EXTENT OF CLUSTER-BASED ECONOMIC DEVELOPMENT POLICIES AND THE POLITICAL/INSTITUTIONAL CONTEXT: A COLLECTIVE CASE STUDY

By

Roberto Gallardo Estrella

A Dissertation
Submitted to the Faculty of
Mississippi State University
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy
in Public Policy and Administration
in the Department of Political Science and Public Administration

Mississippi State, Mississippi

April 2011

ProQuest LLC
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106-1346

EXTENT OF CLUSTER-BASED ECONOMIC DEVELOPMENT POLICIES AND THE POLITICAL/INSTITUTIONAL CONTEXT: A COLLECTIVE CASE STUDY

By

Roberto Gallardo Estrella

Approved:

Bethany Stich Assistant Professor of Political Science and Public Administration Director of Dissertation	Stephen D. Shaffer Professor of Political Science and Public Administration Committee Member
William "Marty" Wiseman Professor of Political Science and Public Administration Committee Member	P. Edward French Assistant Professor of Political Science and Public Administration and Graduate Coordinator Committee Member
Chad R. Miller Assistant Professor of Economic and Workforce Develpopment Committee Member	Gary L. Myers Dean, College of Arts & Sciences

Name: Roberto Gallardo Estrella

Date of Degree: April 30, 2011

Institution: Mississippi State University

Major Field: Public Policy and Administration

Major Professor: Dr. Bethany Stich

Title of Study: EXTENT OF CLUSTER-BASED ECONOMIC DEVELOPMENT POLICIES AND THE POLITICAL/INSTITUTIONAL CONTEXT: A COLLECTIVE CASE STUDY

Pages in Study: 120

Candidate for Degree of Doctor of Philosophy

Regional economic development strategies such as cluster-based development are becoming increasingly popular with policymakers. Yet, the role of government in cluster development and sustainability is not clearly understood. However, network governance theory provides an ideal framework to better understand this role. This research attempts to fill the gap between cluster theory and public administration by testing a political/institutional context model developed by Miller (2006) that attempts to explain the extent of cluster-based economic development policies considering the political/institutional context. A collective case study focusing on the shipbuilding cluster in Alabama, Louisiana, and Mississippi was conducted. A total of 24 in-depth interviews were completed with key informants from economic development organizations, government institutions, and the shipbuilding industry. The major findings of the study indicate that (1) civic entrepreneurs, tax structures, and elected officials are not correlated with the extent of cluster-based policies; (2) the traditionalistic political subculture in the region is a major limiting factor for the development of governance structures suitable for cluster-based economic development and upgrading; (3) participants were highly

satisfied with workforce and infrastructure development policies while government activities and programs had the lowest satisfaction; (4) the findings of this study show no support for a clear factor policy grouping as argued by Porter; and (5) network governance theory provides an ideal framework to build governance structures focused on linkages and formal/informal relationships that are more suitable for cluster-based development ameliorating the effects of a traditionalistic political culture. The contributions of this study become more important because of recent threats to the shipbuilding cluster in the Gulf Coast. The ability of government to adapt and facilitate the development and upgrading of the cluster will prove critical for the overall economic and social vitality of the region.

ACKNOWLEDGMENTS

I would like to thank first and foremost my family for their unconditional support during my graduate studies. Their support and inspiration was very important for me to complete my degree. My wife Monica, for her constant encouragement and support; my daughters, Ana Sofia and Camila Valeria, for providing me with inspiration; and my parents to whom I owe everything I currently am. I would also like to thank Dr. Lionel 'Bo' J. Beaulieu for his support, guidance, and encouragement. Without his support, I could not have completed my degree. Also, Dr. Virgil Culver whose initial encouragement was critical for me to pursue this degree. I would also like to thank Dr. Ben Posadas and Sidney Massey from the Center for Urban Rural Interface Studies for believing in me and providing crucial funding for this project. Finally, I would like to thank my dissertation committee, especially Dr. Bethany Stich, for their support, patience, and guidance. This dissertation would not have been possible without your support. Thank you.

