.7 Process Improvement Characteristics Findings

The scaled survey questions 21 through 23 represented organizational process improvement characteristics. A statistically significant difference was not exhibited regarding the perceptions of urban personnel versus rural personnel with respect to these scaled items.

The findings regarding the process improvement characteristics are given within the following table:

Table 5.13 – Process Improvement Characteristics Findings (Scale)

Urban	Rural	<i>p</i> -value	Effect Size
<i>M</i> = 3.44, <i>SD</i> = 0.93	<i>M</i> = 3.59, <i>SD</i> = 0.92	<i>p</i> = 0.1894	$\omega^2 = 0.0012$

The findings regarding the individual survey questions associated with the process improvement characteristics are given within the following table:

Table 5.14 – Process Improvement Characteristics Findings (Questions)

Question	Urban	Rural	ANOVA	Effect Size
21	<i>M</i> = 3.48, <i>SD</i> = 0.92	<i>M</i> = 3.74, <i>SD</i> = 0.80	$F(1, 201) = 2.17,$ <i>p</i> = 0.142	$\omega^2 = 0.011$
22	<i>M</i> = 3.64, <i>SD</i> = 0.76	<i>M</i> = 3.77, <i>SD</i> = 0.80	$F(1, 201) = 0.58,$ <i>p</i> = 0.446	$\omega^2 = 0.003$

23	$M = 3.20,$ $SD = 1.08$	$M = 3.26,$ $SD = 1.07$	$F(1, 201) = 0.08,$ $p = 0.779$	$\omega^2 = 0.000$
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The transformation between Table 5.13 and 5.14 involved the grouping of items (based on commonness regarding process improvement characteristics) and averaging of individual item scores (from individual questions 21 through 23) to generate the composite data presented within Table 5.13.

### 5.2.8 Process Grouping and Maturity Characteristics Findings

The scaled survey questions 24 through 26 represented organizational process grouping and maturity characteristics. A statistically significant difference was not exhibited regarding the perceptions of urban personnel versus rural personnel with respect to these scaled items.

The findings regarding the process grouping and maturity characteristics are given within the following table:

Table 5.15 – Process Grouping and Maturity Characteristics Findings (Scale)

Urban	Rural	$p$ -value	Effect Size
$M = 3.01,$ $SD = 1.03$	$M = 3.11,$ $SD = 1.05$	$p = 0.4429$	$\omega^2 = -0.0007$

The findings regarding the individual survey questions associated with the process grouping and maturity characteristics are given within the following table:

Table 5.16 – Process Grouping and Maturity Characteristics Findings (Questions)

Question	Urban	Rural	ANOVA	Effect Size
24	<i>M</i> = 3.80, <i>SD</i> = 0.71	<i>M</i> = 3.80, <i>SD</i> = 0.75	$F(1, 201) = 0.00,$ $p = 0.983$	$\omega^2 = 0.000$
25	<i>M</i> = 2.72, <i>SD</i> = 0.98	<i>M</i> = 2.94, <i>SD</i> = 1.06	$F(1, 201) = 1.00,$ $p = 0.318$	$\omega^2 = 0.005$
26	<i>M</i> = 2.52, <i>SD</i> = 0.92	<i>M</i> = 2.59, <i>SD</i> = 0.92	$F(1, 201) = 0.13,$ $p = 0.722$	$\omega^2 = 0.001$

The transformation between Table 5.15 and 5.16 involved the grouping of items (based on commonness regarding process grouping and maturity characteristics) and averaging of individual item scores (from individual questions 24 through 26) to generate the composite data presented within Table 5.15.

### 5.2.9 Organizational Process Characteristics Findings

The scaled survey questions 27 through 33 represented organizational process characteristics. A statistically significant difference was not exhibited regarding the perceptions of urban personnel versus rural personnel with respect to these scaled items.

The findings regarding the organizational process characteristics are given within the following table:

Table 5.17 – Organizational Process Characteristics Findings (Scale)

Urban	Rural	<i>p</i> -value	Effect Size
<i>M</i> = 2.91, <i>SD</i> = 1.12	<i>M</i> = 2.90, <i>SD</i> = 1.07	$p = 0.7030$	$\omega^2 = -0.0006$

The findings regarding the individual survey questions associated with the organizational process characteristics are given within the following table:

Table 5.18 – Organizational Process Characteristics Findings (Questions)

Question	Urban	Rural	ANOVA	Effect Size
27	<i>M</i> = 2.72, <i>SD</i> = 1.14	<i>M</i> = 2.78, <i>SD</i> = 1.06	$F(1, 201) = 0.07,$ $p = 0.791$	$\omega^2 = 0.000$
28	<i>M</i> = 3.72, <i>SD</i> = 0.84	<i>M</i> = 3.88, <i>SD</i> = 0.80	$F(1, 201) = 0.88,$ $p = 0.350$	$\omega^2 = 0.005$
29	<i>M</i> = 2.84, <i>SD</i> = 1.07	<i>M</i> = 3.32, <i>SD</i> = 1.03	$F(1, 201) = 4.75,$ $p = 0.031$	$\omega^2 = 0.230$
30	<i>M</i> = 2.52, <i>SD</i> = 0.96	<i>M</i> = 2.51, <i>SD</i> = 0.84	$F(1, 201) = 0.01,$ $p = 0.937$	$\omega^2 = 0.000$
31	<i>M</i> = 2.40, <i>SD</i> = 0.91	<i>M</i> = 2.22, <i>SD</i> = 0.72	$F(1, 201) = 1.28,$ $p = 0.259$	$\omega^2 = 0.006$
32	<i>M</i> = 3.28, <i>SD</i> = 1.24	<i>M</i> = 2.70, <i>SD</i> = 1.00	$F(1, 201) = 6.99,$ $p = 0.009$	$\omega^2 = 0.034$
33	<i>M</i> = 3.40, <i>SD</i> = 1.00	<i>M</i> = 3.71, <i>SD</i> = 0.81	$F(1, 201) = 2.97,$ $p = 0.087$	$\omega^2 = 0.015$

The transformation between Table 5.17 and 5.18 involved the grouping of items (based on commonness regarding organizational process characteristics) and averaging of individual item scores (from individual questions 27 through 33) to generate the composite data presented within Table 5.17.

### 5.2.10 Statistically Significant Different Outcomes

A statistically significant outcome was exhibited regarding the perceptions of urban versus rural personnel associated with scaled questions 15 through 17. The findings

regarding the exhibiting of statistically significant different scale outcome is given within the following table:

Table 5.19 – Synopsis of Statistically Significant Different Findings (Questions)

Scale	Survey Questions	Urban	Rural	<i>p</i> -value	Effect Size
5	15 – 17	<i>M</i> = 2.83, <i>SD</i> = 1.13	<i>M</i> = 3.13, <i>SD</i> = 1.14	0.0296	$\omega^2 = 0.0061$

Regarding the individual questions of the survey, two statistically significant outcomes were discovered regarding questions 29 and 32. The findings regarding the exhibiting of statistically significant different survey item outcomes are given within the following table:

Table 5.20 – Synopsis of Statistically Significant Different Findings (Questions)

Question	Urban	Rural	ANOVA Values	Effect Size
29	<i>M</i> = 2.84, <i>SD</i> = 1.07	<i>M</i> = 3.32, <i>SD</i> = 1.03	$F(1, 201) = 4.75,$ $p = 0.031$	$\omega^2 = 0.230$
32	<i>M</i> = 3.28, <i>SD</i> = 1.24	<i>M</i> = 2.70, <i>SD</i> = 1.00	$F(1, 201) = 6.99,$ $p = 0.009$	$\omega^2 = 0.034$

### 5.2.11 Reflections and Analyses of the Hypothesis Testing Outcomes

Because this research study was constrained solely to respondents within Alabama and Mississippi, the outcomes of this chapter should be considered only from the perspective of the criminal justice domain representing Alabama and Mississippi respondents. Therefore, the outcomes of this chapter should not be generalized for the whole of American policing within the United States.



Regarding survey questions 1 through 5, with respect to the first scale, the individual items represented the defining characteristics of each maturity level. Specifically, these items queried whether processes were perceived as having randomness, being managed, having specificity and definition, managed quantitatively, and exhibited optimality. The outcomes of hypothesis testing revealed no statistically significant outcome regarding this scale. Thus, some suggestion of CMMi adaptability is indicated for this scale.

Regarding survey questions 6 through 8, with respect to the second scale, the individual items represented queries representing the first maturity level. Specifically, these items queried whether processes were unpredictable, reactive, and uncoordinated. The outcomes of hypothesis testing revealed no statistically significant outcome regarding this scale. Thus, some suggestion of CMMi adaptability is indicated for this scale.

Regarding survey questions 9 through 11, with respect to the third scale, the individual items represented queries representing the second maturity level. Specifically, these items queried whether processes were perceived as planned, managed, and controlled. The outcomes of hypothesis testing revealed no statistically significant outcome regarding this scale. Thus, some suggestion of CMMi adaptability is indicated for this scale.

Regarding survey questions 12 through 14, with respect to the fourth scale, the individual items represented queries representing the third maturity level. Specifically, these items queried whether processes were perceived as well-defined, consistent, and followed. The outcomes of hypothesis testing revealed no statistically significant outcome regarding this scale. Thus, some suggestion of CMMi adaptability is indicated for this scale.

Regarding survey questions 15 through 17, with respect to the fifth scale, the individual items represented queries representing the fourth maturity level. Specifically, these items queried whether processes involved quantitative objectives, metrics analysis, and statistical analysis. The outcomes of hypothesis testing revealed a statistically significant outcome regarding this scale. Given these observations, insufficient evidence exists to

show definitely and conclusively that the CMMi framework is adaptable within the context of the criminal justice domain.

The statistically significant outcome for this scale may be considered from the perspective of differences that exist between managerial and non-managerial jobs among urban and rural entities. Managerial duties, such as crime forecasting, involve mathematical processes ranging from regression to moving average techniques. However, such forecasting duties are uncommon among non-managerial personnel whose duties are primarily operational (e.g., conducting roadway patrols and issuing traffic tickets). Managerial responsibilities of both urban and rural entities involve greater uses of quantitative and analytical skills whereas non-managerial responsibilities involve substantially fewer uses of quantitative skills and analysis. Thus, such differences may have affected respondent perspectives when scoring responses to the survey.

Regarding survey questions 18 through 20, with respect to the sixth scale, the individual items represented queries representing the fifth maturity level. Specifically, these items queried whether processes involved incremental improvement, whether processes were efficient, and whether processes were effective. The outcomes of hypothesis testing revealed no statistically significant outcome regarding this scale. Thus, some suggestion of CMMi adaptability is indicated for this scale.

Regarding survey questions 21 through 23, with respect to the seventh scale, the individual items represented queries representing the process maturity framework. Specifically, these items queried whether process maturity was address within current process improvement initiatives, whether process improvement was advocated within the agency, and whether process initiatives were tracked to examine process performance. The outcomes of hypothesis testing revealed no statistically significant outcome regarding this scale. Thus, some suggestion of the presence of CMMi process improvement characteristics is indicated for this scale.

Regarding survey questions 24 through 26, with respect to the eighth scale, the individual items represented queries representing the process maturity framework. Specifically, these items queried whether process grouping by maturity level would improve process outcomes, whether categorical process grouping was advocated within

the agency, and whether process maturity was a contributor to successful process outputs. The outcomes of hypothesis testing revealed no statistically significant outcome regarding this scale. Thus, some suggestion of the presence of CMMi process improvement characteristics is indicated for this scale.

Regarding survey questions 27 through 33, with respect to the ninth scale, the individual items represented queries representing the process maturity framework. This scale queried various attributes of organizational processes with respect to policy, variance within process management, ineffectiveness, frequency of process change, and advocacy for process training. The outcomes of hypothesis testing revealed no statistically significant outcome regarding this scale. Thus, some suggestion of the presence of CMMi process improvement characteristics is indicated for this scale.

Although the ninth scale exhibited no statistical significance overall, two statistically significant outcomes were indicated regarding the individual question items. Specifically, statistically significant outcomes were observed regarding questions 29 and 32. Question 29 queried whether methods of managing processes varied within the organization. Question 32 queried whether organizational processes changed frequently. Within American society, among both rural and urban areas, some positions within law enforcement organizations are elected positions. Voters freely choose whom they desire to hold leadership offices among some law enforcement organizations. For instance, counties may exercise periodically elections to determine who will assume the leadership position of a sheriff's department. When new people are elected into such positions, they may incite change within the organization that affects its processes and its management paradigms. Given these notions, the scoring of questions and respondent perceptions may have been affected by such scenarios. Thus, some situations exist that may have affected the perceptions of the respondents when responding to the survey questions.

### **5.2.12 Considerations of the Research Question**

The primary research question of this study is stated as: "Can the basic framework of the CMMi be adapted to define a managerial process improvement framework within the criminal justice domain?" Within this research question, the criminal justice domain

consisted of solely polled environments in Alabama and Mississippi. Thus, the outcomes of this chapter should be considered only from the context of Alabama and Mississippi respondents, and not generalized for the remainder of the nation.

The findings of the scales and the findings of the individual questions must be considered with respect to this research question. The first scale addressed the cumulative maturity model framework, and scales two through six addressed the first through the fifth individual maturity model levels of the maturity model framework, respectively. Within the survey questionnaire, the corresponding items represented individually the first twenty questions. Therefore, questions 1 through 20 addressed the basic framework of the CMMi and its maturity levels.

One statistically significant outcome was observed regarding the first through the sixth scales. This statistically significant outcome involved the fifth scale representing considerations of the fourth maturity level. Therefore, insufficient evidence exists to show definitely and conclusively that the CMMi framework is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

### **5.3 DISCUSSION OF THE FINDINGS**

The preceding tables summarized the analysis result regarding the case of urban personnel versus rural personnel. This section contains summaries of the findings for each set of scaled questions.

#### **5.3.1 Analysis of Scaled Questions 1 - 5**

The hypothesis of scaled items 1 through 5 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “organizational evidence of the process maturity model framework exists” between the compared groups. There was no statistically significant difference on the mean responses of the first scale between urban personnel ( $M = 3.16$ ,  $SD = 0.98$ ) versus rural personnel ( $M = 3.24$ ,  $SD = 1.04$ ). The  $p$ -value from the ANOVA method was 0.4143.

The value of the effect size,  $\omega^2$ , was -0.0003. Therefore, there was no statistically significant difference regarding the perceptions of this scale between urban personnel versus rural personnel.

### **5.3.2 Analysis of Scaled Questions 6 - 8**

The hypothesis of scaled items 6 through 8 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the first level of the process maturity framework exists” between the compared groups. There was no statistically significant difference on the mean responses of the second scale between urban personnel ( $M = 2.96$ ,  $SD = 1.07$ ) versus rural personnel ( $M = 2.87$ ,  $SD = 1.06$ ). The  $p$ -value from the ANOVA method was 0.5099. The value of the effect size,  $\omega^2$ , was -0.0009. Therefore, there was no statistically significant difference regarding the perceptions of this scale between urban personnel versus rural personnel.

### **5.3.3 Analysis of Scaled Questions 9 - 11**

The hypothesis of scaled items 9 through 11 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the second level of the process maturity framework exists” between the compared groups. There was no statistically significant difference on the mean responses of the third scale between urban personnel ( $M = 3.83$ ,  $SD = 0.78$ ) versus rural personnel ( $M = 3.81$ ,  $SD = 0.68$ ). The  $p$ -value from the ANOVA method was 0.8698. The value of the effect size,  $\omega^2$ , was -0.0016. Therefore, there was no statistically significant difference regarding the perceptions of this scale between urban personnel versus rural personnel.

### **5.3.4 Analysis of Scaled Questions 12 - 14**

The hypothesis of scaled items 12 through 14 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the third level of the process maturity framework exists” between the compared groups. There was no statistically significant difference on the mean responses of the

fourth scale between urban personnel ( $M = 3.67$ ,  $SD = 0.83$ ) versus rural personnel ( $M = 3.74$ ,  $SD = 0.75$ ). The  $p$ -value from the ANOVA method was 0.4129. The value of the effect size,  $\omega^2$ , was -0.0005. Therefore, there was no statistically significant difference regarding the perceptions of this scale between urban personnel versus rural personnel.

### **5.3.5 Analysis of Scaled Questions 15 - 17**

The hypothesis of scaled items 15 through 17 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the fourth level of the process maturity framework exists” between the compared groups. There was a statistically significant difference on the mean responses of the fifth scale between urban personnel ( $M = 2.83$ ,  $SD = 1.13$ ) versus rural personnel ( $M = 3.13$ ,  $SD = 1.14$ ). The  $p$ -value from the ANOVA method was 0.0296. The value of the effect size,  $\omega^2$ , was 0.0061. Therefore, there was a statistically significant difference regarding the perceptions of this scale between urban personnel versus rural personnel.

### **5.3.6 Analysis of Scaled Questions 18 - 20**

The hypothesis of scaled items 18 through 20 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the fifth level of the process maturity framework exists” between the compared groups. There was no statistically significant difference on the mean responses of the sixth scale between urban personnel ( $M = 3.57$ ,  $SD = 0.74$ ) versus rural personnel ( $M = 3.60$ ,  $SD = 0.80$ ). The  $p$ -value from the ANOVA method was 0.7618. The value of the effect size,  $\omega^2$ , was -0.0015. Therefore, there was no statistically significant difference regarding the perceptions of this scale between urban personnel versus rural personnel.

### **5.3.7 Analysis of Scaled Questions 21 - 23**

The hypothesis of scaled items 21 through 23 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of process improvement exists among work settings” between the compared groups.

There was no statistically significant difference on the mean responses of the seventh scale between urban personnel ( $M = 3.44$ ,  $SD = 0.93$ ) versus rural personnel ( $M = 3.59$ ,  $SD = 0.92$ ). The  $p$ -value from the ANOVA method was 0.1894. The value of the effect size,  $\omega^2$ , was 0.0012. Therefore, there was no statistically significant difference regarding the perceptions of this scale between urban personnel versus rural personnel.

### **5.3.8 Analysis of Scaled Questions 24 - 26**

The hypothesis of scaled items 24 through 26 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “Evidence of process organization exists among work settings” between the compared groups. There was no statistically significant difference on the mean responses of the eighth scale between urban personnel ( $M = 3.01$ ,  $SD = 1.03$ ) versus rural personnel ( $M = 3.11$ ,  $SD = 1.05$ ). The  $p$ -value from the ANOVA method was 0.4429. The value of the effect size,  $\omega^2$ , was -0.0007. Therefore, there was no statistically significant difference regarding the perceptions of this scale between urban personnel versus rural personnel.

### **5.3.9 Analysis of Scaled Questions 27 - 33**

The hypothesis of scaled items 27 through 33 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “Evidence of process volatility exists among work settings” between the compared groups. There was no statistically significant difference on the mean responses of the ninth scale between urban personnel ( $M = 2.91$ ,  $SD = 1.12$ ) versus rural personnel ( $M = 2.90$ ,  $SD = 1.07$ ). The  $p$ -value from the ANOVA method was 0.7030. The value of the effect size,  $\omega^2$ , was -0.0006. Therefore, there was no statistically significant difference regarding the perceptions of this scale between urban personnel versus rural personnel.

## **5.4 FINDINGS OF THE INDIVIDUAL QUESTIONS**

The preceding discussions summarized the analysis results regarding the case of scales involving managerial personnel versus non-managerial personnel perspectives. This section contains summaries of the findings for each survey question individually.

### **5.4.1 Analysis of Question 1**

Question 1 of the survey questionnaire data collection instrument was stated as follows: “agency processes may be defined as ad hoc, chaotic, or random.” There was no statistically significant difference on the mean responses of question 1 between urban entities ( $M = 2.48$ ,  $SD = 0.87$ ) versus rural entities ( $M = 2.48$ ,  $SD = 0.95$ ),  $F(1, 201) = 0.00$ ,  $p = 0.988$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 1 between urban versus rural entities.

### **5.4.2 Analysis of Question 2**

Question 2 of the survey questionnaire data collection instrument was stated as follows: “agency processes are managed.” There was no statistically significant difference on the mean responses of question 2 between urban entities ( $M = 3.64$ ,  $SD = 0.70$ ) versus rural entities ( $M = 3.65$ ,  $SD = 0.85$ ),  $F(1, 201) = 0.00$ ,  $p = 0.973$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 2 between urban versus rural entities.

### **5.4.3 Analysis of Question 3**

Question 3 of the survey questionnaire data collection instrument was stated as follows: “agency processes are defined/specific.” There was no statistically significant difference on the mean responses of question 3 between urban entities ( $M = 3.84$ ,  $SD = 0.62$ ) versus rural entities ( $M = 3.78$ ,  $SD = 0.71$ ),  $F(1, 201) = 0.19$ ,  $p = 0.665$ . The  $\omega^2$



outcome was 0.001 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 3 between urban versus rural entities.

#### **5.4.4 Analysis of Question 4**

Question 4 of the survey questionnaire data collection instrument was stated as follows: “agency processes are quantitatively managed.” There was no statistically significant difference on the mean responses of question 4 between urban entities ( $M = 2.88$ ,  $SD = 1.01$ ) versus rural entities ( $M = 3.11$ ,  $SD = 1.09$ ),  $F(1, 201) = 1.02$ ,  $p = 0.315$ . The  $\omega^2$  outcome was 0.005 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 4 between urban versus rural entities.