TABLE OF CONTENTS

Page

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

Problem Statement

Since the introduction of the competitive framework by Porter (1990), a wealth of research has been conducted regarding clusters and the competitiveness of regions. Studies have shown that clusters have a positive impact on a region increasing productivity, wages, and innovation (Bernat, 1999; Gibbs & Bernat, 2001; Porter, 2003). Thus, understanding how clusters develop and are maintained is critical for regions and states that have or will pursue cluster-based economic development policies. Ironically however, understanding the role politics and governance institutions[1] play in designing, implementing, and supporting cluster-based economic development policies is lacking. Combining cluster-based economic development literature with network governance literature can fill this gap between governance and development.

In part, a great bulk of cluster research has focused on identifying and measuring industrial clusters (Cortright, 2006) since one of the major criticisms of cluster theory is its vagueness in defining both the geographic and industrial scope of clusters (Martin & Sunley, 2003). Combinations of quantitative and qualitative methods have been utilized to provide in-depth cluster studies. A quantitative approach helps identify clusters utilizing macro-level variables such as number of jobs, establishments, patents, and wage

[1] The terms government, politics and governance institutions, and public administration refer to the same concept and are used interchangeably throughout this study.

data (Porter, 2003). On the other hand, a qualitative methodology can go more in depth potentially identifying emerging clusters and better capturing the interrelationships within the cluster and among the multiple actors that support and enhance the cluster as argued by network governance theory (Rosenfeld, Liston, Kingslow, & Fromm, 2000; Austrian, 2000). Porter's (1990) diamond has been extremely valuable in providing a framework to study clusters from a business/competitive perspective but has fallen short in providing a framework to assess the role of public administration in the competitiveness of regions. Therefore, network governance theory has the potential to better describe and explain the role public administration has in the competitiveness of regions.

Miller (2006) identified this gap from both public administration and economic development perspectives. He developed a model that provides a framework to assess the role of public administration in cluster-based economic development. Thus, the first objective of my dissertation is to test Miller's model holding constant the cluster type (traded–traded clusters compete across regions, can locate anywhere, and show a higher level of productivity and innovation) and the stage of development (mature), the statewide political culture (traditionalistic), and the overall economic development context (Gulf Coast "megaregion").

The second objective is to relate the findings to network governance literature. Thereby, this dissertation is contributing to public policy and administration, cluster theory, political culture, network governance, and economic development literatures. Furthermore, the results will provide critical information regarding the relationships between the political/institutional context, political culture, network governance theory, and public administration. This understanding provides key information regarding

government's role in industrial cluster development and sustainability, and how network governance theory could be employed in a traditionalistic political culture to support the creation, maintenance, and development of industrial clusters.

The underlying question guiding this research is the following: how accurately does Miller's (2006) public administration model explain the extent of cluster-based economic development policies? Thus, quantitative and qualitative methods were utilized to (1) select and validate the existence of the shipbuilding cluster primarily employment and establishment location quotient analysis; (2) test the hypotheses derived from Miller's (2006) model; and (3) understand which government policies as argued by Porter (2000) were perceived with a high satisfaction by the participants. Semi-structured interviews to key informants in the industry, government, and regional organizations were completed.

Research Design

The purpose of this study is to test a political/institutional context model utilizing cluster theory, political culture, and network governance theory in an effort to understand what influences the extent of cluster-based policies as well as the level of government involvement in cluster development. Hypotheses were derived from Miller's framework and data was gathered through a series of semi-structured interviews gathering both qualitative and quantitative data. The semi-structured interview instrument contained both a qualitative and a quantitative component. The qualitative component gathered a valuable history of the industrial cluster under study and the role government has played throughout the years in its development. The quantitative component gathered data necessary to test specific hypotheses. Furthermore, the data gathered provided an

understanding of the current policies in place and how they relate to Porter's examples of policies addressing each of the four factors in his cluster diamond. The implications of the findings were discussed utilizing network governance theory (NGT).

Key Findings

The major findings of the study indicate that (1) civic entrepreneurs, tax structures, and elected officials are not correlated with the extent of cluster-based policies; (2) the traditionalistic political subculture in the region is a major limiting factor for the development of governance structures suitable for cluster-based economic development and upgrading; (3) participants were highly satisfied with workforce and infrastructure development policies while government activities and programs ranked in the lowest satisfaction; (4) Porter's examples of policies enhancing each of the diamond factors were not supported by the findings of this study; and (5) network governance theory provides an ideal framework to build governance structures focused on linkages and formal/informal relationships that are more suitable for cluster-based development ameliorating the effects of a traditionalistic political culture.