#### **5.4.5 Analysis of Question 5**

Question 5 of the survey questionnaire data collection instrument was stated as follows: “agency processes are optimized.” There was no statistically significant difference on the mean responses of question 5 between urban entities ( $M = 3.24$ ,  $SD = 0.97$ ) versus rural entities ( $M = 3.12$ ,  $SD = 1.03$ ),  $F(1, 201) = 0.31$ ,  $p = 0.578$ . The  $\omega^2$  outcome was 0.002 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 5 between urban versus rural entities.

#### **5.4.6 Analysis of Question 6**

Question 6 of the survey questionnaire data collection instrument was stated as follows: “agency processes are unpredictable.” There was no statistically significant difference on the mean responses of question 6 between urban entities ( $M = 2.68$ ,  $SD = 0.95$ ) versus rural entities ( $M = 2.49$ ,  $SD = 0.95$ ),  $F(1, 201) = 0.84$ ,  $p = 0.359$ . The  $\omega^2$  outcome was 0.002 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 6 between urban versus rural entities.

#### **5.4.7 Analysis of Question 7**

Question 7 of the survey questionnaire data collection instrument was stated as follows: “agency processes are reactive.” There was no statistically significant difference on the mean responses of question 7 between urban entities ( $M = 3.36$ ,  $SD = 1.08$ ) versus rural entities ( $M = 3.55$ ,  $SD = 0.97$ ),  $F(1, 201) = 0.82$ ,  $p = 0.367$ . The  $\omega^2$  outcome was 0.004 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 7 between urban versus rural entities.

#### **5.4.8 Analysis of Question 8**

Question 8 of the survey questionnaire data collection instrument was stated as follows: “agency processes are uncoordinated.” There was no statistically significant difference on the mean responses of question 8 between urban entities ( $M = 2.84$ ,  $SD = 1.11$ ) versus rural entities ( $M = 2.57$ ,  $SD = 0.97$ ),  $F(1, 201) = 1.61$ ,  $p = 0.206$ . The  $\omega^2$  outcome was 0.004 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 8 between urban versus rural entities.

#### **5.4.9 Analysis of Question 9**

Question 9 of the survey questionnaire data collection instrument was stated as follows: “agency processes are planned.” There was no statistically significant difference on the mean responses of question 9 between urban entities ( $M = 3.84$ ,  $SD = 0.68$ ) versus rural entities ( $M = 3.90$ ,  $SD = 0.60$ ),  $F(1, 201) = 0.25$ ,  $p = 0.621$ . The  $\omega^2$  outcome was 0.008 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 9 between urban versus rural entities.

#### **5.4.10 Analysis of Question 10**

Question 10 of the survey questionnaire data collection instrument was stated as follows: “agency processes are managed.” There was no statistically significant

difference on the mean responses of question 10 between urban entities ( $M = 3.84$ ,  $SD = 0.80$ ) versus rural entities ( $M = 3.78$ ,  $SD = 0.71$ ),  $F(1, 201) = 0.15$ ,  $p = 0.701$ . The  $\omega^2$  outcome was 0.001 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 10 between urban versus rural entities.

#### **5.4.11 Analysis of Question 11**

Question 11 of the survey questionnaire data collection instrument was stated as follows: “agency processes are controlled.” There was no statistically significant difference on the mean responses of question 11 between urban entities ( $M = 3.80$ ,  $SD = 0.87$ ) versus rural entities ( $M = 3.75$ ,  $SD = 0.71$ ),  $F(1, 201) = 0.09$ ,  $p = 0.762$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 11 between urban versus rural entities.

#### **5.4.12 Analysis of Question 12**

Question 12 of the survey questionnaire data collection instrument was stated as follows: “agency processes are defined.” There was no statistically significant difference on the mean responses of question 12 between urban entities ( $M = 3.56$ ,  $SD = 0.96$ ) versus rural entities ( $M = 3.66$ ,  $SD = 0.82$ ),  $F(1, 201) = 0.30$ ,  $p = 0.586$ . The  $\omega^2$  outcome was 0.001 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 12 between urban versus rural entities.

#### **5.4.13 Analysis of Question 13**

Question 13 of the survey questionnaire data collection instrument was stated as follows: “agency processes are consistent.” There was no statistically significant difference on the mean responses of question 13 between urban entities ( $M = 3.68$ ,  $SD = 0.80$ ) versus rural entities ( $M = 3.72$ ,  $SD = 0.74$ ),  $F(1, 201) = 0.06$ ,  $p = 0.806$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 13 between urban versus rural entities.

#### **5.4.14 Analysis of Question 14**

Question 14 of the survey questionnaire data collection instrument was stated as follows: “agency processes are followed.” There was no statistically significant difference on the mean responses of question 14 between urban entities ( $M = 3.76$ ,  $SD = 0.72$ ) versus rural entities ( $M = 3.85$ ,  $SD = 0.68$ ),  $F(1, 201) = 0.41$ ,  $p = 0.523$ . The  $\omega^2$  outcome was 0.002 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 14 between urban versus rural entities.

#### **5.4.15 Analysis of Question 15**

Question 15 of the survey questionnaire data collection instrument was stated as follows: “agency processes involve quantitative objectives.” There was no statistically significant difference on the mean responses of question 15 between urban entities ( $M = 2.64$ ,  $SD = 1.08$ ) versus rural entities ( $M = 3.06$ ,  $SD = 1.12$ ),  $F(1, 201) = 3.16$ ,  $p = 0.077$ . The  $\omega^2$  outcome was 0.015 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 15 between urban versus rural entities.

#### **5.4.16 Analysis of Question 16**

Question 16 of the survey questionnaire data collection instrument was stated as follows: “agency processes involve metrics analysis.” There was no statistically significant difference on the mean responses of question 16 between urban entities ( $M = 2.80$ ,  $SD = 1.16$ ) versus rural entities ( $M = 3.08$ ,  $SD = 1.14$ ),  $F(1, 201) = 1.35$ ,  $p = 0.247$ . The  $\omega^2$  outcome was 0.007 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 16 between urban versus rural entities.

#### **5.4.17 Analysis of Question 17**

Question 17 of the survey questionnaire data collection instrument was stated as follows: “agency processes involve statistical analysis.” There was no statistically significant difference on the mean responses of question 17 between urban entities ( $M = 3.04$ ,  $SD = 1.17$ ) versus rural entities ( $M = 3.25$ ,  $SD = 1.16$ ),  $F(1, 201) = 0.74$ ,  $p = 0.391$ . The  $\omega^2$  outcome was 0.004 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 17 between urban versus rural entities.

#### **5.4.18 Analysis of Question 18**

Question 18 of the survey questionnaire data collection instrument was stated as follows: “agency processes are improved incrementally.” There was no statistically significant difference on the mean responses of question 18 between urban entities ( $M = 3.48$ ,  $SD = 0.77$ ) versus rural entities ( $M = 3.54$ ,  $SD = 0.84$ ),  $F(1, 201) = 0.11$ ,  $p = 0.738$ . The  $\omega^2$  outcome was 0.001 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 18 between urban versus rural entities.

#### **5.4.19 Analysis of Question 19**

Question 19 of the survey questionnaire data collection instrument was stated as follows: “agency processes are efficient.” There was no statistically significant difference on the mean responses of question 19 between urban entities ( $M = 3.44$ ,  $SD = 0.82$ ) versus rural entities ( $M = 3.44$ ,  $SD = 0.84$ ),  $F(1, 201) = 0.00$ ,  $p = 0.983$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 19 between urban versus rural entities.

#### **5.4.20 Analysis of Question 20**

Question 20 of the survey questionnaire data collection instrument was stated as follows: “agency processes are effective.” There was no statistically significant difference on the mean responses of question 20 between urban entities ( $M = 3.80$ ,  $SD = 0.58$ ) versus rural entities ( $M = 3.83$ ,  $SD = 0.67$ ),  $F(1, 201) = 0.03$ ,  $p = 0.855$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 20 between urban versus rural entities.

#### **5.4.21 Analysis of Question 21**

Question 21 of the survey questionnaire data collection instrument was stated as follows: “process maturity is not addressed by our current process improvement initiatives.” There was no statistically significant difference on the mean responses of question 21 between urban entities ( $M = 3.48$ ,  $SD = 0.92$ ) versus rural entities ( $M = 3.74$ ,  $SD = 0.80$ ),  $F(1, 201) = 2.17$ ,  $p = 0.142$ . The  $\omega^2$  outcome was 0.011 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 21 between urban versus rural entities.

#### **5.4.22 Analysis of Question 22**

Question 22 of the survey questionnaire data collection instrument was stated as follows: “process improvement is advocated within my agency.” There was no statistically significant difference on the mean responses of question 22 between urban entities ( $M = 3.64$ ,  $SD = 0.76$ ) versus rural entities ( $M = 3.77$ ,  $SD = 0.80$ ),  $F(1, 201) = 0.58$ ,  $p = 0.446$ . The  $\omega^2$  outcome was 0.003 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 22 between urban versus rural entities.

#### **5.4.23 Analysis of Question 23**

Question 23 of the survey questionnaire data collection instrument was stated as follows: “process initiatives are tracked to examine process performance.” There was no statistically significant difference on the mean responses of question 23 between urban entities ( $M = 3.20$ ,  $SD = 1.08$ ) versus rural entities ( $M = 3.26$ ,  $SD = 1.07$ ),  $F(1, 201) = 0.08$ ,  $p = 0.779$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 23 between urban versus rural entities.

#### **5.4.24 Analysis of Question 24**

Question 24 of the survey questionnaire data collection instrument was stated as follows: “grouping of processes, according to maturity level, would improve the outcomes of our processes.” There was no statistically significant difference on the mean responses of question 24 between urban entities ( $M = 3.80$ ,  $SD = 0.71$ ) versus rural entities ( $M = 3.80$ ,  $SD = 0.75$ ),  $F(1, 201) = 0.00$ ,  $p = 0.983$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 24 between urban versus rural entities.

#### **5.4.25 Analysis of Question 25**

Question 25 of the survey questionnaire data collection instrument was stated as follows: “categorical process grouping is advocated within my agency.” There was no statistically significant difference on the mean responses of question 25 between urban entities ( $M = 2.72$ ,  $SD = 0.98$ ) versus rural entities ( $M = 2.94$ ,  $SD = 1.06$ ),  $F(1, 201) = 1.00$ ,  $p = 0.318$ . The  $\omega^2$  outcome was 0.005 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 25 between urban versus rural entities.

#### **5.4.26 Analysis of Question 26**

Question 26 of the survey questionnaire data collection instrument was stated as follows: “process maturity is a contributor to successful process outputs within my agency.” There was no statistically significant difference on the mean responses of question 26 between urban entities ( $M = 2.52$ ,  $SD = 0.92$ ) versus rural entities ( $M = 2.59$ ,  $SD = 0.92$ ),  $F(1, 201) = 0.13$ ,  $p = 0.722$ . The  $\omega^2$  outcome was 0.001 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 26 between urban versus rural entities.

#### **5.4.27 Analysis of Question 27**

Question 27 of the survey questionnaire data collection instrument was stated as follows: “processes are informal within my agency.” There was no statistically significant difference on the mean responses of question 27 between urban entities ( $M = 2.72$ ,  $SD = 1.14$ ) versus rural entities ( $M = 2.78$ ,  $SD = 1.06$ ),  $F(1, 201) = 0.07$ ,  $p = 0.791$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 27 between urban versus rural entities.

#### **5.4.28 Analysis of Question 28**

Question 28 of the survey questionnaire data collection instrument was stated as follows: “agency policies influence processes.” There was no statistically significant difference on the mean responses of question 28 between urban entities ( $M = 3.72$ ,  $SD = 0.84$ ) versus rural entities ( $M = 3.88$ ,  $SD = 0.80$ ),  $F(1, 201) = 0.88$ ,  $p = 0.350$ . The  $\omega^2$  outcome was 0.005 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 28 between urban versus rural entities.

#### **5.4.29 Analysis of Question 29**

Question 29 of the survey questionnaire data collection instrument was stated as follows: “methods of managing processes vary within my agency.” There was a statistically significant difference on the mean responses of question 29 between urban



entities ( $M = 2.84$ ,  $SD = 1.07$ ) versus rural entities ( $M = 3.32$ ,  $SD = 1.03$ ),  $F(1, 201) = 4.75$ ,  $p = 0.031$ . The value of the effect size variable,  $\omega^2$ , was 0.230. Therefore, there was a statistically significant difference regarding the perceptions of question 29 between urban versus rural entities.

#### **5.4.30 Analysis of Question 30**

Question 30 of the survey questionnaire data collection instrument was stated as follows: “agency processes are inefficient.” There was no statistically significant difference on the mean responses of question 30 between urban entities ( $M = 2.52$ ,  $SD = 0.96$ ) versus rural entities ( $M = 2.51$ ,  $SD = 0.84$ ),  $F(1, 201) = 0.01$ ,  $p = 0.937$ . The  $\omega^2$  outcome was 0.000 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 30 between urban versus rural entities.

#### **5.4.31 Analysis of Question 31**

Question 31 of the survey questionnaire data collection instrument was stated as follows: “agency processes are ineffective.” There was no statistically significant difference on the mean responses of question 31 between urban entities ( $M = 2.40$ ,  $SD = 0.91$ ) versus rural entities ( $M = 2.22$ ,  $SD = 0.72$ ),  $F(1, 201) = 1.28$ ,  $p = 0.259$ . The  $\omega^2$  outcome was 0.006 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 31 between urban versus rural entities.

#### **5.4.32 Analysis of Question 32**

Question 32 of the survey questionnaire data collection instrument was stated as follows: “agency processes change frequently.” There was a statistically significant difference on the mean responses of question 32 between urban entities ( $M = 3.28$ ,  $SD = 1.24$ ) versus rural entities ( $M = 2.70$ ,  $SD = 1.00$ ),  $F(1, 201) = 6.99$ ,  $p = 0.009$ . The value of the effect size variable,  $\omega^2$ , was 0.034. Therefore, there was a statistically significant difference regarding the perceptions of question 32 between urban versus rural entities.

### 5.4.33 Analysis of Question 33

Question 33 of the survey questionnaire data collection instrument was stated as follows: “my agency advocates process training.” There was no statistically significant difference on the mean responses of question 33 between urban entities ( $M = 3.40$ ,  $SD = 1.00$ ) versus rural entities ( $M = 3.71$ ,  $SD = 0.81$ ),  $F(1, 201) = 2.97$ ,  $p = 0.087$ . The  $\omega^2$  outcome was 0.015 regarding effect size. Therefore, there was no statistically significant difference regarding the perceptions of question 33 between urban versus rural entities.

## 5.5 CHAPTER SUMMARY

This chapter implemented the ANOVA method to investigate the stratification involving the perceptions of urban personnel versus the perceptions of rural personnel that were obtained from the survey questionnaire data collection instrument. Overall, one statistically significant different finding was exhibited regarding the examined scales. This statistically significant different finding involved the fifth scale representing the fourth maturity level. The following table shows the hypothesis statement that is associated with this scale.

Table 5.21 – Scale Involving the Statistically Significant Different Finding

Scaled Items	Scale Null Hypothesis Statement
15 – 17	There is no difference between urban versus rural personnel in the perception of “evidence of the fourth level of the process maturity framework exists.”

Within this scale, the queried items represented perceptions regarding whether organizational processes involved quantitative objectives, whether processes involved metrics analysis, and whether processes involved statistical analysis. Respectively,

these concepts were represented within survey questions 15, 16, and 17. This combination of questions revealed the statistically significant outcome of the fifth scale. It should be noted that the statistically significant finding occurred in terms of the scale, and not the individual items. However, as a point of reference for the composition of the scale, the individual survey questions comprising the fifth scale are given within the following table.

Table 5.22 – Survey Items 15, 16, and 17

Question	Survey Question Statement
15	Agency processes involve quantitative objectives.
16	Agency processes involve metrics analysis.
17	Agency processes involve statistical analysis.

Regarding the statistically significant finding for the scale, respondent perceptions to these individual items may have been influenced by perceptions associated with the different responsibilities of managers and non-managers among rural and urban entities.

Regarding the remaining individual question items, statistically significant differences were observed representing questions 29 and 32. The following table shows the individual items regarding these statistically significant different findings.

Table 5.23 – Survey Questions Involving Statistically Significant Different Findings

Question	Survey Question Statement
29	“Methods of managing processes vary within my agency.”
32	“Agency processes change frequently.”

These items involved variance among process management methods and frequencies of process change organizationally. The statistically significant outcomes may be viewed from the perspectives of periodically electing new police officials. When a newly elected individual assumes office, the new official may choose to implement organizational

change that affects processes and management paradigms. Respondents may have viewed the survey questions from such a perspective. This notion may contribute toward some explaining of the observed differences of statistical significance within these individual questions.

The primary research question of this study is expressed as: "Can the basic framework of the CMMi be adapted to define a managerial process improvement framework within the criminal justice domain?" Regarding the research question of this study, the hypothesis testing outcomes of the first through the sixth scales (representing the basic CMMi framework attributes) exhibited one statistically significant outcome involving the fifth scale. Therefore, insufficient evidence exists to show definitely and conclusively that the CMMi framework is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

## CHAPTER 6

### ANALYSES OF THE PERCEPTIONS OF ALABAMA VERSUS MISSISSIPPI PERSONNEL

#### 6.1 INTRODUCTION

This chapter presents the findings of the analysis regarding the stratification involving the perceptions of Alabama personnel versus the perceptions of Mississippi personnel that were obtained from the survey questionnaire data collection instrument. These questions encompassed question 1 through question 33. The one-way, two-tailed ANOVA method was used to investigate whether there was a statistically significant difference on the perceptions of Alabama personnel versus the perceptions of Mississippi personnel. These personnel perceptions represented only personnel from the states of Alabama and Mississippi. The findings of this chapter should not be generalized with respect to policing within the remainder of the nation.

Based on the Likert surveys, composites for analysis were generated through the item scaling approach. These composites represent measures reflecting the underlying concepts within the survey (Lewis-Beck, et al., 2004:998). The composite scale reflects the grouping of similar items for empirical measurement and that exhibit some form of "meaning," and that are grouped according to some type of similarity with respect to a common factor (Lewis-Beck, et al., 2004:998). Composite scores were derived from an averaging of the individual scores (Sarstedt & Mooi, 2014:110). These methods were used as the basis for transformation. Composite scaling and composite scoring represents the transforming of items between the following tables: Table 6.1 and Table 6.2, Table 6.3 and 6.4, Table 6.5 and Table 6.6, Table 6.7 and Table 6.8, Table 6.9 and Table 6.10, Table 6.11 and Table 6.12, Table 6.13 and Table 6.14, Table 6.15 and Table 6.16, and Table 6.17 and Table 6.18.

## 6.2 SYNOPSIS OF THE FINDINGS

This section summarizes the findings of the analysis regarding the case of Alabama personnel versus Mississippi personnel. Statistically significant outcomes were exhibited regarding the perceptions of Alabama versus Mississippi personnel associated with scaled questions 1 through 5, scaled questions 9 through 11, scaled questions 15 through 17, and scaled questions 18 through 20. Respectively, these scales reflected perceptions regarding the maturity model framework, level one of the framework, level four of the framework, level five of the framework, organizational process improvement, process organization, and process volatility within the work setting.

### 6.2.1 Findings of the Basic Framework

The scaled survey questions 1 through 5 represented the basic framework. A statistically significant difference was exhibited regarding the perceptions of Alabama personnel versus Mississippi personnel with respect to these scaled items. The findings of the hypothesis testing regarding the basic framework are given within the following table:

Table 6.1 – Basic Framework Findings (Scale)

Alabama	Mississippi	<i>p</i> -value	Effect Size
<i>M</i> = 3.31, <i>SD</i> = 1.00	<i>M</i> = 3.11, <i>SD</i> = 1.07	<i>p</i> = 0.0031	$\omega^2 = 0.0077$

The findings regarding the individual survey questions associated with the basic framework are given within the following table:

Table 6.2 – Basic Framework Findings (Questions)

Question	Alabama	Mississippi	ANOVA	Effect Size ( $\omega^2$ )
1	$M = 2.46,$ $SD = 0.89$	$M = 2.52,$ $SD = 1.03$	$F(1, 199) = 0.20,$ $p = 0.659$	$\omega^2 = 0.001$
2	$M = 3.75,$ $SD = 0.77$	$M = 3.49,$ $SD = 0.90$	$F(1, 199) = 4.69,$ $p = 0.032$	$\omega^2 = 0.023$
3	$M = 3.87,$ $SD = 0.62$	$M = 3.67,$ $SD = 0.79$	$F(1, 199) = 4.02,$ $p = 0.046$	$\omega^2 = 0.020$
4	$M = 3.21,$ $SD = 1.02$	$M = 2.90,$ $SD = 1.16$	$F(1, 199) = 3.93,$ $p = 0.049$	$\omega^2 = 0.019$
5	$M = 3.24,$ $SD = 1.00$	$M = 2.96,$ $SD = 1.04$	$F(1, 199) = 3.61,$ $p = 0.059$	$\omega^2 = 0.018$

The transformation between Table 6.1 and 6.2 involved the grouping of items (based on commonness regarding the overall maturity framework) and averaging of individual item scores (from individual questions 1 through 5) to generate the composite data presented within Table 6.1.