Limitations

A couple of limitations are related to this study. First and foremost is the fact that the findings of this study are geographically specific but transferable to other states or regions that have a traditionalistic political culture. This geographically specific area includes counties/parishes in Louisiana, Alabama, and Mississippi. Second, although the sample was weighted and the major shipyards in the region participated, the industry overall was underrepresented. Furthermore, only major and medium-sized shipyards were contacted leaving out numerous smaller but important shipyards as well as the supporting

and related industries within the cluster. This was done because the objective of this study was to understand the political/institutional context and not the underlying linkages and relationships within the cluster. Third, because of the high degree of specialization of this research study, a high level of specialized knowledge was required of both the political/institutional context and its interaction with the shipbuilding cluster limiting the overall population and thus the sample size. Future studies can focus on including more clusters with a specific political culture as well as conducting the research in partnership with representatives from other states and regions to expand the overall population and participation rate.

Organization of the Dissertation

Chapter 2 discusses three streams of literature related to this research and concludes with the expectations of this research. First, cluster theory and Miller's political/institutional context framework are reviewed. The former sets the stage to understand the importance of this dissertation while the latter will serve as the theoretical framework. Second, network governance theory was reviewed in an effort to better understand the interrelationships and linkages emerging in public administration and how these can be used to develop governance structures more suitable for cluster-based development. Finally, political culture literature is reviewed in an effort to understand the overall context under which cluster-based economic development takes place and understand the degree of government involvement in economic development.

Chapter 3 discusses the research methodology. A justification of a mixed methods approach as well as the semi-structured interview is provided along with the selection of the industrial cluster. Furthermore, an explanation of the operationalization of the

political/institutional context model is discussed. Finally, a description of the three different sectors selected for validation purposes is provided.

Chapter 4 discusses the findings regarding the cluster history including the role of government. Particular themes that emerged after conducting the interviews are presented as well as the perception of government's role in each of the three participant sectors interviewed. This chapter provides crucial background information and the context understanding required for this research project.

Chapter 5 tests the hypotheses identified and discusses the findings of this research study regarding the political/institutional context model. Furthermore, the policies identified through the interviews are analyzed utilizing Porter's diamond theory. This understanding of the policies and where they fit within the diamond model provides information in areas where policy improvement is required to further enhance the industrial cluster within a traditionalistic political culture context.

Chapter 6 concludes this research study by discussing the implications, limitations, and potential areas for future research. This chapter also presents a discussion regarding the implications that this particular industrial cluster has on governance structures currently in place in the region and the role network governance theory can play in developing these governance structures and ameliorating the effects of a traditionalistic political culture in cluster support and development.

CHAPTER II

LITERATURE REVIEW

Three streams of literature are discussed in this section to better understand the relationship between cluster theory, role of government, cluster upgrading, network governance theory, and political culture. First, an overview of cluster theory is discussed with a focus on the limitation of the theory in understanding the role public administration plays in cluster-based economic development. Miller's (2006) model is provided as a resource for understanding public administration in cluster-based economic development as well as the political/institutional context. Second, network governance theory is reviewed in an effort to understand the relationships between cluster theory and public administration, especially regarding cluster upgrading. Network governance theory is the ideal framework to understand and strengthen these relationships. Third, political culture is discussed in an effort to shed some light on the potential impact political culture may have in cluster theory, public administration, and network governance. To conclude, the final section focuses on combining these streams of literature and discusses some research expectations.

Cluster Theory

Porter (1990) introduced the competitive framework to explain why some regions achieve sustained productivity raising the standard of living of their citizens. Porter's main argument is that competition among firms, and to a certain degree cooperation, generates innovation, which in turn spurs economic growth. Thus, a geographical

concentration of related industries innovates more and is more competitive than firms in the same industry that are "isolated." The author presents a four-factor model that explains the development, extent, and sustainability of industrial clusters.