### 6.2.2 First Maturity Level Findings

The scaled survey questions 6 through 8 represented the first maturity level of the framework. A statistically significant difference was not exhibited regarding the perceptions of Alabama personnel versus Mississippi personnel with respect to these scaled items.

The findings regarding the first maturity level are given within the following table:

Table 6.3 – First Maturity Level Findings (Scale)

Alabama	Mississippi	<i>p</i> -value	Effect Size
<i>M</i> = 2.83, <i>SD</i> = 1.09	<i>M</i> = 2.98, <i>SD</i> = 1.04	<i>p</i> = 0.0920	$\omega^2 = 0.0031$

The findings regarding the individual survey questions associated with the first maturity level are given within the following table:

Table 6.4 – First Maturity Level Findings (Questions)

Question	Alabama	Mississippi	ANOVA	Effect Size
6	<i>M</i> = 2.43, <i>SD</i> = 0.92	<i>M</i> = 2.67, <i>SD</i> = 0.98	$F(1, 201) = 3.17,$ <i>p</i> = 0.077	$\omega^2 = 0.016$
7	<i>M</i> = 3.54, <i>SD</i> = 1.00	<i>M</i> = 3.52, <i>SD</i> = 0.98	$F(1, 201) = 0.03,$ <i>p</i> = 0.871	$\omega^2 = 0.000$
8	<i>M</i> = 2.51, <i>SD</i> = 0.99	<i>M</i> = 2.74, <i>SD</i> = 0.97	$F(1, 199) = 2.71,$ <i>p</i> = 0.101	$\omega^2 = 0.013$

The transformation between Table 6.3 and 6.4 involved the grouping of items (based on commonness regarding the first maturity level) and averaging of individual item scores (from individual questions 6 through 8) to generate the composite data presented within Table 6.3.

### 6.2.3 Second Maturity Level Findings

The scaled survey questions 9 through 11 represented the second maturity level. A statistically significant difference was exhibited regarding the perceptions of Alabama personnel versus Mississippi personnel with respect to these scaled items.



The findings regarding the scaled survey items associated with the second maturity level are given within the following table:

Table 6.5 – Second Maturity Level Findings (Scale)

Alabama	Mississippi	<i>p</i> -value	Effect Size
<i>M</i> = 3.90, <i>SD</i> = 0.62	<i>M</i> = 3.70, <i>SD</i> = 0.75	<i>p</i> = 0.0006	$\omega^2 = 0.0177$

The findings regarding the individual survey questions associated with the second maturity level are given within the following table:

Table 6.6 – Second Maturity Level Findings (Questions)

Question	Alabama	Mississippi	ANOVA	Effect Size
9	<i>M</i> = 3.98, <i>SD</i> = 0.58	<i>M</i> = 3.77, <i>SD</i> = 0.64	$F(1, 199) = 6.30,$ <i>p</i> = 0.013	$\omega^2 = 0.031$
10	<i>M</i> = 3.85, <i>SD</i> = 0.66	<i>M</i> = 3.72, <i>SD</i> = 0.78	$F(1, 199) = 1.73,$ <i>p</i> = 0.190	$\omega^2 = 0.009$
11	<i>M</i> = 3.86, <i>SD</i> = 0.63	<i>M</i> = 3.63, <i>SD</i> = 0.83	$F(1, 199) = 4.96,$ <i>p</i> = 0.027	$\omega^2 = 0.024$

The transformation between Table 6.5 and 6.6 involved the grouping of items (based on commonness regarding the second maturity level) and averaging of individual item scores (from individual questions 9 through 11) to generate the composite data presented within Table 6.5.

### 6.2.4 Third Maturity Level Findings

The scaled survey questions 12 through 14 represented the third maturity level. A statistically significant difference was not exhibited regarding the perceptions of Alabama personnel versus Mississippi personnel with respect to these scaled items.

The findings regarding the scaled survey items associated with the third maturity level are given within the following table:

Table 6.7 – Third Maturity Level Findings (Scale)

Alabama	Mississippi	<i>p</i> -value	Effect Size
<i>M</i> = 3.79, <i>SD</i> = 0.72	<i>M</i> = 3.67, <i>SD</i> = 0.80	<i>p</i> = 0.0514	$\omega^2 = 0.0046$

The findings regarding the individual survey questions associated with the third maturity level are given within the following table:

Table 6.8 – Third Maturity Level Findings (Questions)

Question	Alabama	Mississippi	ANOVA	Effect Size
12	<i>M</i> = 3.73, <i>SD</i> = 0.78	<i>M</i> = 3.54, <i>SD</i> = 0.90	$F(1, 199) = 2.34,$ <i>p</i> = 0.128	$\omega^2 = 0.012$
13	<i>M</i> = 3.78, <i>SD</i> = 0.70	<i>M</i> = 3.63, <i>SD</i> = 0.78	$F(1, 199) = 2.12,$ <i>p</i> = 0.147	$\omega^2 = 0.011$
14	<i>M</i> = 3.86, <i>SD</i> = 0.68	<i>M</i> = 3.83, <i>SD</i> = 0.70	$F(1, 199) = 0.10,$ <i>p</i> = 0.753	$\omega^2 = 0.000$

The transformation between Table 6.7 and 6.8 involved the grouping of items (based on commonness regarding the third maturity level) and averaging of individual item scores (from individual questions 12 through 14) to generate the composite data presented within Table 6.7.

### 6.2.5 Fourth Maturity Level Findings

The scaled survey questions 15 through 17 represented the fourth maturity level. A statistically significant difference was exhibited regarding the perceptions of Alabama personnel versus Mississippi personnel with respect to these scaled items.

The findings regarding the scaled survey items associated with the fourth maturity level are given within the following table:

Table 6.9 – Fourth Maturity Level Findings (Scale)

Alabama	Mississippi	<i>p</i> -value	Effect Size
<i>M</i> = 3.23, <i>SD</i> = 2.90	<i>M</i> = 1.08, <i>SD</i> = 1.22	<i>p</i> = 0.0006	$\omega^2 = 0.0180$

The findings regarding the individual survey questions associated with the fourth maturity level are given within the following table:

Table 6.10 – Fourth Maturity Level Findings (Questions)

Question	Alabama	Mississippi	ANOVA	Effect Size
15	<i>M</i> = 3.15, <i>SD</i> = 1.03	<i>M</i> = 2.80, <i>SD</i> = 1.22	$F(1, 199) = 4.76,$ <i>p</i> = 0.030	$\omega^2 = 0.023$
16	<i>M</i> = 3.18, <i>SD</i> = 1.09	<i>M</i> = 2.85, <i>SD</i> = 1.21	$F(1, 199) = 4.10,$ <i>p</i> = 0.044	$\omega^2 = 0.020$
17	<i>M</i> = 3.35, <i>SD</i> = 1.11	<i>M</i> = 3.05, <i>SD</i> = 1.22	$F(1, 199) = 3.28,$ <i>p</i> = 0.072	$\omega^2 = 0.016$

The transformation between Table 6.9 and 6.10 involved the grouping of items (based on commonness regarding the fourth maturity level) and averaging of individual item scores (from individual questions 15 through 17) to generate the composite data presented within Table 6.9.

### 6.2.6 Fifth Maturity Level Findings

The scaled survey questions 18 through 20 represented the fifth maturity level. A statistically significant difference was exhibited regarding the perceptions of Alabama personnel versus Mississippi personnel with respect to these scaled items.

The findings regarding the scaled survey items associated with the fourth maturity level are given within the following table:

Table 6.11 – Fifth Maturity Level Findings (Scale)

Alabama	Mississippi	<i>p</i> -value	Effect Size
<i>M</i> = 3.66, <i>SD</i> = 0.79	<i>M</i> = 3.52, <i>SD</i> = 0.79	<i>p</i> = 0.0434	$\omega^2 = 0.0051$

The findings regarding the individual survey items associated with the fifth maturity level are given within the following table:

Table 6.12 – Fifth Maturity Level Findings (Questions)

Question	Alabama	Mississippi	ANOVA	Effect Size
18	<i>M</i> = 3.56, <i>SD</i> = 0.85	<i>M</i> = 3.49, <i>SD</i> = 0.81	$F(1, 199) = 0.29,$ <i>p</i> = 0.590	$\omega^2 = 0.001$

19	$M = 3.52,$ $SD = 0.80$	$M = 3.35,$ $SD = 0.87$	$F(1, 199) = 2.06,$ $p = 0.152$	$\omega^2 = 0.010$
20	$M = 3.89,$ $SD = 0.66$	$M = 3.73,$ $SD = 0.65$	$F(1, 199) = 3.00,$ $p = 0.085$	$\omega^2 = 0.015$

The transformation between Table 6.11 and 6.12 involved the grouping of items (based on commonness regarding the fifth maturity level) and averaging of individual item scores (from individual questions 18 through 20) to generate the composite data presented within Table 6.11.

### 6.2.7 Process Improvement Characteristics Findings

The scaled survey questions 21 through 23 represented organizational process improvement characteristics. A statistically significant difference was not exhibited regarding the perceptions of Alabama personnel versus Mississippi personnel with respect to these scaled items.

The findings regarding the scaled survey items associated with the process improvement characteristics are given within the following table:

Table 6.13 – Process Improvement Characteristics Findings (Scale)

Alabama	Mississippi	$p$ -value	Effect Size
$M = 3.59,$ $SD = 0.93$	$M = 3.55,$ $SD = 0.93$	$p = 0.6394$	$\omega^2 = -0.0013$

The findings regarding the individual survey questions associated with the process improvement characteristics are given within the following table:

Table 6.14 – Process Improvement Characteristics Findings (Questions)

Question	Alabama	Mississippi	ANOVA	Effect Size
21	$M = 3.69,$ $SD = 0.83$	$M = 3.73,$ $SD = 0.81$	$F(1, 199) = 0.10,$ $p = 0.756$	$\omega^2 = 0.000$
22	$M = 3.81,$ $SD = 0.76$	$M = 3.68,$ $SD = 0.85$	$F(1, 199) = 1.28,$ $p = 0.260$	$\omega^2 = 0.006$
23	$M = 3.27,$ $SD = 1.09$	$M = 3.23,$ $SD = 1.04$	$F(1, 199) = 0.04,$ $p = 0.835$	$\omega^2 = 0.000$

The transformation between Table 6.13 and 6.14 involved the grouping of items (based on commonness regarding process improvement characteristics) and averaging of individual item scores (from individual questions 21 through 23) to generate the composite data presented within Table 6.13.

### 6.2.8 Process Grouping and Maturity Characteristics Findings

The scaled survey questions 24 through 26 represented organizational process grouping and maturity characteristics. A statistically significant difference was not exhibited regarding the perceptions of Alabama personnel versus Mississippi personnel with respect to these scaled items.

The findings regarding the scaled survey items representing process grouping and maturity characteristics are given within the following table:

Table 6.15 – Process Grouping and Maturity Characteristics Findings (Scale)

Alabama	Mississippi	$p$ -value	Effect Size
$M = 3.16,$ $SD = 1.03$	$M = 3.01,$ $SD = 1.07$	$p = 0.0817$	$\omega^2 = 0.0034$

The findings regarding the individual survey questions associated with process grouping and maturity characteristics are given within the following table:

Table 6.16 – Process Grouping and Maturity Characteristics Findings (Questions)

Question	Alabama	Mississippi	ANOVA	Effect Size
24	$M = 3.84,$ $SD = 0.70$	$M = 3.75,$ $SD = 0.81$	$F(1, 199) = 0.68,$ $p = 0.411$	$\omega^2 = 0.003$
25	$M = 3.00,$ $SD = 1.05$	$M = 2.80,$ $SD = 1.05$	$F(1, 199) = 1.72,$ $p = 0.192$	$\omega^2 = 0.009$
26	$M = 2.65,$ $SD = 0.92$	$M = 2.48,$ $SD = 0.91$	$F(1, 199) = 1.63,$ $p = 0.203$	$\omega^2 = 0.008$

The transformation between Table 6.15 and 6.16 involved the grouping of items (based on commonness regarding process grouping and maturity characteristics) and averaging of individual item scores (from individual questions 24 through 26) to generate the composite data presented within Table 6.15.

### 6.2.9 Organizational Process Characteristics Findings

The scaled survey questions 27 through 33 represented organizational process characteristics. A statistically significant difference was not exhibited regarding the perceptions of Alabama personnel versus Mississippi personnel with respect to these scaled items.

The findings regarding the scaled survey items representing organizational process characteristics are given within the following table:

Table 6.17 – Organizational Process Characteristics Findings (Scale)

Alabama	Mississippi	<i>p</i> -value	Effect Size
<i>M</i> = 2.99, <i>SD</i> = 1.10	<i>M</i> = 3.05, <i>SD</i> = 1.05	<i>p</i> = 0.2611	$\omega^2 = 0.0002$

The findings regarding the individual survey questions associated with organizational process characteristics are given within the following table:

Table 6.18 – Organizational Process Characteristics Findings (Questions)

Question	Alabama	Mississippi	ANOVA	Effect Size
27	<i>M</i> = 2.65, <i>SD</i> = 1.05	<i>M</i> = 2.98, <i>SD</i> = 1.08	$F(1, 199) = 4.52,$ <i>p</i> = 0.035	$\omega^2 = 0.022$
28	<i>M</i> = 3.97, <i>SD</i> = 0.70	<i>M</i> = 3.73, <i>SD</i> = 0.92	$F(1, 199) = 4.34,$ <i>p</i> = 0.039	$\omega^2 = 0.021$
29	<i>M</i> = 3.30, <i>SD</i> = 1.04	<i>M</i> = 3.22, <i>SD</i> = 1.05	$F(1, 199) = 0.27,$ <i>p</i> = 0.605	$\omega^2 = 0.001$
30	<i>M</i> = 2.46, <i>SD</i> = 0.85	<i>M</i> = 2.58, <i>SD</i> = 0.86	$F(1, 199) = 0.98,$ <i>p</i> = 0.323	$\omega^2 = 0.005$
31	<i>M</i> = 2.19, <i>SD</i> = 0.74	<i>M</i> = 2.31, <i>SD</i> = 0.77	$F(1, 199) = 1.18,$ <i>p</i> = 0.279	$\omega^2 = 0.006$
32	<i>M</i> = 2.68, <i>SD</i> = 1.05	<i>M</i> = 2.86, <i>SD</i> = 1.03	$F(1, 199) = 1.45,$ <i>p</i> = 0.230	$\omega^2 = 0.007$
33	<i>M</i> = 3.66, <i>SD</i> = 0.90	<i>M</i> = 3.69, <i>SD</i> = 0.75	$F(1, 199) = 0.07,$ <i>p</i> = 0.786	$\omega^2 = 0.000$

The transformation between Table 6.17 and 6.18 involved the grouping of items (based on commonness regarding organizational process characteristics) and averaging of



individual item scores (from individual questions 27 through 33) to generate the composite data presented within Table 6.17.

### 6.2.10 Statistically Significant Different Outcomes

The findings regarding the exhibiting of statistically significant different outcomes among the scaled items are given within the following table:

Table 6.19 – Synopsis of Statistically Significant Different Findings (Scale)

Scale	Survey Questions	Alabama	Mississippi	<i>p</i> -value	Effect Size
1	1 – 5	<i>M</i> = 3.31, <i>SD</i> = 1.00	<i>M</i> = 3.11, <i>SD</i> = 1.07	0.0031	$\omega^2 = 0.0077$
3	9-11	<i>M</i> = 3.90, <i>SD</i> = 0.62	<i>M</i> = 3.70, <i>SD</i> = 0.75	0.0006	$\omega^2 = 0.0177$
5	15 – 17	<i>M</i> = 3.23, <i>SD</i> = 2.90	<i>M</i> = 1.08, <i>SD</i> = 1.22	0.0006	$\omega^2 = 0.0180$
6	18 – 20	<i>M</i> = 3.66, <i>SD</i> = 0.79	<i>M</i> = 3.52, <i>SD</i> = 0.79	0.0434	$\omega^2 = 0.0051$

The findings regarding the exhibiting of statistically significant different outcomes among the individual survey questions are given within the following table:

Table 6.20 – Synopsis of Statistically Significant Different Findings (Questions)

Question	Alabama	Mississippi	ANOVA Values	Effect Size
2	<i>M</i> = 3.75, <i>SD</i> = 0.77	<i>M</i> = 3.49, <i>SD</i> = 0.90	<i>F</i> (1, 199) = 4.69, <i>p</i> = 0.032	$\omega^2 = 0.023$
3	<i>M</i> = 3.87, <i>SD</i> = 0.62	<i>M</i> = 3.67, <i>SD</i> = 0.79	<i>F</i> (1, 199) = 4.02, <i>p</i> = 0.046	$\omega^2 = 0.020$
4	<i>M</i> = 3.21, <i>SD</i> = 1.02	<i>M</i> = 2.90, <i>SD</i> = 1.16	<i>F</i> (1, 199) = 3.93, <i>p</i> = 0.049	$\omega^2 = 0.019$
9	<i>M</i> = 3.98, <i>SD</i> = 0.58	<i>M</i> = 3.77, <i>SD</i> = 0.64	<i>F</i> (1, 199) = 6.30, <i>p</i> = 0.013	$\omega^2 = 0.031$
11	<i>M</i> = 3.86, <i>SD</i> = 0.63	<i>M</i> = 3.63, <i>SD</i> = 0.83	<i>F</i> (1, 199) = 4.96, <i>p</i> = 0.027	$\omega^2 = 0.024$
15	<i>M</i> = 3.15, <i>SD</i> = 1.03	<i>M</i> = 2.80, <i>SD</i> = 1.22	<i>F</i> (1, 199) = 4.76, <i>p</i> = 0.030	$\omega^2 = 0.023$
16	<i>M</i> = 3.18, <i>SD</i> = 1.09	<i>M</i> = 2.85, <i>SD</i> = 1.21	<i>F</i> (1, 199) = 4.10, <i>p</i> = 0.044	$\omega^2 = 0.020$
27	<i>M</i> = 2.65, <i>SD</i> = 1.05	<i>M</i> = 2.98, <i>SD</i> = 1.08	<i>F</i> (1, 199) = 4.52, <i>p</i> = 0.035	$\omega^2 = 0.022$
28	<i>M</i> = 3.97, <i>SD</i> = 0.70	<i>M</i> = 3.73, <i>SD</i> = 0.92	<i>F</i> (1, 199) = 4.34, <i>p</i> = 0.039	$\omega^2 = 0.021$

### 6.2.11 Reflections and Analyses of the Hypothesis Testing Outcomes

The outcomes of this chapter should not be generalized for the whole of American policing within the United States because this research study was constrained solely to respondents within Alabama and Mississippi. Therefore, the outcomes of this chapter should be considered only from the perspective of the criminal justice domain representing Alabama and Mississippi respondents.

Regarding the scales, statistically significant outcomes were observed regarding the first, third, fifth, and sixth scales. Respectively, these scales represented the overall maturity framework; the second level of the maturity framework representing the planning, managing, and controlling of processes; the fourth level of the maturity framework representing analytical and quantitative aspects of the process environment; and the fifth level of the maturity framework representing an optimized process maturity environment. The outcomes of hypothesis testing revealed statistically significant outcomes regarding these scales.

Responses to the queries comprising these scales were obtained from respondents in the states of Alabama and Mississippi. Regardless of the state, managerial entities have the responsibility of crafting strategy that influences the long-term interests of the organization. Similarly, regardless of the state, non-managers, such as patrol officers and desk clerks, have responsibilities that are associated with the daily operations of the organization and the direct provision of policing services within a community. In such cases, managers address process improvement administratively via analytical methods whereas non-managers implement the actual processes operationally.

With respect to these differences in responsibilities and their relative perspectives, managers and non-managers possess different views of processes within the organization. Managers may view processes from a perspective that is used to adjust the performing of an organization toward betterment through time using a variety of methods, such as statistical analysis, benchmarking, and forecasting. Non-managers may view processes from a perspective that is much more operational and that affects the performing of policing duties directly, such as completing the check-in and check-out processes that may be associated with obtaining a patrol car at the beginning of a work shift and returning it after the work shift is finished. Non-management personnel may lack the skills necessary for analyzing processes mathematically whereas managers may consistently analyze processes mathematically for metrics purposes, such as examining characteristics of efficiency and effectiveness. Such differences of personnel perspectives, regardless of status as Alabama or Mississippi law enforcement personnel, may have impacted the responses submitted by respondents to the survey questions.

Regarding the individual questions, statistically significant responses were observed regarding survey questions 2, 3, 4, 9, 11, 15, 16, 27, and 28. The issues addressed within these questions involved process management, definition and specificity, the quantitative managing of processes, quantitative objectives that are associated with processes, metrics analysis of processes, process informality, and varying process management methods. Regardless of the state from which survey responses were submitted, either Alabama or Mississippi, law enforcement organizations possess both management and non-management personnel. Within the individual questions that showed a statistically significant outcome, four of the issues represent concepts that are of interest and great importance to managers. Specifically, these items are the quantitative managing of processes, quantitative objectives that are associated with processes, metrics analysis of processes, and varying process management methods. Regarding these issues, with respect to personnel in both Alabama and Mississippi, managers may have responded to the survey questions from an administrative viewpoint whereas non-managers may have submitted responses from an operational perspective. Such differences of personnel perspectives, regardless of status as Alabama or Mississippi law enforcement personnel, may have impacted the responses submitted by respondents to the survey questions.