The four factors discussed by Porter (1990) are as follows: (1) *factor (input) conditions* ranging from tangible assets to information, legal systems, and university research institutes. These factors should improve efficiency, quality, and specialization; (2) *demand conditions* refer to the existence of sophisticated and demanding customers. These customers pressure firms to improve; (3) *firm strategy, structure, and rivalry* refers to a context in which forms of investment are encouraged. Similarly, a vigorous competition among local rivals is necessary; and (4) *related and supporting industries* refer to the presence of capable suppliers as well as competitive related industries. Because these four factors are dynamic and not static, they result in competitive industries that are not evenly dispersed geographically; rather, they appear in geographical "clusters." Moreover, the author argues that no particular element is responsible for generating a cluster. Rather, it is more likely that a single element serves as a catalyst and strengthens the other elements.

Further, Porter (1990) argued that chance and government were two "external" factors involved in cluster development as well. The author defines chance as exogenous and unpredictable factors such as national crisis, major industry bankruptcy, etc. that exert an influence on the cluster. Regarding government, Porter simply argues that its role is to influence the other four elements. Figure 1 shows Porter's diamond model including all four factors and the two "external" factors.

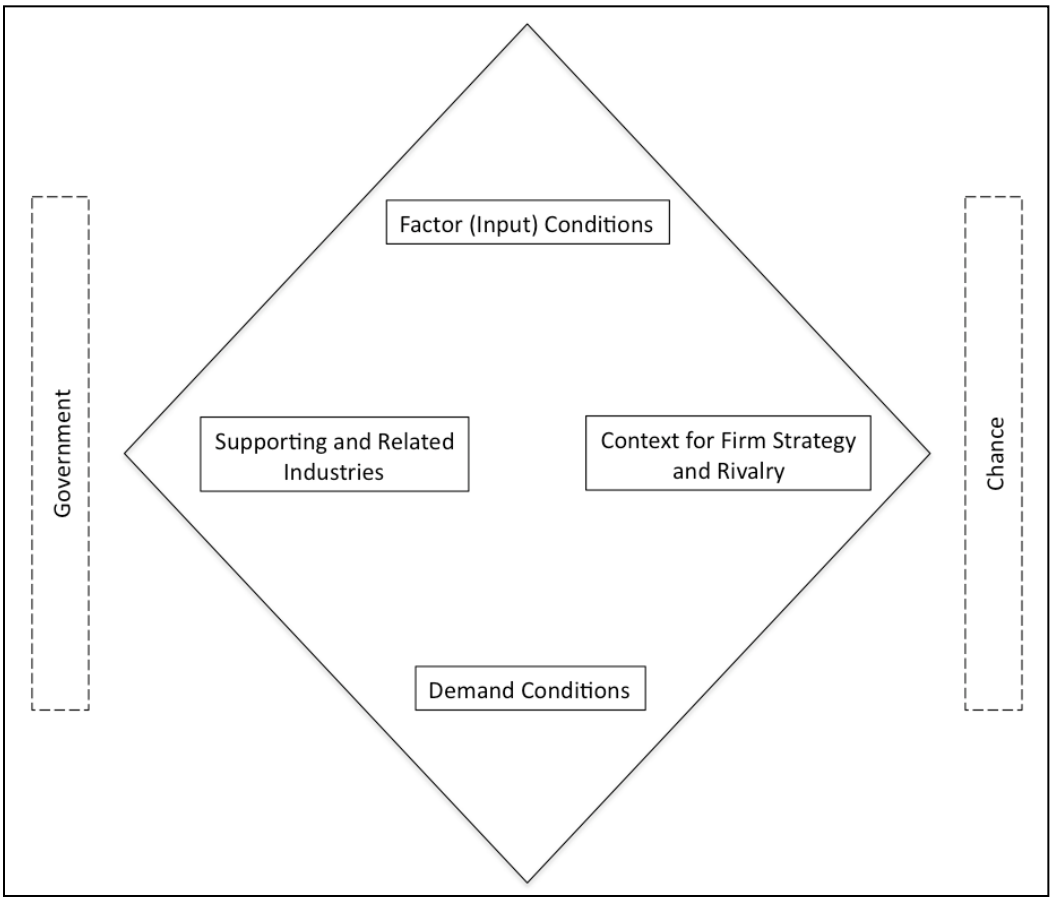

Figure 1 Porter's Diamond Model (Porter, 2000)

In a later study, Porter (2000) identified basic roles government can play and what influence they have in each of the four "diamond" elements expanding on his previous work. Some examples include providing an educated workforce, appropriate infrastructure, timely and accurate data, rules and incentives governing competition, and developing and implementing a change process. These policies influence the factors, which in turn strengthen and enhance the cluster. The author also argues that a cluster-based strategy highlights the importance of the "roles of government at *several geographic levels*" (p. 29). According to the author, industrial clusters need to be an important component of state and local policies, not just national policies, implying some

industrial cluster development and sustainability responsibility falls on the state and local level.

After conducting a worldwide cluster meta-study, Van der Linde (2003) found that in 39.8% of the clusters analyzed, Porter's diamond element of factor conditions was the most common cause of cluster formation; 26.3% reported the cause as other (e.g., government, random events, entrepreneurial activity, prolonged strikes, etc.); and 18.8% of the clusters analyzed formed mainly because of demand conditions. In other words, chance and government were responsible for the creation of almost a third of the clusters analyzed. This finding emphasizes the need of understanding the role of public administration in cluster formation and sustainability. Of the 26% of clusters formed because of other causes, 26.5% included government actions and only one of the 186 clusters analyzed was formed directly because of "conscious government action" (Van der Linde, 2003, p. 147).

Role of Government

While Porter's (1990) "vague" description of government's role in cluster development and Van der Linde's (2003) conclusion that political intervention did not play a solely decisive role in cluster formation and/or sustainability indicate an irrelevant and unclear role of government, Wickham (2005) found that as a matter of fact, government's role is "far more significant than the exogenous one theorised by Porter" (p. 15) and that not only does government plays a significant role, but also plays *different* roles throughout the cluster's industrial life cycle (Klepper, 1996), which include "embryonic, emerging, or mature and the cluster can be growing, stagnating, or declining" (Enright, 2003, p. 102). Wickham (2005) argues that during the emergence of

the cluster, government enhanced the cluster reputation and maximized the synergistic relationships between shipbuilders and their suppliers; later government formalized these relationships and even recruited more innovative shipbuilders to provide more sources of sales to the cluster's suppliers.

Similarly, Enright (2003) identifies five levels at which government is involved in a cluster. The *non-existent* role is one in which there are no cluster-based economic policies in place; the *catalytic* role is one in which government arranges for parties to come together but its involvement is limited; a *supportive* role is one in which in addition to getting groups together, government provides cluster-specific investments in infrastructure and education/training and plays a passive indirect role; a *directive* role is one in which government implements cluster programs to reshape local economies. Finally, an *interventionist* role is one in which government, in addition to implementing cluster programs, makes major decisions regarding the cluster (rather than the private sector); provides substantial subsidies, protections, or regulations; and has major ownership and/or control of the cluster. Enright (2003) also argues that different levels of government are involved in cluster-based economic development strategies and that the ideal level of government (e.g., state, regional, local) involved should be one that corresponds to the geographic scope of the cluster itself and has "substantial influence over relevant programs and expenditures" (Enright, 2003, p. 119).

Furthermore, Enright (2003) mentions that governments with different political ideologies and philosophies (e.g., conservative/liberal) implement cluster-based economic development strategies. This in part can be explained, according to Enright, because the degree of government involvement (i.e., non-existent, catalytic, supportive, directive, and interventionist) varies and the fact that different strategies, tools, and

tactics are all labeled under a cluster policies umbrella. Finally, Enright (2003) mentions that in developed nations, local or regional governments are responsible for most of the cluster initiatives, while in developing nations, the national government takes the lead. This implies that state and local governments have a responsibility and therefore more flexibility regarding industrial cluster development.