Another factor that may have impacted respondent scoring involves the notion that some respondents may have confused organizational processes with organizational policies. Organizational policy serves as a guide for the organization, and may exist either in written or unwritten fashion. Processes are often derived from the policies of an organization. Thus, policy and process are different concepts. If confusion existed among respondents, then their score response may have been affected when completing the survey questionnaire. Thus, another possibility exists to explain the analytical outcomes reflected within the individual survey questions.

#### **6.2.12 Considerations of the Research Question**

The primary research question of this study is stated as: “Can the basic framework of the CMMi be adapted to define a managerial process improvement framework within the criminal justice domain?” Within this research question, the criminal justice domain represents only the polled environments of Alabama and Mississippi organizations. The

findings of the chapter should be considered only from the context of Alabama and Mississippi respondents, and not generalized for the remainder of the nation.

The findings of the scales and the findings of the individual questions must be considered with respect to this research question. Statistically significant outcomes were observed regarding the first, third, fifth, and sixth scales. These scales represented the overall maturity framework, the second level of maturity, the fourth level of maturity, and the fifth level of maturity. Statistically significant responses were shown regarding survey questions 2, 3, 4, 9, 11, 15, 16, 27, and 28. These questions investigated perceptions of process definition and specificity, the quantitative managing of processes, quantitative objectives that are associated with processes, metrics analysis of processes, and varying process management methods. Given these observations, insufficient evidence exists to show definitely and conclusively that the CMMi framework is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

### **6.3 DISCUSSION OF THE FINDINGS**

The preceding tables summarized the analyses results regarding the case of Alabama personnel versus Mississippi personnel. This section contains summaries of the findings for each set of scaled questions.

#### **6.3.1 Analysis of Scaled Questions 1 - 5**

The hypothesis of scaled items 1 through 5 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “organizational evidence of the process maturity model framework exists” between the compared groups. There was a statistically significant difference on the mean responses of the first scale between Alabama personnel ( $M = 3.31$ ,  $SD = 1.00$ ) versus Mississippi personnel ( $M = 3.11$ ,  $SD = 1.07$ ). The  $p$ -value from the ANOVA method was 0.0031. The value of the effect size,  $\omega^2$ , was 0.0077. Therefore, there was no statistically

significant difference regarding the perceptions of this scale between Alabama personnel versus Mississippi personnel.

### **6.3.2 Analysis of Scaled Questions 6 - 8**

The hypothesis of scaled items 6 through 8 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the first level of the process maturity framework exists” between the compared groups. There was no statistically significant difference on the mean responses of the second scale between Alabama personnel ( $M = 2.83$ ,  $SD = 1.09$ ) versus Mississippi personnel ( $M = 2.98$ ,  $SD = 1.04$ ). The  $p$ -value from the ANOVA method was 0.0920. The value of the effect size,  $\omega^2$ , was 0.0031. Therefore, there was no statistically significant difference regarding the perceptions of this scale between Alabama personnel versus Mississippi personnel.

### **6.3.3 Analysis of Scaled Questions 9 - 11**

The hypothesis of scaled items 9 through 11 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the second level of the process maturity framework exists” between the compared groups. There was a statistically significant difference on the mean responses of the third scale between Alabama personnel ( $M = 3.90$ ,  $SD = 0.62$ ) versus Mississippi personnel ( $M = 3.70$ ,  $SD = 0.75$ ). The  $p$ -value from the ANOVA method was 0.0006. The value of the effect size,  $\omega^2$ , was 0.0177. Therefore, there was a statistically significant difference regarding the perceptions of this scale between Alabama personnel versus Mississippi personnel.

### **6.3.4 Analysis of Scaled Questions 12 - 14**

The hypothesis of scaled items 12 through 14 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the third level of the process maturity framework exists” between the compared

groups. There was no statistically significant difference on the mean responses of the fourth scale between Alabama personnel ( $M = 3.79$ ,  $SD = 0.72$ ) versus Mississippi personnel ( $M = 3.67$ ,  $SD = 0.80$ ). The  $p$ -value from the ANOVA method was 0.0514. The value of the effect size,  $\omega^2$ , was 0.0046. Therefore, there was no statistically significant difference regarding the perceptions of this scale between Alabama personnel versus Mississippi personnel.

### **6.3.5 Analysis of Scaled Questions 15 - 17**

The hypothesis of scaled items 15 through 17 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the fourth level of the process maturity framework exists” between the compared groups. There was a statistically significant difference on the mean responses of the fifth scale between Alabama personnel ( $M = 3.23$ ,  $SD = 2.90$ ) versus Mississippi personnel ( $M = 1.08$ ,  $SD = 1.22$ ). The  $p$ -value from the ANOVA method was 0.0006. The value of the effect size,  $\omega^2$ , was 0.0180. Therefore, there was a statistically significant difference regarding the perceptions of this scale between Alabama personnel versus Mississippi personnel.

### **6.3.6 Analysis of Scaled Questions 18 - 20**

The hypothesis of scaled items 18 through 20 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of the fifth level of the process maturity framework exists” between the compared groups. There was a statistically significant difference on the mean responses of the sixth scale between Alabama personnel ( $M = 3.66$ ,  $SD = 0.79$ ) versus Mississippi personnel ( $M = 3.52$ ,  $SD = 0.79$ ). The  $p$ -value from the ANOVA method was 0.0434. The value of the effect size,  $\omega^2$ , was 0.0051. Therefore, there was a statistically significant difference regarding the perceptions of this scale between Alabama personnel versus Mississippi personnel.

### **6.3.7 Analysis of Scaled Questions 21 - 23**

The hypothesis of scaled items 21 through 23 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “evidence of process improvement exists among work settings” between the compared groups. There was no statistically significant difference on the mean responses of the seventh scale between Alabama personnel ( $M = 3.59$ ,  $SD = 0.93$ ) versus Mississippi personnel ( $M = 3.55$ ,  $SD = 0.93$ ). The  $p$ -value from the ANOVA method was 0.6394. The value of the effect size,  $\omega^2$ , was -0.0013. Therefore, there was no statistically significant difference regarding the perceptions of this scale between Alabama personnel versus Mississippi personnel.

### **6.3.8 Analysis of Scaled Questions 24 - 26**

The hypothesis of scaled items 24 through 26 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “Evidence of process organization exists among work settings” between the compared groups. There was no statistically significant difference on the mean responses of the eighth scale between Alabama personnel ( $M = 3.16$ ,  $SD = 1.03$ ) versus Mississippi personnel ( $M = 3.01$ ,  $SD = 1.07$ ). The  $p$ -value from the ANOVA method was 0.0817. The value of the effect size,  $\omega^2$ , was 0.0034. Therefore, there was no statistically significant difference regarding the perceptions of this scale between Alabama personnel versus Mississippi personnel.

### **6.3.9 Analysis of Scaled Questions 27 - 33**

The hypothesis of scaled items 27 through 33 of the survey questionnaire data collection instrument was stated as follows: There is no difference in the perception of “Evidence of process volatility exists among work settings” between the compared groups. There was no statistically significant difference on the mean responses of the ninth scale between Alabama personnel ( $M = 2.99$ ,  $SD = 1.10$ ) versus Mississippi personnel ( $M = 3.05$ ,  $SD = 1.05$ ). The  $p$ -value from the ANOVA method was 0.2611. The value of the effect size,  $\omega^2$ , was 0.0002. Therefore, there was no statistically significant difference



regarding the perceptions of this scale between Alabama personnel versus Mississippi personnel.

## **6.4 FINDINGS OF THE INDIVIDUAL QUESTIONS**

The preceding discussions summarized the analysis results regarding the case of scales involving managerial personnel versus non-managerial personnel perspectives. This section contains summaries of the findings for each survey question individually.

### **6.4.1 Analysis of Question 1**

Question 1 of the survey questionnaire data collection instrument was stated as follows: “agency processes may be defined as ad hoc, chaotic, or random.” There was no statistically significant difference on the mean responses of question 1 between Alabama entities ( $M = 2.46$ ,  $SD = 0.89$ ) versus Mississippi entities ( $M = 2.52$ ,  $SD = 1.03$ ),  $F(1, 199) = 0.20$ ,  $p = 0.659$ . The value of the effect size variable,  $\omega^2$ , was 0.001. Therefore, there was no statistically significant difference regarding the perceptions of question 1 between Alabama entities versus Mississippi entities.

### **6.4.2 Analysis of Question 2**

Question 2 of the survey questionnaire data collection instrument was stated as follows: “agency processes are managed.” There was a statistically significant difference on the mean responses of question 2 between Alabama entities ( $M = 3.75$ ,  $SD = 0.77$ ) versus Mississippi entities ( $M = 3.49$ ,  $SD = 0.90$ ),  $F(1, 199) = 4.69$ ,  $p = 0.032$ . The value of the effect size variable,  $\omega^2$ , was 0.023. Therefore, there was a statistically significant difference regarding the perceptions of question 2 between Alabama entities versus Mississippi entities.

### 6.4.3 Analysis of Question 3

Question 3 of the survey questionnaire data collection instrument was stated as follows: “agency processes are defined/specific.” There was a statistically significant difference on the mean responses of question 3 between Alabama entities ( $M = 3.87$ ,  $SD = 0.62$ ) versus Mississippi entities ( $M = 3.67$ ,  $SD = 0.79$ ),  $F(1, 199) = 4.02$ ,  $p = 0.046$ . The value of the effect size variable,  $\omega^2$ , was 0.020. Therefore, there was a statistically significant difference regarding the perceptions of question 3 between Alabama entities versus Mississippi entities.

### 6.4.4 Analysis of Question 4

Question 4 of the survey questionnaire data collection instrument was stated as follows: “agency processes are quantitatively managed.” There was a statistically significant difference on the mean responses of question 4 between Alabama entities ( $M = 3.21$ ,  $SD = 1.02$ ) versus Mississippi entities ( $M = 2.90$ ,  $SD = 1.16$ ),  $F(1, 199) = 3.93$ ,  $p = 0.049$  but The value of the effect size variable,  $\omega^2$ , was 0.019. Therefore, there was a statistically significant difference regarding the perceptions of question 4 between Alabama entities versus Mississippi entities.

### 6.4.5 Analysis of Question 5

Question 5 of the survey questionnaire data collection instrument was stated as follows: “agency processes are optimized.” There was no statistically significant difference on the mean responses of question 5 between Alabama entities ( $M = 3.24$ ,  $SD = 1.00$ ) versus Mississippi entities ( $M = 2.96$ ,  $SD = 1.04$ ),  $F(1, 199) = 3.61$ ,  $p = 0.059$ . The value of the effect size variable,  $\omega^2$ , was 0.018. Therefore, there was no statistically significant difference regarding the perceptions of question 5 between Alabama entities versus Mississippi entities.

#### **6.4.6 Analysis of Question 6**

Question 6 of the survey questionnaire data collection instrument was stated as follows: “agency processes are unpredictable.” There was no statistically significant difference on the mean responses of question 6 between Alabama entities ( $M = 2.43$ ,  $SD = 0.92$ ) versus Mississippi entities ( $M = 2.67$ ,  $SD = 0.98$ ),  $F(1, 201) = 3.17$ ,  $p = 0.077$ . The value of the effect size variable,  $\omega^2$ , was 0.016. Therefore, there was no statistically significant difference regarding the perceptions of question 6 between Alabama entities versus Mississippi entities.

#### **6.4.7 Analysis of Question 7**

Question 7 of the survey questionnaire data collection instrument was stated as follows: “agency processes are reactive.” There was no statistically significant difference on the mean responses of question 7 between Alabama entities ( $M = 3.54$ ,  $SD = 1.00$ ) versus Mississippi entities ( $M = 3.52$ ,  $SD = 0.98$ ),  $F(1, 201) = 0.03$ ,  $p = 0.871$ . The value of the effect size variable,  $\omega^2$ , was 0.000. Therefore, there was no statistically significant difference regarding the perceptions of question 7 between Alabama entities versus Mississippi entities.

#### **6.4.8 Analysis of Question 8**

Question 8 of the survey questionnaire data collection instrument was stated as follows: “agency processes are uncoordinated.” There was no statistically significant difference on the mean responses of question 8 between Alabama entities ( $M = 2.51$ ,  $SD = 0.99$ ) versus Mississippi entities ( $M = 2.74$ ,  $SD = 0.97$ ),  $F(1, 199) = 2.71$ ,  $p = 0.101$ . The value of the effect size variable,  $\omega^2$ , was 0.013. Therefore, there was no statistically significant difference regarding the perceptions of question 8 between Alabama entities versus Mississippi entities.

#### **6.4.9 Analysis of Question 9**

Question 9 of the survey questionnaire data collection instrument was stated as follows: “agency processes are planned.” There was a statistically significant difference on the mean responses of question 9 between Alabama entities ( $M = 3.98$ ,  $SD = 0.58$ ) versus Mississippi entities ( $M = 3.77$ ,  $SD = 0.64$ ),  $F(1, 199) = 6.30$ ,  $p = 0.013$ . The value of the effect size variable,  $\omega^2$ , was 0.031. Therefore, there was a statistically significant difference regarding the perceptions of question 9 between Alabama entities versus Mississippi entities.

#### **6.4.10 Analysis of Question 10**

Question 10 of the survey questionnaire data collection instrument was stated as follows: “agency processes are managed.” There was no statistically significant difference on the mean responses of question 10 between Alabama entities ( $M = 3.85$ ,  $SD = 0.66$ ) versus Mississippi entities ( $M = 3.72$ ,  $SD = 0.78$ ),  $F(1, 199) = 1.73$ ,  $p = 0.190$ . The value of the effect size variable,  $\omega^2$ , was 0.009. Therefore, there was no statistically significant difference regarding the perceptions of question 10 between Alabama entities versus Mississippi entities.

#### **6.4.11 Analysis of Question 11**

Question 11 of the survey questionnaire data collection instrument was stated as follows: “agency processes are controlled.” There was a statistically significant difference on the mean responses of question 11 between Alabama entities ( $M = 3.86$ ,  $SD = 0.63$ ) versus Mississippi entities ( $M = 3.63$ ,  $SD = 0.83$ ),  $F(1, 199) = 4.96$ ,  $p = 0.027$ . The value of the effect size variable,  $\omega^2$ , was 0.024. Therefore, there was a statistically significant difference regarding the perceptions of question 11 between Alabama entities versus Mississippi entities.

#### **6.4.12 Analysis of Question 12**

Question 12 of the survey questionnaire data collection instrument was stated as follows: “agency processes are defined.” There was no statistically significant difference on the mean responses of question 12 between Alabama entities ( $M = 3.73$ ,  $SD = 0.78$ ) versus Mississippi entities ( $M = 3.54$ ,  $SD = 0.90$ ),  $F(1, 199) = 2.34$ ,  $p = 0.128$ . The value of the effect size variable,  $\omega^2$ , was 0.012. Therefore, there was no statistically significant difference regarding the perceptions of question 12 between Alabama entities versus Mississippi entities.

#### **6.4.13 Analysis of Question 13**

Question 13 of the survey questionnaire data collection instrument was stated as follows: “agency processes are consistent.” There was no statistically significant difference on the mean responses of question 13 between Alabama entities ( $M = 3.78$ ,  $SD = 0.70$ ) versus Mississippi entities ( $M = 3.63$ ,  $SD = 0.78$ ),  $F(1, 199) = 2.12$ ,  $p = 0.147$ . The value of the effect size variable,  $\omega^2$ , was 0.011. Therefore, there was no statistically significant difference regarding the perceptions of question 13 between Alabama entities versus Mississippi entities.

#### **6.4.14 Analysis of Question 14**

Question 14 of the survey questionnaire data collection instrument was stated as follows: “agency processes are followed.” There was no statistically significant difference on the mean responses of question 14 between Alabama entities ( $M = 3.86$ ,  $SD = 0.68$ ) versus Mississippi entities ( $M = 3.83$ ,  $SD = 0.70$ ),  $F(1, 199) = 0.10$ ,  $p = 0.753$ . The value of the effect size variable,  $\omega^2$ , was 0.000. Therefore, there was no statistically significant difference regarding the perceptions of question 14 between Alabama entities versus Mississippi entities.

#### **6.4.15 Analysis of Question 15**

Question 15 of the survey questionnaire data collection instrument was stated as follows: “agency processes involve quantitative objectives.” There was a statistically significant difference on the mean responses of question 15 between Alabama entities ( $M = 3.15$ ,  $SD = 1.03$ ) versus Mississippi entities ( $M = 2.80$ ,  $SD = 1.22$ ),  $F(1, 199) = 4.76$ ,  $p = 0.030$ . The value of the effect size variable,  $\omega^2$ , was 0.023. Therefore, there was a statistically significant difference regarding the perceptions of question 6 between Alabama entities versus Mississippi entities.

#### **6.4.16 Analysis of Question 16**

Question 16 of the survey questionnaire data collection instrument was stated as follows: “agency processes involve metrics analysis.” There was a statistically significant difference on the mean responses of question 16 between Alabama entities ( $M = 3.18$ ,  $SD = 1.09$ ) versus Mississippi entities ( $M = 2.85$ ,  $SD = 1.21$ ),  $F(1, 199) = 4.10$ ,  $p = 0.044$ . The value of the effect size variable,  $\omega^2$ , was 0.020. Therefore, there was a statistically significant difference regarding the perceptions of question 16 between Alabama entities versus Mississippi entities.

#### **6.4.17 Analysis of Question 17**

Question 17 of the survey questionnaire data collection instrument was stated as follows: “agency processes involve statistical analysis.” There was no statistically significant difference on the mean responses of question 17 between Alabama entities ( $M = 3.35$ ,  $SD = 1.11$ ) versus Mississippi entities ( $M = 3.05$ ,  $SD = 1.22$ ),  $F(1, 199) = 3.28$ ,  $p = 0.072$ . The value of the effect size variable,  $\omega^2$ , was 0.016. Therefore, there was no statistically significant difference regarding the perceptions of question 17 between Alabama entities versus Mississippi entities.

#### **6.4.18 Analysis of Question 18**

Question 18 of the survey questionnaire data collection instrument was stated as follows: “agency processes are improved incrementally.” There was no statistically significant difference on the mean responses of question 18 between Alabama entities ( $M = 3.56$ ,  $SD = 0.85$ ) versus Mississippi entities ( $M = 3.49$ ,  $SD = 0.81$ ),  $F(1, 199) = 0.29$ ,  $p = 0.590$ . The value of the effect size variable,  $\omega^2$ , was 0.001. Therefore, there was no statistically significant difference regarding the perceptions of question 18 between Alabama entities versus Mississippi entities.

#### **6.4.19 Analysis of Question 19**

Question 19 of the survey questionnaire data collection instrument was stated as follows: “agency processes are efficient.” There was no statistically significant difference on the mean responses of question 19 between Alabama entities ( $M = 3.52$ ,  $SD = 0.80$ ) versus Mississippi entities ( $M = 3.35$ ,  $SD = 0.87$ ),  $F(1, 199) = 2.06$ ,  $p = 0.152$ . The value of the effect size variable,  $\omega^2$ , was 0.010. Therefore, there was no statistically significant difference regarding the perceptions of question 19 between Alabama entities versus Mississippi entities.

#### **6.4.20 Analysis of Question 20**

Question 20 of the survey questionnaire data collection instrument was stated as follows: “agency processes are effective.” There was no statistically significant difference on the mean responses of question 20 between Alabama entities ( $M = 3.89$ ,  $SD = 0.66$ ) versus Mississippi entities ( $M = 3.73$ ,  $SD = 0.65$ ),  $F(1, 199) = 3.00$ ,  $p = 0.085$ . The value of the effect size variable,  $\omega^2$ , was 0.015. Therefore, there was no statistically significant difference regarding the perceptions of question 20 between Alabama entities versus Mississippi entities.

#### **6.4.21 Analysis of Question 21**

Question 21 of the survey questionnaire data collection instrument was stated as follows: “process maturity is not addressed by our current process improvement initiatives.” There was no statistically significant difference on the mean responses of question 21 between Alabama entities ( $M = 3.69$ ,  $SD = 0.83$ ) versus Mississippi entities ( $M = 3.73$ ,  $SD = 0.81$ ),  $F(1, 199) = 0.10$ ,  $p = 0.756$ . The value of the effect size variable,  $\omega^2$ , was 0.000. Therefore, there was no statistically significant difference regarding the perceptions of question 21 between Alabama entities versus Mississippi entities.

#### **6.4.22 Analysis of Question 22**

Question 22 of the survey questionnaire data collection instrument was stated as follows: “process improvement is advocated within my agency.” There was no statistically significant difference on the mean responses of question 22 between Alabama entities ( $M = 3.81$ ,  $SD = 0.76$ ) versus Mississippi entities ( $M = 3.68$ ,  $SD = 0.85$ ),  $F(1, 199) = 1.28$ ,  $p = 0.260$ . The value of the effect size variable,  $\omega^2$ , was 0.006. Therefore, there was no statistically significant difference regarding the perceptions of question 22 between Alabama entities versus Mississippi entities.

#### **6.4.23 Analysis of Question 23**

Question 23 of the survey questionnaire data collection instrument was stated as follows: “process initiatives are tracked to examine process performance.” There was no statistically significant difference on the mean responses of question 23 between Alabama entities ( $M = 3.27$ ,  $SD = 1.09$ ) versus Mississippi entities ( $M = 3.23$ ,  $SD = 1.04$ ),  $F(1, 199) = 0.04$ ,  $p = 0.835$ . The value of the effect size variable,  $\omega^2$ , was 0.000. Therefore, there was no statistically significant difference regarding the perceptions of question 24 between Alabama entities versus Mississippi entities.