Enright's (2003) five levels of government involvement are not the only way to classify government's role, as Su and Hung (2009) analyzed a biotechnology cluster in two nations and found their origins to be either spontaneous or policy driven. Independently of their origins, both clusters had five success factors in common: (1) human capital, (2) financial capital, (3) entrepreneurship, (4) social capital, and (5) networking. Even though these two clusters with different origins shared success factors, these factors came to be and developed in different ways according to the authors. In the case of the policy-driven cluster, government provided both human and financial capital. However, its levels of entrepreneurship and social capital are still emerging, resulting in loose networks.

On the other hand, the spontaneous and older cluster obtained its human and financial capital from venture capitalists and leading universities. The entrepreneurship and social capital in this particular cluster is strong, partly because the cluster began from academic spin-offs and venture capitalists' support, resulting in tight networks that benefit the cluster overall. The authors also emphasize the importance of understanding the institutional context and history of the cluster. Thus, networks are stronger and more effective in clusters that originated spontaneously.

With multiple studies providing these different classifications for the role of government in cluster development and in an effort to understand the

political/institutional context and the extent of cluster-based policies, Miller (2006) provides a framework to assess the political/institutional context under which cluster-based economic development strategies are designed and implemented.

This framework contemplates structural factors, political/institutional predictors, and a network governance moderator in an effort to explain the extent of cluster-based policies. Structural factors include the market model, evolutionary economics, and civic culture. The political/institutional predictors include tax structure, state context, elected officials, institutional arrangements, and professionalism. Finally, the network governance moderator discusses whether the private sector or the public sector leads economic development efforts in a particular community. Figure 2 shows Miller's model.

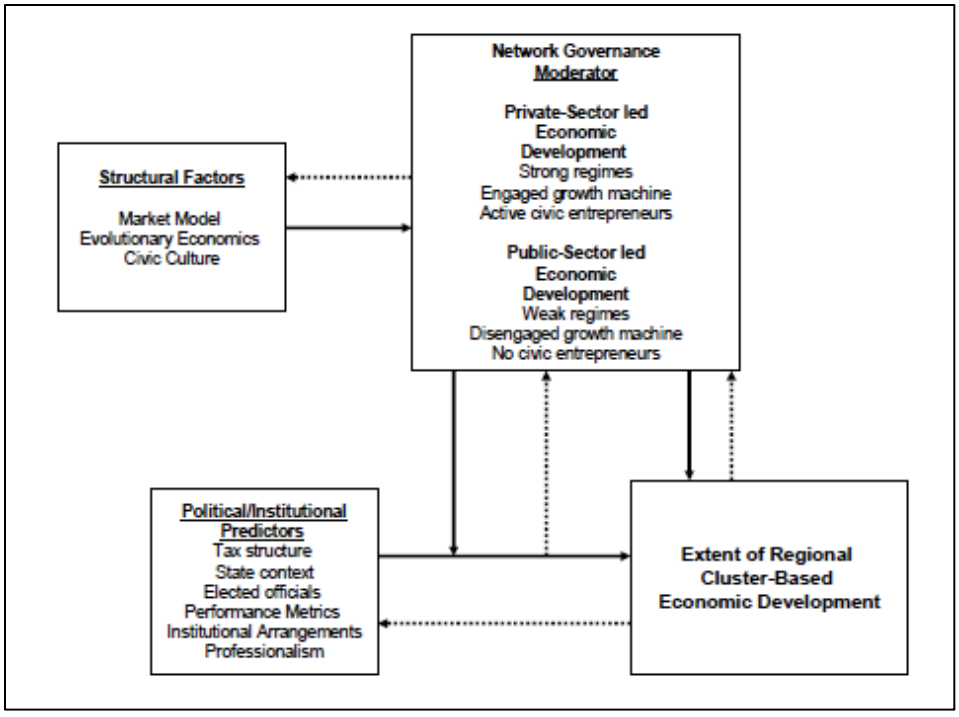

Figure 2 Miller's Political/Institutional Model

Miller (2006) developed this framework based in part on the power community literature including Stone (1989), Molotch (1976), Logan and Molotch (1987), and Henton et al. (1997) among others. The author mentions several questions that need to be asked within each component (e.g., structural factors, political/institutional predictors, etc.) in order to understand the political/institutional context. According to Miller (2006), the elements within the network governance moderator include regimes, growth machines, and civic entrepreneurs. Based on the power community literature reviewed by Miller (2006), *regimes* are informal yet stable groups that have access to institutional resources and have a significant impact on local economic development policy and implementation; *growth machines* are defined as individuals or institutions that directly benefit from economic development, such as landowners, bankers, lawyers, etc.; *civic entrepreneurs* are individuals from private-sector businesses but also include public and civic organizations that help forge powerful productive linkages with their vision and commitment.