#### **6.4.24 Analysis of Question 24**

Question 24 of the survey questionnaire data collection instrument was stated as follows: “grouping of processes, according to maturity level, would improve the outcomes of our processes.” There was no statistically significant difference on the mean responses of question 24 between Alabama entities ( $M = 3.84$ ,  $SD = 0.70$ ) versus Mississippi entities ( $M = 3.75$ ,  $SD = 0.81$ ),  $F(1, 199) = 0.68$ ,  $p = 0.411$ . The value of the effect size variable,  $\omega^2$ , was 0.003. Therefore, there was no statistically significant difference regarding the perceptions of question 24 between Alabama entities versus Mississippi entities.

#### **6.4.25 Analysis of Question 25**

Question 25 of the survey questionnaire data collection instrument was stated as follows: “categorical process grouping is advocated within my agency.” There was no statistically significant difference on the mean responses of question 25 between Alabama entities ( $M = 3.00$ ,  $SD = 1.05$ ) versus Mississippi entities ( $M = 2.80$ ,  $SD = 1.05$ ),  $F(1, 199) = 1.72$ ,  $p = 0.192$ . The value of the effect size variable,  $\omega^2$ , was 0.009. Therefore, there was no statistically significant difference regarding the perceptions of question 25 between Alabama entities versus Mississippi entities.

#### **6.4.26 Analysis of Question 26**

Question 26 of the survey questionnaire data collection instrument was stated as follows: “process maturity is a contributor to successful process outputs within my agency.” There was no statistically significant difference on the mean responses of question 26 between Alabama entities ( $M = 2.65$ ,  $SD = 0.92$ ) versus Mississippi entities ( $M = 2.48$ ,  $SD = 0.91$ ),  $F(1, 199) = 1.63$ ,  $p = 0.203$ . The value of the effect size variable,  $\omega^2$ , was 0.008. Therefore, there was no statistically significant difference regarding the perceptions of question 26 between Alabama entities versus Mississippi entities.

#### **6.4.27 Analysis of Question 27**

Question 27 of the survey questionnaire data collection instrument was stated as follows: “processes are informal within my agency.” There was a statistically significant difference on the mean responses of question 27 between Alabama entities ( $M = 2.65$ ,  $SD = 1.05$ ) versus Mississippi entities ( $M = 2.98$ ,  $SD = 1.08$ ),  $F(1, 199) = 4.52$ ,  $p = 0.035$ . The value of the effect size variable,  $\omega^2$ , was 0.022. Therefore, there was a statistically significant difference regarding the perceptions of question 27 between Alabama entities versus Mississippi entities.

#### **6.4.28 Analysis of Question 28**

Question 28 of the survey questionnaire data collection instrument was stated as follows: “agency policies influence processes.” There was a statistically significant difference on the mean responses of question 28 between Alabama entities ( $M = 3.97$ ,  $SD = 0.70$ ) versus Mississippi entities ( $M = 3.73$ ,  $SD = 0.92$ ),  $F(1, 199) = 4.34$ ,  $p = 0.039$ . The value of the effect size variable,  $\omega^2$ , was 0.021. Therefore, there was a statistically significant difference regarding the perceptions of question 28 between Alabama entities versus Mississippi entities.

#### **6.4.29 Analysis of Question 29**

Question 29 of the survey questionnaire data collection instrument was stated as follows: “methods of managing processes vary within my agency.” There was no statistically significant difference on the mean responses of question 29 between Alabama entities ( $M = 3.30$ ,  $SD = 1.04$ ) versus Mississippi entities ( $M = 3.22$ ,  $SD = 1.05$ ),  $F(1, 199) = 0.27$ ,  $p = 0.605$ . The value of the effect size variable,  $\omega^2$ , was 0.001. Therefore, there was no statistically significant difference regarding the perceptions of question 29 between Alabama entities versus Mississippi entities.

#### **6.4.30 Analysis of Question 30**

Question 30 of the survey questionnaire data collection instrument was stated as follows: “agency processes are inefficient.” There was no statistically significant difference on the mean responses of question 30 between Alabama entities ( $M = 2.46$ ,  $SD = 0.85$ ) versus Mississippi entities ( $M = 2.58$ ,  $SD = 0.86$ ),  $F(1, 199) = 0.98$ ,  $p = 0.323$ . The value of the effect size variable,  $\omega^2$ , was 0.005. Therefore, there was no statistically significant difference regarding the perceptions of question 30 between Alabama entities versus Mississippi entities.

#### **6.4.31 Analysis of Question 31**

Question 31 of the survey questionnaire data collection instrument was stated as follows: “agency processes are ineffective.” There was no statistically significant difference on the mean responses of question 31 between Alabama entities ( $M = 2.19$ ,  $SD = 0.74$ ) versus Mississippi entities ( $M = 2.31$ ,  $SD = 0.77$ ),  $F(1, 199) = 1.18$ ,  $p = 0.279$ . The value of the effect size variable,  $\omega^2$ , was 0.006. Therefore, there was no statistically significant difference regarding the perceptions of question 31 between Alabama entities versus Mississippi entities.

#### **6.4.32 Analysis of Question 32**

Question 32 of the survey questionnaire data collection instrument was stated as follows: “agency processes change frequently.” There was no statistically significant difference on the mean responses of question 32 between Alabama entities ( $M = 2.68$ ,  $SD = 1.05$ ) versus Mississippi entities ( $M = 2.86$ ,  $SD = 1.03$ ),  $F(1, 199) = 1.45$ ,  $p = 0.230$ . The value of the effect size variable,  $\omega^2$ , was 0.007. Therefore, there was no statistically significant difference regarding the perceptions of question 32 between Alabama entities versus Mississippi entities.

### 6.4.33 Analysis of Question 33

Question 33 of the survey questionnaire data collection instrument was stated as follows: “my agency advocates process training.” There was no statistically significant difference on the mean responses of question 33 between Alabama entities ( $M = 3.66$ ,  $SD = 0.90$ ) versus Mississippi entities ( $M = 3.69$ ,  $SD = 0.75$ ),  $F(1, 199) = 0.07$ ,  $p = 0.786$ . The value of the effect size variable,  $\omega^2$ , was 0.000. Therefore, there was no statistically significant difference regarding the perceptions of question 33 between Alabama entities versus Mississippi entities.

## 6.5 CHAPTER SUMMARY

This chapter implemented the ANOVA method to investigate the stratification involving the perceptions of Alabama personnel versus the perceptions of Mississippi personnel that were obtained from the survey questionnaire data collection instrument. A total of four statistically significant different findings were exhibited regarding the scaled survey questions.

The following table shows the survey scaled hypothesis statements regarding the statistically significant different findings.

Table 6.21 – Survey Scales Involving Statistically Significant Different Findings

Scaled Items	Scale Null Hypothesis Statement
1 – 5	There is no difference between Alabama versus Mississippi personnel in the perception of “organizational evidence of the process maturity model framework exists.”
9 - 11	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the second level of the process maturity framework exists.”

15 – 17	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the fourth level of the process maturity framework exists.”
18 – 20	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the fifth level of the process maturity framework exists.”

## **CHAPTER 7**

### **RESEARCH SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS**

#### **7.1 INTRODUCTION**

This chapter presents a cumulative perspective and summary of this research study. It discusses conclusions that were derived from the hypothesis testing and ancillary data processing that were discussed within the preceding chapters. Recommendations are offered regarding the drawn conclusions.

#### **7.2 SUMMARY OF THE DOMAIN**

This research endeavor represented a multi-disciplinary study involving literature representing the domains of criminal justice, police science, project management, quality management, software engineering, management, public administration, and business administration. These domains represent considerations of process improvement methods that may influence the administrative process environments of law enforcement organizations and other criminal justice entities. The process improvement method involved in this research represents a process maturity framework in which the maturity of organizational processes is improved progressively through time.

#### **7.3 SUMMARY OF THE LITERATURE**

The literature review discussed the traditional approaches taken to facilitate process improvement initiatives among a variety of organizations representing both for-profit and non-profit entities. These traditional approaches represented an array of management philosophies and organizational improvement paradigms within the context of organizational process improvement. These approaches included TQM, BPI, BPR, BPM, benchmarking, six-sigma, regulation (corporate or government), ISO standards, and Compstat. The literature review examined the salient characteristics of each of

these approaches, and discussed the use of these approaches within the contexts of various criminal justice organizations ranging from law enforcement organizations to uses within the legal system.

The review of the literature revealed the absence of a maturity model within the context of the justice system regarding administrative processes. The literature review showed that the management philosophies and paradigms of TQM, BPI, BPR, BPM, benchmarking, six-sigma, regulation (corporate or government), ISO standards, and Compstat do not approach organizational process improvement from the perspective of process maturity. However, within the criminal justice domain, the literature showed no management philosophy or model that progressively matures processes through time via the use of a systematic, sequential framework that facilitates increases of process maturity within the organization. This gap in the existing literature served as a motivational basis for researching process maturity modeling within the context of the justice system and police science.

The literature review revealed a variety of derivative process improvement maturity model frameworks among domains that were unrelated to policing and the justice system. Specifically, the literature contained discussions regarding derivative frameworks in the areas of human resources, organizational security, quality management, and the software domain.

Within the traditional management domain, the literature showed the presence of the CMMi as method of improving the maturity of organizational processes through time. Such CMMi improvements are generated through the incorporation of a five-stage model that sequentially and incrementally facilitates organizational process improvement. Given the absence of such a model within the literature of the criminal justice domain despite its existence within the literature of other disciplines, this research endeavor conjectured a derivative CMMi model, denoted as the CJMM, within the context of the criminal justice domain.

The literature regarding process maturity frameworks was synthesized to generate a conjectured Criminal Justice Maturity Model (CJMM). This proposed CJMM incorporates the foundational approach of progressively maturing organizational via a maturity model

framework. Analogous with the derivative maturity model frameworks discovered within the literature (e.g., human resources, security management, etc.), the proposed CJMM incorporates a five-stage framework that reflects each of the individual process improvement maturity stages that comprise the CMMi.

## 7.4 SUMMARY OF THE RESEARCH STUDY

### 7.4.1 Summary of the Research Question and Hypotheses Statements

The primary research question of this research is offered as follows: Can the basic framework of the CMMi be adapted to define a managerial process improvement maturity framework within the criminal justice domain? This primary research question was investigated via the use of a Likert-scale survey questionnaire data collection instrument. Additionally, the criminal justice domain referenced within the research question was limited only to Alabama and Mississippi entities. Therefore, with respect to the research question, the findings, conclusions, and recommendations of this study should not be generalized for the whole of American policing within the United States.

The hypotheses associated with the cumulative maturity model framework are given within the following table:

Table 7.1 – Basic CMMi Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “organizational evidence of the process maturity model framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “organizational evidence of the process maturity model framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “organizational evidence of the process maturity model framework exists.”	Alabama vs. Mississippi



The hypotheses associated with the first level of the maturity model are given within the following table:

Table 7.2 - First Level Null Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the first level of the process maturity framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the first level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the first level of the process maturity framework exists.”	Alabama vs. Mississippi

The hypotheses associated with the second level of the maturity model are given within the following table:

Table 7.3 - Second Level Null Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the second level of the process maturity framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the second level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the second level of the process maturity framework exists.”	Alabama vs. Mississippi

The hypotheses associated with the third level of the maturity model are given within the following table:

Table 7.4 - Third Level Null Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the third level of the process maturity framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the third level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the third level of the process maturity framework exists.”	Alabama vs. Mississippi

The hypotheses associated with the fourth level of the maturity model are given within the following table:

Table 7.5 – Fourth Level Null Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the fourth level of the process maturity framework exists.”	Managers vs. Non- Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the fourth level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the fourth level of the process maturity framework exists.”	Alabama vs. Mississippi

The hypotheses associated with the fifth level of the maturity model are given within the following table:

Table 7.6 – Fifth Level Null Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of the fifth level of the process maturity framework exists.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of the fifth level of the process maturity framework exists.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of the fifth level of the process maturity framework exists.”	Alabama vs. Mississippi

The hypotheses associated with the attributes of work environments are given within the following table:

Table 7.7 – Work Setting Null Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of process improvement exists among work settings.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of process improvement exists among work settings.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of process improvement exists among work settings.”	Alabama vs. Mississippi

The hypotheses associated with the attributes of process organization are given within the following table:

Table 7.8 – Process Organization Hypothesis Statements

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of process organization exists among work settings.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of process organization exists among work settings.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of process organization exists among work settings.”	Alabama vs. Mississippi

The hypotheses associated with the attributes of process volatility are given within the following table:

Table 7.9 – Process Volatility Hypothesis Statement

Null	Statement	Grouping
H <sub>0</sub> :	There is no difference between managers versus non-managers in the perception of “evidence of process volatility exists among work settings.”	Managers vs. Non-Managers
H <sub>0</sub> :	There is no difference between urban versus rural personnel in the perception of “evidence of process volatility exists among work settings.”	Urban vs. Rural
H <sub>0</sub> :	There is no difference between Alabama versus Mississippi personnel in the perception of “evidence of process volatility exists among work settings.”	Alabama vs. Mississippi

### **7.4.2 Summary of the Variables**

Three variable perspectives were used within this research study: job type involving management versus non-management personnel, organizational status involving urban versus rural entities, and geography representing Alabama versus Mississippi entities.

The job type variable was linked between police organizations and the CMMi through considerations of structured managerial decisions involving human resources and personnel activities, such as shift supervisors assigning work tasks to subordinate police officers. Structured decisions are rendered by managerial entities within police organizations (Doss, et al., 2011:11). Structured decision processes are within the scope of the CMMi decision process analysis domains (Ahern, et al., 2004:138). Thus, a linkage is demonstrated involving managerial decisions among policing endeavors and the CMMi.

The organizational type variable was linked between police organizations and the CMMi through considerations of administrative processes, such as acquisitions processes that are necessary for obtaining resources within the police organization. Both urban and rural organizations must acquire resources organizationally. Among police organizations, acquisitions may involve contemplating leasing versus purchasing resources (Doss, et al., 2014:461). Table 2.3, given within Chapter 2, delineates an acquisitions variant of the CMMi. With respect to the CMMi framework, acquisitions processes are representative of the obtaining of services and products within an organization (Mutafelija & Stromberg, 2009:86). Thus, a linkage is demonstrated involving common administrative processes, such as acquisitions, between police organizations and the CMMi.

The geography variable was linked between police organizations and the CMMi through considerations of policing activities that cross state lines, such as activities involving manhunts and prisoner extradition. The extraditing of prisoners represents a process involving communication between the exchanging organizations (Hufnagel, et al., 2012:154). During 2014, a prisoner extradition occurred from Mississippi to Alabama regarding murder charges (Mitchell, 2014:1). The crime occurred in Alabama, but the arrest and initial confinement occurred in Mississippi after the perpetrator crossed the

state line (Mitchell, 2014:1). Between law enforcement organizations, communication processes facilitate interactions with peer entities when performing operations involving “missing person” searches or manhunts (Doss, et al., 2015:11). The CMMi framework accommodates the developing of communications processes for communicating between organizations (Greiner, 2007:1). Facilitating this extradition necessitated interaction and communication between the different Alabama and Mississippi law enforcement organizations across the state line. Thus, a linkage is demonstrated involving communication between the Alabama and Mississippi law enforcement organizations with respect to geography and the CMMi.

The results of this study, involving the use of these three variables, failed to show conclusively the adaptability of the CMMi within the context of the examined criminal justice domain that consisted of only polled environments in Alabama and Mississippi.

#### **7.4.3 Summary of the Findings**

The two-tailed ANOVA method was used to perform hypothesis testing regarding the collected data. The stratification of survey responses involved the perceptions of management versus non-management personnel, urban versus rural personnel, and Alabama versus Mississippi personnel.

Regarding the management versus non-management personnel groupings, a total of seven statistically significant differences resulted from the testing of the scaled questions. Statistically significant outcomes were exhibited regarding the perceptions of management versus non-management personnel associated with scaled questions 1 through 5, scaled questions 6 through 8, scaled questions 15 through 17, scaled questions 18 through 20, scaled questions 21 through 23, scaled questions 24 through 26, and scaled questions 27 through 33.

Regarding the urban versus rural personnel groupings, a total of one statistically significant difference resulted from the testing of the scaled questions. This statistically significant outcome was associated with question scale 15 through 17.

Regarding the Alabama versus Mississippi personnel groupings, a total of four statistically significant differences resulted from the testing of the scaled questions. Statistically significant outcomes were exhibited regarding the perceptions of Alabama versus Mississippi personnel associated with scaled questions 1 through 5, scaled questions 9 through 11, scaled questions 15 through 17, and scaled questions 18 through 20.

This research study was constrained only to the states of Alabama and Mississippi. Therefore, any generalization of these findings for the entirety of the United States is inappropriate. Regardless of the grouping, managers versus non-managers, urban versus rural, or Alabama versus Mississippi, the findings did not show definitively and conclusively the complete adaptability of the CMMi within the context of the justice domain encompassing Alabama and Mississippi. Thus, these outcomes should be considered only from the perspective of the criminal justice domain encompassing Alabama and Mississippi entities, and not generalized for the remainder of the nation.

## **7.5 CONCLUSIONS: MANAGEMENT VS. NON-MANAGEMENT**

### **7.5.1 Conclusions of Scaled Questions 1 – 5**

Regarding scaled items 1 through 5 of the survey questionnaire, involving the maturity model framework, it is concluded that a statistically significant difference exists between the perceptions of managers versus non-managers regarding the notion that “organizational evidence of the process maturity model framework exists.” Regarding the maturity framework hypothesis, it appears that perceptions regarding “organizational evidence of the process maturity model framework exists” are different between managers versus non-managers. Given the mean analysis delineated within chapter 3, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Thus, it is concluded that few characteristics, if any, of the overall maturity model are perceived among the polled environments in Alabama and Mississippi.

This conclusion is unsurprising. Approximately 0.49% of the respondents reported that process maturity modeling existed as a current improvement initiative within their respective work settings. Approximately 0.49% of the respondents also reported that process maturity modeling existed as a previous improvement initiative within their respective work settings. The literature review showed that although process maturity has been examined within the context of the justice domain, no solitary process improvement model framework exists, such as a derivative of the CMMi, within the context of law enforcement entities. Therefore, the conclusion is commensurate with the notion that no such model exists to support process improvement, from the perspective of incremental process maturity, within the context of law enforcement entities.

### **7.5.2 Conclusions of Scaled Questions 6 – 8**

Regarding scaled items 6 through 8 of the survey questionnaire, involving the first level of the maturity framework, it is concluded that a statistically significant difference exists between the perceptions of managers versus non-managers regarding the notion that “evidence of the first level of the process maturity framework exists.” The first level of maturity represents processes that are ad hoc and random. Regarding the hypothesis statement, it appears that perceptions regarding “organizational evidence of the first level of the process maturity framework exists” are different between managers versus non-managers. Given the mean analysis of chapter 3, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Therefore, it is concluded that attributes of the first level are not perceived among the polled work settings encompassing Alabama and Mississippi.

This conclusion is commensurate with discussions presented within the literature. Various processes are often static among individual law enforcement organizations. For instance, an example of such known and repeatable processes include processes for ordering materials and supplies within the law enforcement organization (Doss, et al., 2011:72). Other examples of static processes include personnel evaluation and personnel hiring (Cronkhite, 2013:177). Such processes are expressed within organizational policy thereby establishing a specific method of accomplishing a task (Page, 2002:1). Given these notions, processes may be delineated expressly whereby



an adherence to a specific method of accomplishing something occurs within the organization. Thus, process randomness is diminished within such contexts.

### **7.5.3 Conclusions of Scaled Questions 9 – 11**

Regarding scaled items 9 through 11 of the survey questionnaire, involving the second level of the maturity framework, it is concluded that no statistically significant difference exists between the perceptions of managers versus non-managers regarding the notion that “evidence of the second level of the process maturity framework exists.” The second level of maturity represents managed processes. Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the second level of the process maturity framework exists” are not different between managers versus non-managers. Given the mean analysis of chapter 3, management personnel and non-management personnel exhibited direction toward agreement. Thus, it is concluded that some characteristics of the second level are perceived among the polled environments in Alabama and Mississippi.

Law enforcement organizations generally have policies that govern their operations and activities. However, such policies provide guidance regarding personnel behaviors and discretion regarding the performance of duties. For instance, an organizational policy may accommodate the expectations associated with service calls, fulfilling organizational mission, and the use of discretion (Cole, et al., 2013:206). Among law enforcement organizations, policies may exist as expressions of purpose and philosophy instead of representing operational dictates (Cordner & Scarborough, 2010:127). Given these notions, respondents within this study may be subject to policies that influence processes liberally. As a result, respondents may perceive that some amount of formative management exists among processes organizationally among polled environments in Alabama and Mississippi.

### **7.5.4 Conclusions of Scaled Questions 12 – 14**

Regarding scaled items 12 through 14 of the survey questionnaire, involving the third level of the maturity framework, it is concluded that no statistically significant difference

exists between the perceptions of managers versus non-managers regarding the notion that “evidence of the third level of the process maturity framework exists.” The third level of maturity represents understandable and documented processes. Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the third level of the process maturity framework exists” are not different between managers versus non-managers. Given the mean analysis of chapter 3, management personnel and non-management personnel exhibited direction toward agreement. Thus, it is concluded that some characteristics of the third level are perceived among the polled environments in Alabama and Mississippi.