According to Miller (2006), this framework will "allow researchers to begin asking the right questions regarding governance structures needed for cluster-based economic development" (Miller, 2006, p. 231). The network governance moderator may be public or private sector driven. Either way, public administrators are responsible for holding the network governance moderator together and in some cases also fill a leadership role. This leadership role is filled when there is a weak regime and/or growth machine and civic entrepreneurs are not engaged. Thus, Miller's research concludes that the public administrator's role will vary depending on the network governance moderator and that private sector driven is preferable.

Thus, government does play a role in cluster development influencing each of the four factors (Porter, 2000) through cluster-based policies, whose extent is explained by a political/institutional context (Miller, 2006), and at the same time gets involved at different levels (Enright, 2003) and at different times (Wickham, 2005) throughout the cluster's history. Further, the cluster's institutional context and history as well as its origin, being either spontaneous or policy driven, determine how strong or how weak its networks will be along with its social, human, and financial capital (Su & Hung, 2009). However, government does and should play a more advanced role (Porter, 2000) that is critical for industrial clusters: facilitating the development and upgrading of a cluster. See Table 1 for a summary based on the literature discussed of the role of government in cluster development.

Table 1 Role of Government in Cluster Development

Author	Year	Key Findings
Porter	1990, 2000	- To influence each of the four factors in his diamond model
Enright	2003	- Non-existent - Catalytic - Supportive - Directive - Interventionist
Wickham	2005	- Government's role more significant and endogenous than the role theorized by Porter - Government plays different roles throughout the cluster's history; role is not static
Su & Hung	2009	- Origin of cluster (spontaneous or policy-driven) as well as cluster's history and institutional context determine the strength of networks and level of human, financial, and social capital in the cluster
Miller	2006	- Provides political/institutional framework to assess the extent of cluster-based policies - Structural factors, inst./political predictors, and network governance moderator determine the extent of cluster-based policies

Cluster Upgrading

When talking about his four factors and the role government plays influencing each factor, Porter (2000) also discussed a fifth more advanced government role in regards to "facilitating cluster development and upgrading" (p. 26.) He argues that the basic roles are geared toward a more general business environment while the fifth, more advanced, role moves beyond factor competition into cluster development and competitiveness. This fifth more advanced role requires a level of government involvement that goes beyond providing a macroeconomic stability.

Pietrobelli and Rabellotti (2004) looked at the role policies played in upgrading clusters in Latin America. The authors define upgrading as "innovating to increase value added"[2] (p. 6). The study concluded that policies designed to upgrade clusters need to consider two dimensions at the same time. First, the territorial factor needs to be considered. This factor includes the social and cultural identity as well as the geographical concentration and specialization of the cluster. Second, a linkage factor needs to be considered. This factor includes the variety and richness of vertical and horizontal linkages within the cluster. Therefore, policy instruments targeting the development of local competitive factors such as infrastructure or local know-how also need to target the promotion of linkages among the cluster such as programs to establish business associations and/or upgrade contractors. Finally and according to the authors, human capital and time are two essential resources for these types of policies.

Going beyond Porter's (2000) argument in that government can influence all four factors and in an effort to capture the positive impacts of the factors associated with the competitiveness of firms located in clusters, Schmitz (1995) defined the term *collective efficiency* as consisting of two main components: local external economies and joint action. Local external economies were explored by Marshall in the 1920s and some examples are a market for specialized skilled labor, market inputs, improved market access, easy access to specialized knowledge, and rapid dissemination of information. According to Schmitz (1995), "the concept of external economies is essential to understand efficiency advantages which small firms derive from clustering" (p. 535).

[2] According to Porter (2000) innovation in a cluster occurs because of the close proximity of related industries causing them to innovate in part because of sheer pressure. On the other hand, Miller and Stich (2009) argue that "having a group of smart people (and organizations) in a setting where they can share ideas and learn from each other on a particular topic leads to new and better ideas [innovation]" (p. 177).