This conclusion may be considered from the context of organizational policy. Each law enforcement organization is unique; none are alike. Thus, the processes associated with any specific law enforcement organization may be inapplicable for a different organization. The respective policies of law enforcement organizations uniquely affect their processes (Hicks, 2007:4). Thus, differing amounts of documentation may exist regarding organizational processes among law enforcement entities. Policies express the purpose and philosophy of an organization instead of dictating operations (Cordner & Scarborough, 2010:127). Personnel may have a good understanding of organizational expectations, but may have a lack of knowledge regarding specific processes.

#### **7.5.5 Conclusions of Scaled Questions 15 – 17**

Regarding scaled items 15 through 17 of the survey questionnaire, involving the fourth level of the maturity framework, it is concluded that a statistically significant difference exists between the perceptions of managers versus non-managers regarding the notion that “evidence of the fourth level of the process maturity framework exists.” The fourth maturity level represents quantitatively managed processes. Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the fourth level of the process maturity framework exists” are different between managers versus non-managers. Given the mean analysis of chapter 3, management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing) and non-management personnel exhibited direction toward disagreement. Therefore, it is concluded that the attributes of the fourth level are not perceived among the polled work settings in Alabama and Mississippi.

Various improvement paradigms incorporate strong levels of quantitative management whereas others emphasize less the use of quantitative management. Within this study, approximately 1.96% of the respondents indicated that their organization implemented Compstat. The use of Compstat necessitates strong amounts of quantitative management organizationally (DeLorenzi, et al., 2006:1). Approximately 13.73% of the respondents indicated that no current improvement initiative existed among their respective organizations. Given the low reporting of Compstat use and the lack of an improvement paradigm among some of the polled work environments, the conclusion is unsurprising.

#### **7.5.6 Conclusions of Scaled Questions 18 – 20**

Regarding scaled items 18 through 20 of the survey questionnaire, involving the fifth level of the maturity framework, it is concluded that a statistically significant difference exists between the perceptions of managers versus non-managers regarding the notion that “evidence of the fifth level of the process maturity framework exists.” The fifth level of maturity represents optimized processes. Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the fifth level of the process maturity framework exists” are different between managers versus non-managers. Given the mean analysis of chapter 3, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Thus, it is concluded that few characteristics of the fifth level, if any, are perceived among the polled environments in Alabama and Mississippi.

This conclusion is unsurprising. The CMMi is a progressive method through which process maturity improves through time incrementally. Before the fifth level of the model can exist within an organization, each of the preceding four levels of maturity must have been sequentially exhibited and experienced before improving the maturity of processes to generate a fifth level of maturity (Myerson, 2007:1). From the perspective of the CMMi and maturity modeling paradigms, this conclusion is expected. Before reaching the fifth level of maturity, representing optimized organizational processes, organizations must sequentially progress through each of the four preceding phases of the maturity model framework. Within this study, approximately 0.49% of the respondents indicated that

process maturity modeling was used as an improvement paradigm within their respective work settings. Thus, given the lack of use of any maturity model framework, it is expected that perceptions of the fifth maturity level would be few, if any.

### **7.5.7 Conclusions of Scaled Questions 21 – 23**

Regarding scaled items 21 through 23 of the survey questionnaire, involving the process improvement attributes among work settings, it is concluded that a statistically significant difference exists between the perceptions of managers versus non-managers regarding the notion that “evidence of process improvement exists among work settings.” Process improvement paradigms queried in this research ranged from TQM to process maturity modeling. Regarding the hypothesis statement, it appears that perceptions regarding “evidence of process improvement exists among work settings” are different between managers versus non-managers. Given the mean analysis of chapter 3, management personnel exhibited direction toward agreement and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Thus, it is concluded that few characteristics of process improvement, if any, are perceived among the polled environments in Alabama and Mississippi.

Such a conclusion may exist for a variety of reasons. For instance, within this study, approximately 13.73% of the polled entities indicated that their organization currently exhibited no ongoing process improvement initiative. Approximately 36.72% of the responses indicated the use of Total Quality Management. Approximately 14.71% of the responses indicated the use of business process improvement. However, no data was collected regarding the length of time these initiatives existed within the organization. If an initiative is just beginning, then it may not have had sufficient time to show positive results. No data was collected regarding organizational and personnel commitments to implementing an improvement initiative with vigor and seriousness. Thus, it may be possible that improvement initiatives exist in name only among some of the polled organizations.

### **7.5.8 Conclusions of Scaled Questions 24 – 26**

Regarding scaled items 24 through 26 of the survey questionnaire, involving the process organization attributes among work settings, it is concluded that a statistically significant difference exists between the perceptions of managers versus non-managers regarding the notion that “evidence of process organization exists among work settings.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of process organization exists among work settings” are different between managers versus non-managers. Given the mean analysis of chapter 3, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Therefore, it is concluded that the attributes of process organization are not perceived among the polled work settings of Alabama and Mississippi.

From the perspective of the CMMi, all organizations commence implementation of the maturity framework at level 1 representing a state of ad hoc, random processes. Before achieving a maturity level representing organized processes, each of the preceding stages must be experienced sequentially. Approximately 0.49% of the responses indicated the use of maturity modeling as a process improvement initiative. Therefore, the conclusion is unsurprising.

Additionally, each work environment is unique. The concept of process organization that is perceived within one organization may differ from the interpretation of process organization that exists within a different organization. Interpreting the basic notion of process organization may be subjective in the mind of the respondent. Therefore, such differences may affect the responses among the polled work settings.

### **7.5.9 Conclusions of Scaled Questions 27 – 33**

Regarding scaled items 27 through 33 of the survey questionnaire, involving the process volatility attributes among work settings, it is concluded that a statistically significant difference exists between the perceptions of managers versus non-managers regarding the notion that “evidence of process volatility exists among work settings.” Regarding

the hypothesis statement, it appears that perceptions regarding “evidence of process volatility exists among work settings” are different between managers versus non-managers. Given the mean analysis of chapter 3, management personnel and non-management personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Therefore, it is concluded that the attributes of process volatility are not perceived among the polled work settings in Alabama and Mississippi.

Such a conclusion is expected. Law enforcement entities often have processes that are repeatable and static. For instance, a chain-of-custody process may be static requiring a specific set of signatures and transfer records to ensure the integrity of evidence (McElreath, et al. 2013:306). The hiring of personnel may also follow specific processes that may not be bypassed, such as polygraph examinations (Gaines & Worrall, 2012:297). Therefore, such processes would not incur much volatility.

## **7.6 CONCLUSIONS: URBAN VS. RURAL**

### **7.6.1 Conclusions of Scaled Questions 1 – 5**

Regarding scaled items 1 through 5 of the survey questionnaire, involving the maturity model framework, it is concluded that no statistically significant difference exists between the perceptions of urban versus rural personnel regarding the notion that “organizational evidence of the process maturity model framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “organizational evidence of the complete process maturity model framework exists” are not different between urban versus rural personnel. Given the mean analysis of chapter 3, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Thus, it is concluded that few characteristics of the overall maturity model framework, if any, are perceived among the polled environments in Alabama and Mississippi.

Approximately 0.49% of the respondents reported that process maturity modeling existed as an ongoing improvement initiative within their respective work settings. Based on the literature review, despite some examinations of maturity modeling within the context of the justice system, there exists no unique maturity model framework,

derived from the CMMi, to address process improvement specifically for law enforcement organizations. Therefore, the conclusion is not surprising.

### **7.6.2 Conclusions of Scaled Questions 6 – 8**

Regarding scaled items 6 through 8 of the survey questionnaire, involving the first level of the maturity framework, it is concluded that a statistically significant difference did not exist between the perceptions of urban versus rural personnel regarding the notion that “evidence of the first level of the process maturity framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the first level of the process maturity framework exists” are not different between urban versus rural personnel. The first level of maturity represents processes that are ad hoc and random. Given the mean analysis of chapter 3, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Thus, it is concluded that characteristics of the first level of the maturity framework are not perceived among the polled environments in Alabama and Mississippi.

This observation is an expected conclusion. Organizations that commence a process improvement initiative, using a maturity model framework, must begin at the first level of maturity (Myerson, 2007:1). The first level of maturity represents ad hoc, random processes within the organization (Myerson, 2007:1). Because law enforcement organizations contain a myriad of processes that are specific and repeatable, such as hiring personnel, chain-of-custody transfers, and inmate booking, processes may be generally static and repeated through time. For instance, drug screening is a necessary portion of the personnel hiring process within a law enforcement organization (McElreath, et al. 2013:400). Given these notions, the conclusion is unsurprising.

### **7.6.3 Conclusions of Scaled Questions 9 – 11**

Regarding scaled items 9 through 11 of the survey questionnaire, involving the second level of the maturity framework, it is concluded that no statistically significant difference exists between the perceptions of urban versus rural personnel regarding the notion that “evidence of the second level of the process maturity framework exists.” Regarding the

hypothesis statement, it appears that perceptions regarding “evidence of the second level of the process maturity framework exists” are not different between urban versus rural personnel. The second level of maturity represents managed processes. Given the mean analysis of chapter 3, urban personnel and rural personnel exhibited direction toward agreement. Thus, it is concluded that few characteristics of the second level, if any, are perceived among the polled environments in Alabama and Mississippi.

The conclusion may be considered from the perspective of organizational policy among law enforcement entities. Policies exist as resources through which organizational guidance is facilitated concerning discretion and personnel behaviors when performing duties. Cole, et al., (2013:206) indicate that policies may influence the expectations associated with service calls, fulfilling organizational mission, and the use of discretion. Organizational philosophies and purposes may be delineated within organizational policies (Cordner & Scarborough, 2010:127). However, policies do not always dictate the operational activities and processes of an organization (Cordner & Scarborough, 2010:127). Given these notions, among the polled work settings of this study, policies may influence processes liberally without specificity of processes. As a result, respondents may perceive that organizational processes are unmanaged.

#### **7.6.4 Conclusions of Scaled Questions 12 – 14**

Regarding scaled items 12 through 14 of the survey questionnaire, involving the third level of the maturity framework, it is concluded that no statistically significant difference exists between the perceptions of urban versus rural personnel regarding the notion that “evidence of the third level of the process maturity framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the third level of the process maturity framework exists” are not different between urban versus rural personnel. The third level of maturity represents understandable and documented processes. Given the mean analysis of chapter 3, urban personnel and rural personnel exhibited direction toward agreement. Thus, it is concluded that some characteristics of the third level, if any, are perceived among the polled environments in Alabama and Mississippi.



This conclusion may again be considered from the context of policy within the law enforcement organization. Law enforcement organizations are unique entities. Therefore, processes that are appropriate for one law enforcement organization may be inappropriate for a different organization. The processes of a law enforcement organization are affected uniquely by their policies (Hicks, 2007:4). Given these notions, different law enforcement organizations may possess different levels of documentation organizationally. The purpose and philosophy of an organization are delineated by policy, but policy is not necessarily used to dictate operations (Cordner & Scarborough, 2010:127). Personnel may have a good understanding of organizational expectations delineated within organizational policy, but may have a lack of knowledge and understanding regarding the specificity of processes.

#### **7.6.5 Conclusions of Scaled Questions 15 – 17**

Regarding scaled items 15 through 17 of the survey questionnaire, involving the fourth level of the maturity framework, it is concluded that a statistically significant difference exists between the perceptions of urban versus rural personnel regarding the notion that “evidence of the fourth level of the process maturity framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the fourth level of the process maturity framework exists” are different between urban versus rural personnel. The fourth maturity level represents quantitatively managed processes. Given the mean analysis of chapter 3, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Therefore, it is concluded that attributes of the fourth level, if any, are not perceived among the polled work settings in Alabama and Mississippi.

Within this study, approximately 1.96% of the respondents indicated that their organization implemented Compstat which involves high amounts of quantitative analysis. Given this observation, it is calculated mathematically that approximately 98.04% of the respondent organizations did not implement Compstat. The Compstat paradigm involves high levels of quantitative management within an organization (DeLorenzi, et al., 2006:1). For instance, an example is law enforcement organizations invoking mathematical processes to forecast expected staffing requirements during some future period. Although Compstat may be used as a quantitative management tool

to generate improvements in organizational processes, a small percentage of the respondents reported its use organizationally. Thus, Compstat may not be perceived as a strong contributor to quantitative process management among the respondent work settings.

Approximately 13.73% of the respondents indicated that no ongoing improvement initiative existed organizationally. Further, some of the reported improvement initiatives, such as ISO standards, may not involve high amounts of quantitative analysis within the organization. Therefore, despite the reporting of various initiatives among the respondents, no guarantee exists that each paradigm is heavily dependent upon quantitative management for its implementation. Chapter 3 contains the specific paradigms. Given these notions, the conclusion is unsurprising.

#### **7.6.6 Conclusions of Scaled Questions 18 – 20**

Regarding scaled items 18 through 20 of the survey questionnaire, involving the fifth level of the maturity framework, it is concluded that a statistically significant difference does not exist between the perceptions of urban versus rural personnel regarding the notion that “evidence of the fifth level of the process maturity framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the fifth level of the process maturity framework exists” are not different between urban versus rural personnel. The fifth level of maturity represents optimized processes. Given the mean analysis of chapter 3, urban personnel and rural personnel exhibited direction toward agreement. Thus, it is concluded that some characteristics of the fifth level are perceived among the polled environments in Alabama and Mississippi.

An organization must progress sequentially through each of the separate phases of the CMMi before experiencing the final stage representing optimized processes (Myerson, 2007:1). However, the CMMi is not the only paradigm through which organizations may experience an optimized process environment that results from an improvement initiative. Doss, et al., (2011) indicate that various mathematical methods may be applied among managed environments to generate optimization. Within law enforcement organizations, the use of operations research mathematics may generate optimization (Doss, et al., 2011:100). Therefore, if the work environment of a respondent

experienced an alternative process improvement endeavor, then it is not infeasible that some optimization benefits may have occurred within the organization. Such notions may have affected the perceptions of respondents when answering the survey questions.

#### **7.6.7 Conclusions of Scaled Questions 21 – 23**

Regarding scaled items 21 through 23 of the survey questionnaire, involving the process improvement attributes among work settings, it is concluded that a statistically significant difference does not exist between the perceptions of urban versus rural personnel regarding the notion that “evidence of process improvement exists among work settings.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of process improvement exists among work settings” are not different between urban versus rural personnel. Process improvement paradigms queried in this research ranged from TQM to process maturity modeling. Given the mean analysis of chapter 3, urban personnel exhibited direction toward neutrality and rural personnel exhibited direction toward agreement. Thus, it is concluded that some characteristics of process improvement are perceived among the polled environments in Alabama and Mississippi.

This conclusion may occur from a variety of reasons. For instance, within this study, approximately 36.72% of the responses indicated the use of Total Quality Management. Approximately 13.73% of the respondents indicated that their organization currently exhibited no current process improvement initiative. Among the responses, approximately 14.71% indicated the use of business process improvement. Several other improvement paradigms were reported, and they were detailed in Chapter 3. Therefore, some process improvement initiatives may exist among some of the polled organizations.

#### **7.6.8 Conclusions of Scaled Questions 24 – 26**

Regarding scaled items 24 through 26 of the survey questionnaire, involving the process organization attributes among work settings, it is concluded that a statistically significant difference does not exist between the perceptions of urban versus rural personnel

regarding the notion that “evidence of process organization exists among work settings.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of process improvement exists among work settings” are not different between urban versus rural personnel. Given the mean analysis of chapter 3, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Thus, it is concluded that characteristics of process organization are unperceived among the polled environments in Alabama and Mississippi.

This conclusion may be examined within the context of the CMMi. All organizations begin implementing the maturity framework at level 1. This initial level represents a state of ad hoc, random processes. Each of the successive stages must be experienced sequentially before achieving a maturity level representing organized processes is experienced by organizations. Within this study, approximately 0.49% of the responses indicated the use of maturity modeling as a method of improving processes organizationally. Therefore, the conclusion is unsurprising.

#### **7.6.9 Conclusions of Scaled Questions 27 – 33**

Regarding scaled items 27 through 33 of the survey questionnaire, involving the process volatility attributes among work settings, it is concluded that a statistically significant difference does not exist between the perceptions of urban versus rural personnel regarding the notion that “evidence of process volatility exists among work settings.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of process volatility exists among work settings” are not different between urban versus rural personnel. Given the mean analysis of chapter 3, urban personnel and rural personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Thus, it is concluded that few characteristics of process volatility, if any, are perceived among the polled environments in Alabama and Mississippi.

Such a conclusion is unsurprising. Law enforcement often implement static, repeatable processes operationally. For instance, an example of such static, repeatable processes involves ordering materials and supplies (Doss, et al., 2011:72). Other examples of static processes include personnel hiring and evaluation (Cronkhite, 2013:177). Because an adherence to such repeatable processes, it is expected that variance of

such processes would be little. Thus, respondents may not perceive organizational processes as volatile activities.

## **7.7 CONCLUSIONS: ALABAMA VS. MISSISSIPPI**

### **7.7.1 Conclusions of Scaled Questions 1 – 5**

Regarding scaled items 1 through 5 of the survey questionnaire, involving the maturity model framework, it is concluded that a statistically significant difference exists between the perceptions of Alabama versus Mississippi personnel regarding the notion that “organizational evidence of the process maturity model framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “organizational evidence of the process maturity model framework exists” are different between Alabama versus Mississippi personnel. Given the mean analysis of chapter 3, Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Thus, it is concluded that few characteristics, if any, of the overall framework are perceived among the polled environments in Alabama and Mississippi.

This conclusion is commensurate with the conclusions associated with the management versus non-management and the urban versus rural analyses. Approximately 0.49% of the respondents reported that process maturity modeling was either a former or current improvement initiative among the polled work environments. The literature review showed that there exists no unique maturity model framework, derived from the CMMi, to address process improvement specifically for law enforcement organizations. Therefore, the conclusion is not surprising.

### **7.7.2 Conclusions of Scaled Questions 6 – 8**

Regarding scaled items 6 through 8 of the survey questionnaire, involving the first level of the maturity framework, it is concluded that no statistically significant difference exists between the perceptions of Alabama versus Mississippi personnel regarding the notion that “evidence of the first level of the process maturity framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the first level of

the process maturity framework exists” are different between Alabama versus Mississippi personnel. The first level of maturity represents processes that are ad hoc and random. Given the mean analysis of chapter 3, both Alabama personnel and Mississippi personnel exhibited direction toward neutrality (neither agreeing nor disagreeing). Thus, it is concluded that characteristics of the first level, if any, are not perceived among the polled environments in Alabama and Mississippi.

This conclusion is commensurate with the preceding conclusions associated with the analyses of management versus non-management and urban versus rural groups. This conclusion is unsurprising. The first level of maturity represents ad hoc, random processes within the organization, and represents the stage at which all organizations commence the implementation of a maturity model framework (Myerson, 2007:1). Among law enforcement entities, various processes may be generally static and repeated through time. For instance, during a hiring process for law enforcement personnel, the use of drug screening is a necessity (McElreath, et al. 2013:400).

### **7.7.3 Conclusions of Scaled Questions 9 – 11**

Regarding scaled items 9 through 11 of the survey questionnaire, involving the second level of the maturity framework, it is concluded that a statistically significant difference exists between the perceptions of Alabama versus Mississippi personnel regarding the notion that “evidence of the second level of the process maturity framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the second level of the process maturity framework exists” are not different between Alabama versus Mississippi personnel. The second level of maturity represents managed processes. Given the mean analysis of chapter 3, Alabama personnel and Mississippi personnel exhibited direction toward agreement. Thus, it is concluded that some characteristics of the second level are perceived among the polled environments in Alabama and Mississippi.

This conclusion is unsurprising. Organizational policy among law enforcement entities may be considered regarding this conclusion. Cole, et al., (2013:206) indicate that policies are influential regarding the expectations of service calls, fulfilling organizational mission, and using discretion. Policies guidance among organizations with respect to the

behaviors and discretion that are exhibited during duty performance. Mathematical analysis and operations research techniques also may contribute to the fashioning of organizational policy (Doss, et al., 2011:99). However, processes and operations activities are not dictated by policy organizationally (Cordner & Scarborough, 2010:127).

Policies serve as guiding documents for organizations. Policy also affects organizational operations and the behaviors of personnel. All actions of the organization and its personnel are expected to comply with tenets of policy. Thus, processes may be derived from policy, and must conform to the constraints established by policy. In such cases, processes may be planned, managed, and controlled with respect to the expectations of organizational policy guidelines. Given these notions, the observed conclusion is unsurprising.

#### **7.7.4 Conclusions of Scaled Questions 12 – 14**

Regarding scaled items 12 through 14 of the survey questionnaire, involving the third level of the maturity framework, it is concluded that no statistically significant difference exists between the perceptions of Alabama versus Mississippi personnel regarding the notion that “evidence of the third level of the process maturity framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the third level of the process maturity framework exists” are not different between Alabama versus Mississippi personnel. The third level of maturity represents understandable and documented processes. Given the mean analysis of chapter 3, Alabama personnel and Mississippi personnel exhibited direction toward agreement. Thus, it is concluded that some characteristics of the third level are perceived among the polled environments in Alabama and Mississippi.

Law enforcement organizational processes are affected uniquely by policy (Hicks, 2007:4). Organizational policy does not dictate specific processes despite its use for guiding personnel behaviors and influencing organizational philosophy and purpose (Cordner & Scarborough, 2010:127). Given these notions, different amounts of documentation may exist among individual law enforcement organizations whereby personnel gain an understanding of processes. In such cases, respondents may

perceive processes to exhibit some amounts of consistency, definition, and adherence with respect to the limitations of organizational policy.

#### **7.7.5 Conclusions of Scaled Questions 15 – 17**

Regarding scaled items 15 through 17 of the survey questionnaire, involving the fourth level of the maturity framework, it is concluded that a statistically significant difference exists between the perceptions of Alabama versus Mississippi personnel regarding the notion that “evidence of the fourth level of the process maturity framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding evidence of the fourth level of the process maturity framework exists” are different between Alabama versus Mississippi personnel. The fourth maturity level represents quantitatively managed processes. Given the mean analysis of chapter 3, Alabama personnel exhibited direction toward neutrality and Mississippi personnel exhibited direction toward disagreement. Thus, it is concluded that few, if any, characteristics of the fourth level are perceived among the polled environments in Alabama and Mississippi.

Law enforcement organizations use a variety of methods for managing processes quantitatively. Within American policing, one of the most used paradigms is Compstat (Willis, et al., 2003:6). Among departments that have over 100 personnel, 32.6% of the law enforcement organizations implement Compstat. Among smaller organizations, below 100 personnel, approximately 11.0% of law enforcement organizations implement Compstat (Willis, et al., 2003:6). Within this study, approximately 1.96% of the polled environments reported the use of Compstat. Thus, the conclusion is unsurprising given the low Compstat rates.

The use of maturity modeling to improve processes also involves quantitatively managed processes. However, the polled environments of this study indicated that only approximately 0.49% use maturity modeling as a process improvement paradigm. Therefore, given such a low percentage, the conclusion is unsurprising.



### **7.7.6 Conclusions of Scaled Questions 18 – 20**

Regarding scaled items 18 through 20 of the survey questionnaire, involving the fifth level of the maturity framework, it is concluded that a statistically significant difference exists between the perceptions of Alabama versus Mississippi personnel regarding the notion that “evidence of the fifth level of the process maturity framework exists.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of the fifth level of the process maturity framework exists” are different between Alabama versus Mississippi personnel. The fifth level of maturity represents optimized processes. Given the mean analysis of chapter 3, Alabama personnel and Mississippi personnel exhibited direction toward agreement. Thus, it is concluded that some characteristics of the fifth level are perceived among the polled environments in Alabama and Mississippi.

The CMMi is not the solitary process improvement paradigm that may contribute to optimization within work settings. For instance, the mathematical and analytical methods of operations research are also used to generate optimization within organizational environments. Although approximately 0.49% of the respondents indicated the use of maturity modeling, other quality and process improvements may have contributed toward the presence of any optimization among the work settings of the respondents. Given these notions, it is feasible that respondents may perceive some amount of optimization within their work settings.

### **7.7.7 Conclusions of Scaled Questions 21 – 23**

Regarding scaled items 21 through 23 of the survey questionnaire, involving the process improvement attributes among work settings, it is concluded that no statistically significant difference exists between the perceptions of Alabama versus Mississippi personnel regarding the notion that “evidence of process improvement exists among work settings.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of process improvement exists among work settings” are not different between Alabama versus Mississippi personnel. Process improvement paradigms queried in this research ranged from TQM to process maturity modeling.

Given the mean analysis of chapter 3, Alabama personnel and Mississippi personnel exhibited direction toward agreement. Thus, it is concluded that some characteristics of process improvement are perceived among the polled environments in Alabama and Mississippi.

Respondents reported a variety of quality paradigms that existed among the polled work settings. Familiar examples include TQM and Six-Sigma. Given that such quality paradigms involve process improvement organizationally, this conclusion is unsurprising. Regardless of the quality paradigm implemented within the work settings of respondents, it is possible that existing quality paradigms could generate process improvement. Thus, respondents may perceive some amount of process improvement regarding the quality paradigm or process improvement method that exists within the organization.

#### **7.7.8 Conclusions of Scaled Questions 24 – 26**

Regarding scaled items 24 through 26 of the survey questionnaire, involving the process organization attributes among work settings, it is concluded that no statistically significant difference exists between the perceptions of Alabama versus Mississippi personnel regarding the notion that “evidence of process organization exists among work settings.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of process organization exists among work settings” are not different between Alabama versus Mississippi personnel. Given the mean analysis of chapter 3, Alabama personnel and Mississippi personnel exhibited direction toward neutrality. Thus, it is concluded that few characteristics of process organization, if any, are perceived among the polled environments in Alabama and Mississippi.

Various factors may influence perceptions of whether process organization exists. For instance, standards differ among law enforcement organizations (McElreath, et. al., 2013:178). The perceptions associated with the concept of process organization within one organization may differ from the interpretations of process organization within a different organization. Each work environment is unique. Thus, subjectivity may exist in the mind of the respondent regarding their perceptions of quality and improvements among processes (Doss, et al., 2012:50). Therefore, these differences of perceptions among the polled entities may affect the responses within this study.

### **7.7.9 Conclusions of Scaled Questions 27 – 33**

Regarding scaled items 27 through 33 of the survey questionnaire, involving the process volatility attributes among work settings, it is concluded that no statistically significant difference exists between the perceptions of Alabama versus Mississippi personnel regarding the notion that “evidence of process volatility exists among work settings.” Regarding the hypothesis statement, it appears that perceptions regarding “evidence of process volatility exists among work settings” are not different between Alabama versus Mississippi personnel. Given the mean analysis of chapter 3, Alabama personnel and Mississippi personnel exhibited direction toward neutrality. Thus, it is concluded that few characteristics of process volatility are perceived among the polled environments in Alabama and Mississippi.

Although processes may exhibit various levels of maturity organizationally, there may exist a certain level of static attributes among law enforcement processes organizationally. Within each individual law enforcement organization, certain processes may occur identically each time they are invoked. For instance, during hiring processes, a law enforcement organization may implement medical, psychiatric, and polygraph examinations among employment candidates (Twomey, 2010:648). Because such activities are static events within the hiring process, perceptions of volatility may be affected.

Another perspective of volatility may be considered from organizational conformance to existing law. The activities of justice system entities and law enforcement organizations must conform to existing laws (Hess, 2009:117). Organizational processes must occur in accordance with the tenets of laws that affect the organization. As a result, the method whereby processes are exercised must also occur in conformance with law. Thus, variability of processes must be within the limitations of law. Such notions may also affect perceptions of process volatility among personnel.

## **7.8 CONCLUSIONS REGARDING THE GOALS AND OBJECTIVES**

The goals of this research study involved examining the adapting of the CMMi within the criminal justice domain encompassing Alabama and Mississippi, whether issues of process maturity within criminal justice administration settings are addressed using a process maturity framework, and whether the existing administrative settings conform to the tenets of the CMMi paradigm. The objectives of this study involved assessing the perceptions of management versus non-management personnel, urban versus rural personnel, and Alabama versus Mississippi personnel regarding the basic process maturity model framework, the five levels of maturity comprising the CMMi, and the work environments of Alabama and Mississippi organizations.

Through the use of the two-tailed ANOVA method, this research quantitatively assessed the perceptions of management versus non-management, urban versus rural, and Alabama versus Mississippi personnel regarding the basic process maturity model framework, the five levels of maturity comprising the CMMi, and the work environment. Therefore, the objectives associated with assessing these areas were satisfied.

This study represents an extension of previous research that examined maturity modeling involving the CMMi. Through its use of job category, geographic location, and type of locality as variables of interest, this study represents an extension of previous works that incorporated these same approaches. Specifically, this study complements the writings of West (2005) involving the manager versus non-manager approach, complements the writings of Reddick (2010) regarding the urban versus rural perspective, and complements the writings of De Oliveira, et al., (2010) regarding the geographic approach. Therefore, the goal of contributing a unique offering to the body of literature, using established approaches, was successful.

The conclusions of this research did not show that all five levels of the maturity model framework appear to be separately perceived among the respondent environments of Alabama and Mississippi. However, this research was applicable regarding only personnel perceptions within the states of Alabama and Mississippi. Thus, generalization for all police organizations within the United States is inappropriate given the limited respondent sample from these two states. Regarding the sample respondents of this

study, representing only perceptions within Alabama and Mississippi, this research failed to show conclusively that the maturity model framework is adaptable among administrative settings in the criminal justice domain encompassing these two states and that process maturity issues are addressed via a process maturity framework within these two states.

Such conclusions must be considered with respect to the notion that the CMMi is a progressive framework whereby organizational processes are sequentially and progressively improved through time. Per the tenets of CMMi, all organizations begin in the first stage representing ad hoc, chaotic processes, and progress sequentially through the remaining stages of the maturity model framework. Approximately 0.49% of the respondents indicated the use of maturity modeling within their respective organizations as a form of process improvement. Given this low quantity, personnel representing the organizations examined within this study may not perceive the existence of any succeeding stage of the maturity model framework among their respective work environments in Alabama and Mississippi.

However, justice system organizations may freely choose to implement some CMMi framework as a method of improving processes. Therefore, if an organization decides to implement some form of CMMi as a process improvement initiative, then there exists the possibility of individual stages of improvement occurring within the organization in due time via progressing through each successive stage of the maturity model framework. Given such notions, the future possibility exists that characteristics of the maturity model framework may exist organizationally. Thus, the findings of this study must be considered only within the current contexts of the statuses of existences representing the examined work settings of Alabama and Mississippi organizations. However, if an organization eventually decides to implement some form of maturity modeling, then characteristics of the CMMi may be perceived possibly among Alabama and Mississippi organizations in the future.

## **7.9 CONCLUSIONS REGARDING THE RESEARCH QUESTION**

The primary research question of this study is stated as: “Can the basic framework of the CMMi be adapted to define a managerial process improvement framework within the criminal justice domain?” The examined criminal justice domain represented solely Alabama and Mississippi entities. Therefore, conclusions should not be generalized regarding the remainder of policing throughout the entirety of the United States. The research question may be considered from the perspectives of the findings involving the managers vs. non-managers, urban vs. rural, and Alabama vs. Mississippi groups.

Regarding the grouping of management personnel versus non-management personnel, statistically significant outcomes were exhibited regarding the perceptions of management versus non-management personnel associated with scaled questions 1 through 5, scaled questions 6 through 8, scaled questions 15 through 17, and scaled questions 18 through 20. Analyzing the means showed no consistency regarding agreement toward all of the examined issues representing the CMMi framework. Given these notions, insufficient evidence exists to show definitely and conclusively that the CMMi framework is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

Regarding the grouping of urban vs. rural entities, a statistically significant outcome was exhibited regarding the perceptions of urban versus rural personnel associated with scaled questions 15 through 17. With respect to the examined CMMi framework issues, consistency regarding agreement was not exhibited when analyzing the means. Given these notions, insufficient evidence exists to show definitely and conclusively that the CMMi framework is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

Regarding the grouping of Alabama vs. Mississippi entities, statistically significant outcomes were exhibited regarding the perceptions of Alabama versus Mississippi personnel associated with scaled questions 1 through 5, scaled questions 9 through 11, scaled questions 15 through 17, and scaled questions 18 through 20. Consistency of agreement was not exhibited within the analysis of the means with respect to all of the

examined CMMI issues. Given these notions, insufficient evidence exists to show definitely and conclusively that the CMMi framework is adaptable within the context of the criminal justice domain encompassing Alabama and Mississippi.

These three conclusions must be considered with respect to the constraints of this research study. They are applicable only for the combination of Alabama and Mississippi organizations that were examined during this research. Thus, generalization regarding all policing within American society is inappropriate regarding these conclusions given the research scope limitations of Alabama and Mississippi. The conclusions herein are appropriate only for the polled criminal justice domain that encompassed the states of Alabama and Mississippi.

These conclusions may also be considered from the perspective of organizational attributes. Approximately 0.49% of the respondents reported that their respective organizations used some form of maturity modeling as a method of improving processes. Because of this low quantity indicating the use of maturity modeling, respondents may not perceive greatly the existence of any current CMMi characteristics within their respective organizations. The conclusions must be considered from the perspective of organizational status showing only current perceptions at the time of this research. Because organizations may select to implement maturity modeling of their own volition at any time, there exists a chance of future CMMi attributes existing organizationally. If an organization elects to pursue maturity modeling at some point in the future, then the potential of organizational attributes existing that represent various stages of the CMMi is not inconceivable. Also, regarding organizations that currently implement some form of process maturity framework as an improvement method, future progression toward succeeding maturity stages may result in higher levels of process maturity organizationally. Thus, organizational attributes representing process maturity may change through time. Therefore, given these notions, any future studies may show different findings and conclusions regarding the primary research question of this study.

## **7.10 RECOMMENDATIONS AND FUTURE RESEARCH**

Within the literature, there is an absence of writings that discuss process improvement maturity modeling within the context of the criminal justice domain. It is recommended that additional studies beyond this research endeavor be conducted to generate original contributions within the criminal justice literature. Such additional studies may investigate the crafting of process maturity models among other justice system domains. For instance, future studies may address the potential of the CMMi within court systems or among correctional environments.

This study was constrained only to polled environments representing the states of Alabama and Mississippi. Therefore, its outcomes should not be generalized with respect to the whole of policing within the United States. Future studies may examine maturity modeling with greater scopes and magnitudes that affect policing nationally.

This research endeavor was constrained geographically to the states of Alabama and Mississippi. It is recommended that other state comparisons occur to determine whether similar outcomes are manifested during future studies. Therefore, this study may be repeated involving different state combinations (e.g., Georgia versus Florida, etc.). These combinations of states may or may not involve adjacent states. Because the United States is comprised of 50 individual states, a plethora of state combinations could be studied and compared to the outcomes of this study.

Both Alabama and Mississippi are neighboring, adjacent states. Therefore, they may share similarities regarding organizational influences, organizational processes, justice systems, and the types of crimes that exist within their societies that may impact their organizational administrative processes. Given these notions, it is recommended that this study be repeated using data from states that represent geographically different regions (e.g., Arizona versus Connecticut) within the United States whose law enforcement organizations experience differing scopes and magnitudes of activities and organizational attributes that may affect their organizational administrative processes.



The respondents of this study indicated either a rural or urban location. Future research may investigate comparisons between cities of similar size or between rural areas that exhibit similar demographic characteristics.

This study incorporated a variety of potential respondents including federal, state, local, and tribal entities. It is recommended that future research endeavors repeat this study using specific organizational comparisons within their analyses. For example, the perceptions of personnel representing federal agencies may be compared against those of state agencies.

The stratifications of this study involved management versus non-management personnel, urban versus rural personnel, and Alabama versus Mississippi personnel. Future studies may also accommodate different stratifications. Examples of such future stratifications include the perspectives of male versus female personnel, day versus night shift personnel, and part-time versus full-time personnel.

All organizations may change through time. Within this study, approximately 0.49% of the respondents indicated that their organizations implemented maturity modeling. Through time, the quantity of Alabama and Mississippi organizations that exercise maturity modeling may change. Therefore, during the future, it is recommended that this study be repeated using the same geographic constraints with respect to the potential of possible change organizationally through time.

## **7.11 CHAPTER SUMMARY**

This chapter summarized the overall research study, presented conclusions, and provided recommendations. Regarding the CMMi framework, it was concluded that not all of the five levels of the maturity model framework were perceived separately as being present individually among the work settings of the respondents. The conclusions of this study must not be generalized to encompass the entirety of American policing within the United States because of the research scope constraints that limited this study only to the states of Alabama and Mississippi.

Further, the conclusions of this study must also be considered with respect to the timeliness and current statuses of the examined organizations. At the time of this research, the respondents indicated that approximately 0.49% of the polled organizations implemented maturity modeling as a process improvement method. Thus, opportunity exists for organizations to choose to implement process maturity modeling frameworks as process improvement methods. Also, with the passing of time, organizations that currently implement process maturity modeling may progress to achieve higher stages of process maturity within their respective maturity model framework. Because organizations may choose to implement CMMi as a process improvement framework at any time, the future potential for the existence of different CMMi attributes within respondent organizations exists. Given this notion, future studies may show different findings and conclusions regarding the primary research question and the considered criminal justice domain of this study.

A variety of recommendations were offered regarding this research endeavor. Future studies were recommended to pursue additional approaches of this study. For instance, future endeavors may examine the perceptions of male versus female officers or between different states besides Alabama and Mississippi. Regardless, this study represents an initial starting point from which several future research endeavors may be crafted.

## **APPENDIX MATERIALS**

Appendix A – Mailing Cover Letter

Appendix B – Survey Screen Captures

Appendix C – Excerpt from *Official and Statistical Register of the State of Mississippi*

Appendix D – Excerpt from *Alabama Criminal Justice Directory*

## APPENDIX A

### A.1 MAILING COVER LETTER

June 9, 2012

Dear Sir or Ma'am,

This note is from Adrian Doss. I am a doctoral student with the University of South Africa (UNISA). UNISA is a comprehensive research institution in which I am pursuing graduate studies in police science. UNISA is an institution of higher education within the South African system. You may view the details of the institution via: <http://www.unisa.ac.za>

I am conducting a research study as a component of my dissertation. The research study investigates the potential of a maturity model framework that may be useful in improving the efficiency and effectiveness of work settings among organizations within the justice system. Specifically, I am exploring the potential of crafting a maturity model process improvement framework within the context of entities within the justice system. Such a model may be useful as a complement to any existing quality management paradigms that organizations may embrace. This model may also be beneficial when crafting organizational processes.

If you have either a management or non-management position in which you craft processes, influence processes, or implement processes, then your assistance is greatly appreciated. If you are not associated with the crafting, influencing, or implementing of processes, then please forward these materials to someone in your organization who does have such an association.

Participating in this study is completely voluntary. You may opt to terminate participation at any point in time without experiencing any adverse effects. There are no identified risks or harm in that the study is completely anonymous and is confidential. No personal data is collected within this research. Specific details of your work environment and management characteristics are queried within this research regarding demographics, management activities, and organizational processes. All responses and the collected data are confidential, and will be destroyed upon the completion of this research study. You will receive no financial compensation for participating in this survey. Reporting of the responses and outcomes will occur in an aggregated form thereby embellishing confidentiality and anonymity. All responses will be used only for the purposes of this research study, and will not be shared with others. Any physical responses will be kept in a locked enclosure. The outcomes of the study will be made available upon the completion of this research endeavor. Please contact me if you desire to review the results.

Completing the survey instrument requires approximately ten minutes. Completing and submitting the survey materials represent implied consent regarding your participation. The survey will be available between June 19, 2012 and July 19, 2012. The survey may be accessed on the Internet via: <https://www.surveymonkey.com/s/WJXNPWW>

If you prefer a physical copy of the survey, then please contact me. You will incur no financial costs regarding either receiving or returning a physical version of the survey.

If you have any questions or wish to speak with me, then please contact me via any of the following methods:

Adrian Doss	Office: 205-652-5416
P.O. Box 1818	Email: <a href="mailto:professorbusiness@gmail.com">professorbusiness@gmail.com</a>
Livingston, AL 35470	

Your assistance with this study is greatly appreciated. The data you provide will be of great value to this research study.

Thank you for your time and attention to this matter.

Best Regards,



Daniel Adrian Doss

Figure A.1 – Survey Letter

## APPENDIX B

### B.1 SURVEY QUESTIONNAIRE DATA COLLECTION INSTRUMENT

This appendix contains screen captures of the survey questionnaire data collection instrument. These images were recorded during the allotted period that encompassed the conducting of this research endeavor.

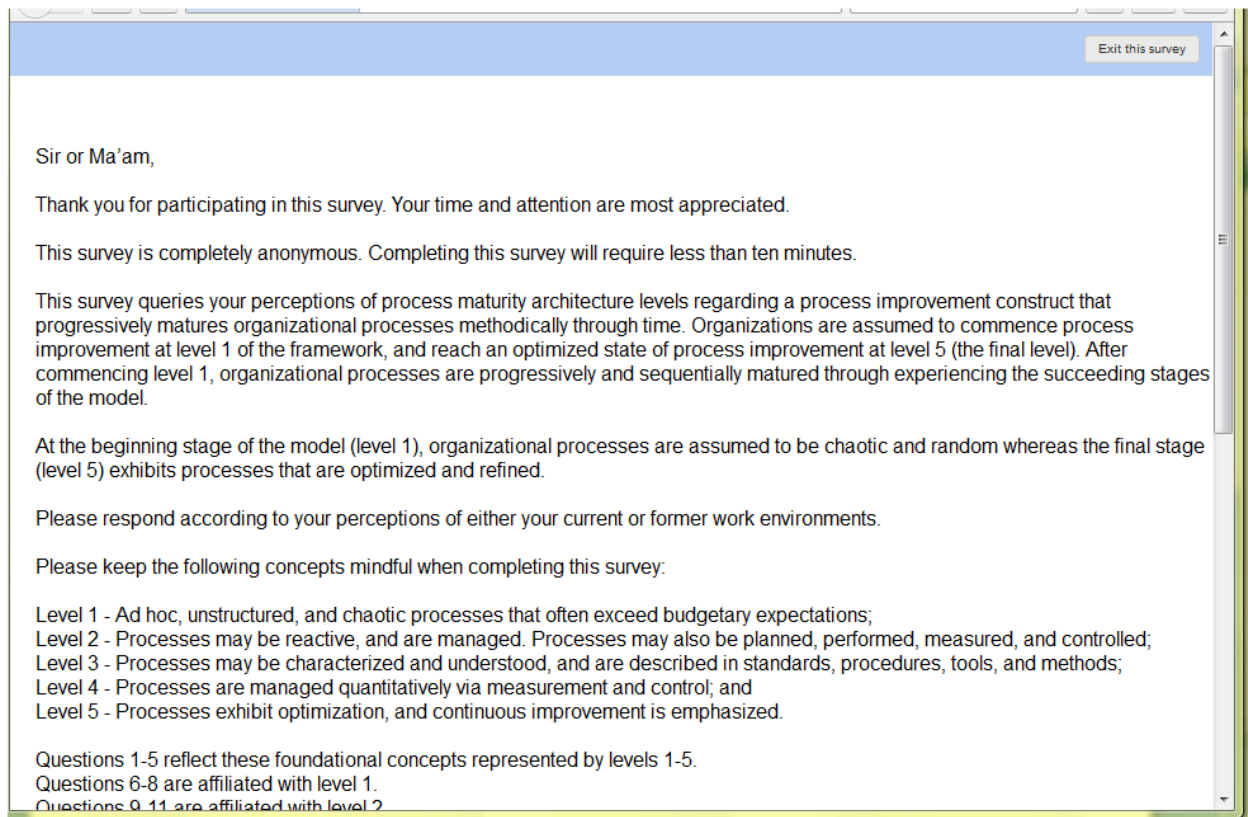


Figure B.1 – Introductory Letter (First Portion)

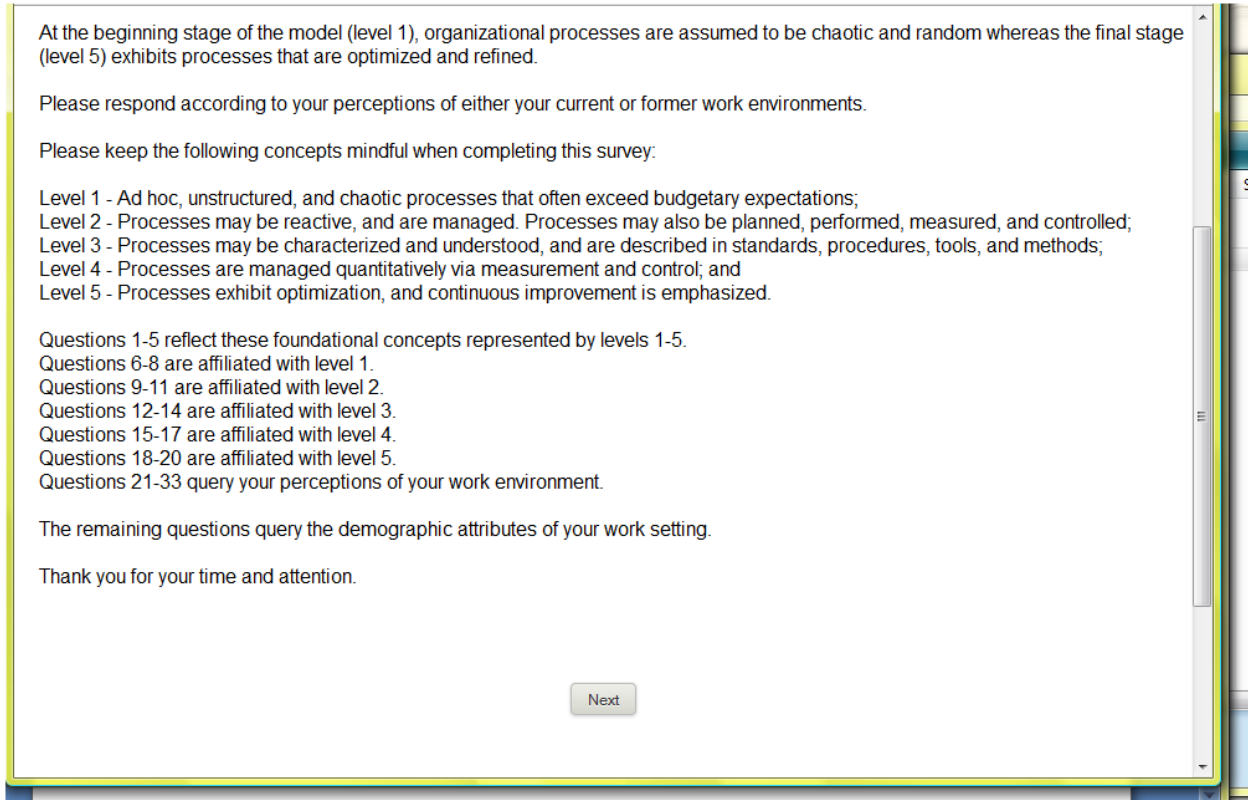


Figure B.2 -- Introductory Instructions (Second Portion)

Exit this survey

The first five questions query perceptions of the basic process maturity framework.

**\*1. Agency processes may be defined as ad hoc, chaotic, or random.**

- Strongly Disagree
- Disagree
- No Judgment
- Agree
- Strongly Agree

**\*2. Agency processes are managed.**

- Strongly Disagree
- Disagree
- No Judgment
- Agree
- Strongly Agree

**\*3. Agency processes are defined/specific.**

- Strongly Disagree
- Disagree
- No Judgment
- Agree
- Strongly Agree

**\*4. Agency processes are quantitatively managed.**

Figure B.3 – Survey Questions 1 - 3

**\*3. Agency processes are defined/specific.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*4. Agency processes are quantitatively managed.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*5. Agency processes are optimized.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

Figure B.4 – Survey Questions 3 - 5



Exit this survey

Questions 6, 7, and 8 query perceptions of process maturity framework -- level 1.

**\*6. Agency processes are unpredictable.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*7. Agency processes are reactive.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*8. Agency processes are uncoordinated.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

Prev Next

Figure B.5 -- Survey Questions 6 - 8

[Exit this survey](#)

Questions 9, 10, and 11 query perceptions of process maturity framework -- level 2.

**\*9. Agency processes are planned.**

- Strongly Disagree
- Disagree
- No Judgment
- Agree
- Strongly Agree

**\*10. Agency processes are managed.**

- Strongly Disagree
- Disagree
- No Judgment
- Agree
- Strongly Agree

**\*11. Agency processes are controlled.**

- Strongly Disagree
- Disagree
- No Judgment
- Agree
- Strongly Agree

[Prev](#)   [Next](#)

Figure B.6 -- Survey Questions 9 - 11

Exit this survey

Questions 12, 13, and 14 query perceptions of process maturity framework – level 3.

**\*12. Agency processes are well-defined.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*13. Agency processes are consistent.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*14. Agency processes are followed.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

Microsoft Word - IntroRecord.docx Page: 7 Page: 7 of 7 Line: 1 Words: 86

Figure B.7 -- Survey Questions 12 - 14

Exit this survey

Questions 15, 16, and 17 query perceptions of process maturity framework – level 4.

**\*15. Agency processes involve quantitative objectives.**

- Strongly Disagree
- Disagree
- No Judgment
- Agree
- Strongly Agree

**\*16. Agency processes involve metrics analysis.**

- Strongly Disagree
- Disagree
- No Judgment
- Agree
- Strongly Agree

**\*17. Agency processes involve statistical analysis.**

- Strongly Disagree
- Disagree
- No Judgment
- Agree
- Strongly Agree

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Figure B.8 -- Survey Questions 15 - 17

Exit this survey

Questions 18, 19, and 20 query perceptions of process maturity framework – level 5.

**\*18. Agency processes are improved incrementally.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*19. Agency processes are efficient.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*20. Agency processes are effective.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

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Figure B.9 -- Survey Questions 18 - 20

Exit this survey

Questions 21 through 33 query ancillary perceptions of process maturity framework.

**\*21. Process maturity is not addressed by our current process improvement initiatives.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*22. Process improvement is advocated within my agency.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

**\*23. Process initiatives are tracked to examine process performance.**

Strongly Disagree

Disagree

No Judgment

Agree

Strongly Agree

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Figure B.10 -- Survey Questions 21 – 23

Agree  
 Strongly Agree

**\*24. Grouping of processes, according to maturity level, would improve the outcomes of our processes.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

**\*25. Categorical process grouping is advocated within my agency.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

**\*26. Process maturity is a contributor to successful process outputs within my agency.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

**\*27. Processes are informal within my agency.**

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Figure B.11 -- Survey Questions 24 - 26

Agree  
 Strongly Agree

**\*27. Processes are informal within my agency.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

**\*28. Agency policies influence processes.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

**\*29. Methods of managing processes vary within my agency.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

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Figure B.12 -- Survey Questions 27 - 29



Agree  
 Strongly Agree

**\*30. Agency processes are inefficient.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

**\*31. Agency processes are ineffective.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

**\*32. Agency processes change frequently.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

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Figure B.13 -- Survey Questions 30 - 32

**\*33. My agency advocates process training.**

Strongly Disagree  
 Disagree  
 No Judgment  
 Agree  
 Strongly Agree

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Figure B.14 -- Survey Questions 33

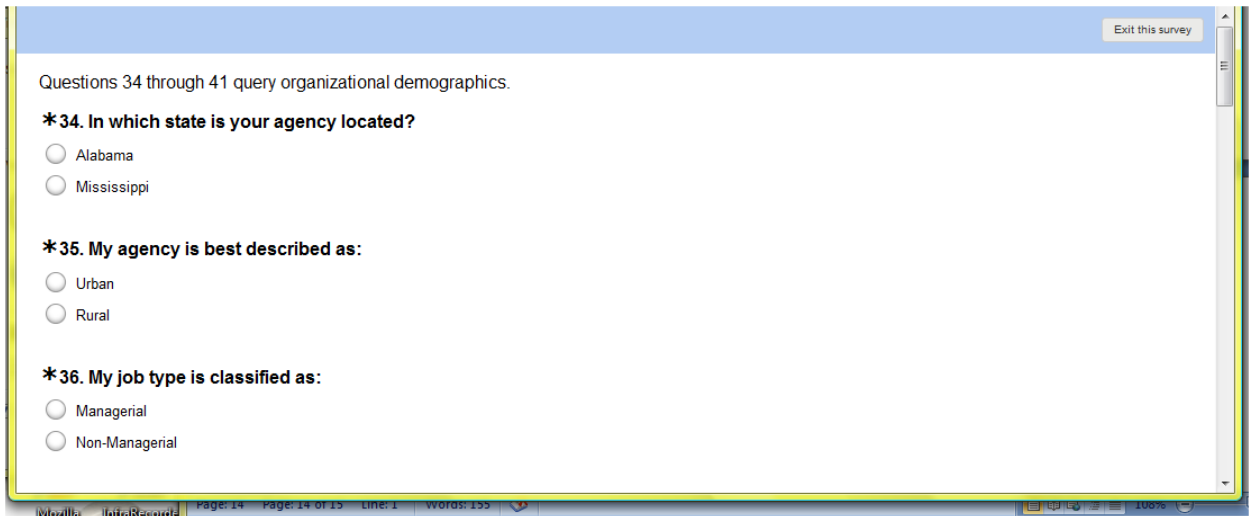


Figure B.15 -- Survey Questions 34 - 36

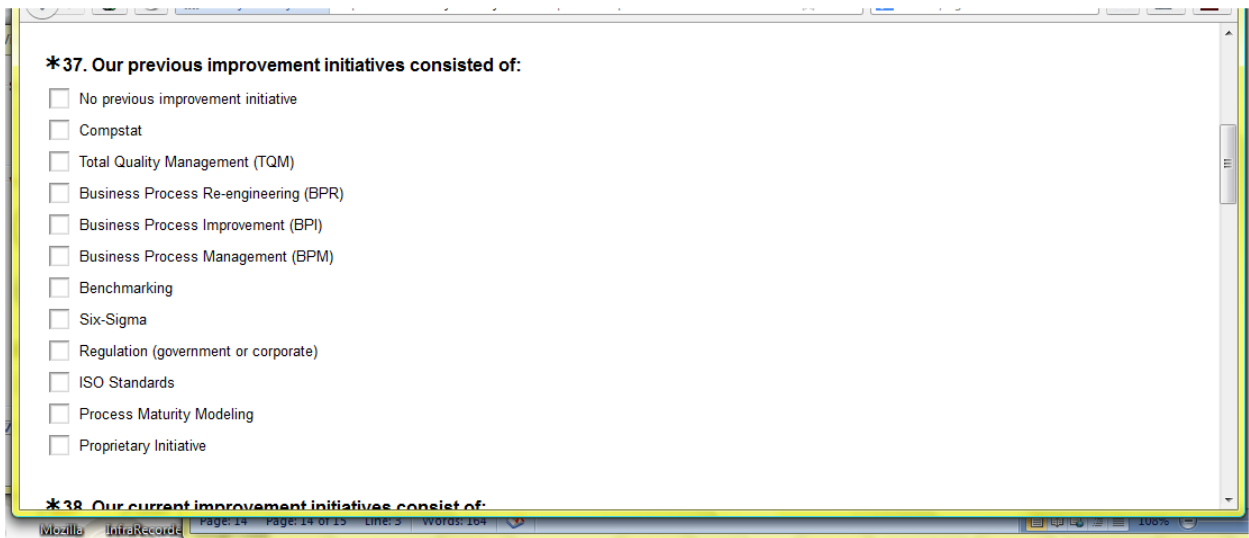


Figure B.16 -- Survey Questions 37

**\*38. Our current improvement initiatives consist of:**

- No current improvement initiative
- Compstat
- Total Quality Management (TQM)
- Business Process Re-engineering (BPR)
- Business Process Improvement (BPI)
- Business Process Management (BPM)
- Benchmarking
- Six-Sigma
- Regulation (government or corporate)
- ISO Standards
- Process Maturity Modeling
- Proprietary Initiative

**\*39. How many employees does your agency have?**

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Figure B.17 -- Survey Questions 38

**\*39. How many employees does your agency have?**

- 1-9
- 10-19
- 20-29
- 30-39
- 40-49
- 50-59
- 60-69
- 70-79
- 80-89
- 90-99
- 100 or more

**\*40. Which of the following best describes your agency?**

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Figure B.18 -- Survey Question 39

**\*40. Which of the following best describes your agency?**

- Federal
- Regional
- State
- Local
- Tribal
- Private
- Commercial

**\*41. My agency is best described as:**

- For-Profit
- Non-Profit


Prev Done

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Figure B.19 -- Survey Questions 40 – 41

## APPENDIX C


### C.1 EXCERPT FROM *Official and Statistical Register of the State of Mississippi*



*Natchez Spring Pilgrimage is held in March/April each spring in the Natchez Historic District.*

### ADAMS COUNTY

County Seat: Natchez  
Named for President John Adams  
Formed: 1817  
Area: 486.4 square miles  
Population: 32,297  
[www.adamscountymiss.net](http://www.adamscountymiss.net)



**Board Attorney**  
 Scott Slover ..... P.O. Box 846, Natchez 39121. .... (601) 442-0075/F (601) 304-9896

**Chancery Clerk**  
 Tommy O'Beirne ..... P.O. Box 1006, Natchez 39121. .... (601) 446-6684/F (601) 445-7913

**Circuit Clerk**  
 Edward C. (Eddie) Walker ..... P.O. Box 1224, Natchez 39121. .... (601) 446-6326/F (601) 445-7955

**Constables**

**North District**  
 Ray Brown ..... P.O. Box 1048, Natchez 39121. .... (601) 442-0199

**South District**  
 Randy Freeman ..... P.O. Box 1048, Natchez 39121. .... (601) 442-0199

**Coroner**  
 James E. Lee ..... 112 S. Wall St., Natchez 39120 ..... (601) 445-7974/  
 F (601) 445-7975

**County Prosecuting Attorney**  
 John Barret Martin ..... P.O. Box 1603, Natchez 39121. .... (601) 442-7954/F (601) 442-5659

**County Court Judge**  
 John N. Hudson ..... P.O. Box 1371, Natchez 39121. .... (601) 442-6416/F (601) 445-2369

**Election Commissioners**

District 1 ..... Catherine Meng ..... 205B S. Broadway St., Natchez 39120  
 District 2 ..... Larry Gardner ..... #2 Summerfield Pl., Natchez 39120  
 District 3 ..... Evelyn Henry Smith ..... 110 Meadowlane Dr., Natchez 39120  
 District 4 ..... Katye Dukes ..... 54 W. Wilderness Rd., Natchez 39120  
 District 5 ..... Mitch Ballard ..... 23 Selma Estate Rd., Natchez 39120

**Justice Court Clerk**  
 Audrey Bailey ..... P.O. Box 1048, Natchez 39121. .... (601) 442-0199

**Justice Court Judges**

**North District**  
 Patricia F. Dunmore ..... P.O. Box 1048, Natchez 39121. .... (601) 442-0199

**South District**  
 Charles L. Vess ..... P.O. Box 1048, Natchez 39121. .... (601) 442-0199

**Sheriff**  
 Chuck Mayfield ..... 306 State St., Natchez 39120 ..... (601) 442-2752/F (601) 442-2911

**Superintendent of Education**  
 Dr. Frederick Hill ..... P.O. Box 1188, Natchez 39121. .... (601) 442-0212/F (601) 445-2818

**Supervisors**

**District 1**  
 Mike Lazarus ..... P.O. Box 1008, Natchez 39121. .... (601) 442-2431/F (601) 304-8088

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Figure C.1 – Mississippi Addresses

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## APPENDIX D

### D.1 EXCERPT FROM *Alabama Criminal Justice Directory*

<b>Alabama Law Enforcement Directory</b>						<b>2013 - 3rd Qtr</b>		
<i>Agency Type</i>	<i>Agency Name</i>	<i>Chief Officer</i>	<i>Address</i>	<i>City</i>	<i>State</i>	<i>Zip</i>	<i>Phone</i>	<i>Fax</i>
Municipal LE Agency	Hartselle Police Department	Ron Puckett	150 Chestnut Street Northwest	Hartselle	AL	35640	256-773-6534	256-773-4474
Municipal LE Agency	Hayneville Police Department	Kelvin Mitchell	133 Lafayette Street	Hayneville	AL	36040	334-548-2128	
Municipal LE Agency	Headland Police Department	Mark Jones	9 Park Street	Headland	AL	36345	334-693-2222	334-693-5577
Municipal LE Agency	Heflin Police Department	Alex Benefield	174 Bell Street	Heflin	AL	36264	256-463-2291	
Municipal LE Agency	Helena Police Department	Douglas Jones	P.O. Box 262	Helena	AL	35080	205-663-6499	205-664-9208
Municipal LE Agency	Henegar Police Department	Randell Smith	P.O. Box 39	Henegar	AL	35978	256-657-3231	256-657-5838
Municipal LE Agency	Highland Lake Police Department	Scott Kon	612 Lakeshore Drive	Oneonta	AL	35121	205-625-4912	
Municipal LE Agency	Hillsboro Police Department	Michael Taylor	P.O. Box 261	Hillsboro	AL	35643	256-637-2070	
Municipal LE Agency	Hodges Police Department	Michael Franklin	PO Box 87	Hodges	AL	35571	205-935-3445	205-935-3445
Municipal LE Agency	Hokes Bluff Police Department	James Hill	P.O. Box 2338	East Gadsden	AL	35903	256-492-2414	256-492-2416
Municipal LE Agency	Hollywood Police Department	Jason Hepler	P.O. Box 240	Hollywood	AL	35752-0240	256-259-1295	
Municipal LE Agency	Homewood Police Department	James Roberson	P.O. Box 59666	Homewood	AL	35209	205-879-2101	205-877-8605
Municipal LE Agency	Hoover Police Department	Nicholas Derzis	100 Municipal Drive	Hoover	AL	35216	205-444-7700	205-444-7560
Municipal LE Agency	Hueytown Police Department	Chuck Hagler	P.O. Box 3650	Hueytown	AL	35023	205-491-3523	205-497-1880
Municipal LE Agency	Huntsville Police Department	Lewis Morris	P.O. Box 2085	Huntsville	AL	35804	256-427-7001	256-427-5296
Municipal LE Agency	Huntsville-Madison Airport Police Department	Gregory Garner	1000 Glenn Hearn Boulevard	Huntsville	AL	35824	256-772-9395	256-427-7108
Municipal LE Agency	Huntsboro Police Department	Jimmy Martin	P.O. Box 358	Huntsboro	AL	36860	334-667-0701	334-667-7773
Municipal LE Agency	Ider Police Department	Eric Watkins	P.O. Box 72	Ider	AL	35981	256-657-5717	
Municipal LE Agency	Irondale Police Department	Jerry McIntosh	101 S. 20th Street	Irondale	AL	35210	205-951-1404	205-951-1400
Municipal LE Agency	Jackson Police Department	Charles Burge	P.O. Box 95	Jackson	AL	36545	251-246-4484	251-246-4445
Municipal LE Agency	Jacksons Gap Police Department	B Cooper	P.O. Box 162	Jacksons Gap	AL	36861	256-825-8515	256-825-7326

ALABAMA CRIMINAL JUSTICE INFORMATION CENTER  
201 S. Union Street, Suite 300 . Montgomery, Alabama 36130 . Phone 334 517 2400

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Figure D.1 – Alabama Addresses

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