However according to Schmitz (1995), *consciously* pursued joint action is a critical component distinguishing clusters from industrial districts. This joint action can be vertical, horizontal, or multilateral (Pietrobelli & Rabellotti, 2004). Vertical linkages refer to backward linkages with suppliers and subcontractors as well as forward linkages with traders and buyers. Horizontal linkages refer to linkages with other producers in the area, and finally, multilateral linkages refer to linkages with multiple local producers through cluster-wide institutions.

Regarding the role of specific institutions within the cluster, Formica (2003) argues that agency model organizations, or quasi-governmental public-private partnerships, serving as an instrument of collaboration between government and businesses are the "less effective means available to policymakers who would be willing to induce governmental partnership both as a vehicle to reinforce existing clusters and a propulsive factor in cluster building" (p. 243). He concludes that a free agent model, or private sector service delivery, should replace the agent model to stimulate industrial self-government within the cluster. This finding is similar to Miller's (2006) in that private sector-led economic development is more suitable for cluster development compared to public sector leadership. In other words, the private sector should be responsible for forging networks and partnerships within the cluster. See Table 2 for a summary of the literature reviewed regarding the role of government in cluster upgrading.

Table 2 Summary of Cluster Upgrading Literature

Author	Year	Key Findings
Porter	2000	- More advanced role - To facilitate cluster development and upgrading
Pietrobelli & Rabellotti	2004	- Policies that upgrade need to consider territorial factor needs (including social and cultural identity) and a linkage factor
Schmitz	1995	- Looked at the positive impacts of factors associated with the competitiveness of firms located in clusters - Defined collective efficiency consisting of local external economies and joint action - Joint action can be vertical, horizontal, or multilateral
Formica	2003	- Agent model, or private sector, more efficient to stimulate industrial self-government than quasi governmental public-private partnerships

In conclusion, networks, linkages, and partnerships lie at the heart of cluster development, innovation, and upgrading (Pietrobelli & Rabelloti, 2004; Schmitz, 1995). Government can play a more advanced role that involves creating, managing, and strengthening networks between the cluster and external institutions since the private sector is more effective at creating partnerships within the cluster (Formica, 2003). The public administration theory of network governance seems ideal to help explain and understand how government can play this more advanced role that requires stimulating, developing, and strengthening networks and linkages.

Network Governance Theory

This section is divided into three parts. The first part will discuss the importance of network governance theory in public administration. This first section will also focus

on some theoretical propositions. The second part will discuss the role these theories play in economic development and cluster development. Finally, the third section will discuss empirical studies conducted utilizing these theories in an effort to understand how they can help address issues faced primarily by local governments.

Network Governance and Public Administration

Frederickson (1999) argued that the twentieth century was a successful century for American public administration. Major accomplishments, such as winning the space race and the Second World War among others throughout the century, were effectively implemented by public administration. However, according to the author, the field began repositioning itself at the turn of the century. Public administration is moving away from the clash of interests, competition, and winners and losers toward theories that focus more on cooperation, networking, institutions, and governance. In other words, "a repositioned public administration is the political science of making the fragmented and disarticulated state work" (Frederickson, 1999, p. 702).

According to Frederickson (1999), several factors have played a role in the disarticulation of the state. The main factors include economic activity, which essentially is becoming more global and less local, and advances in telecommunication technology that further impact the "traditional" state. These two factors have made boundaries and borders, along with jurisdictions, to become blurry and unclear, especially in metropolitan areas. This in turn has affected "traditional" public management, generating new challenges and issues. In response, current public administration practices have evolved trying to address these issues and at the same time are becoming the bedrock on which theoretical perspectives are being built.

Using institutionalism as a framework and based on network governance theory, Frederickson (1999) defines a theory that ameliorates these issues and calls it administrative conjunction. Administrative conjunction is the "array and character of horizontal formal and informal association between actors representing units in a networked public and the administrative behavior of those actors" (Frederickson, 1999, p. 708). In other words, conjunction is "primarily an administrative activity carried on by like-minded institutional professionals" (Frederickson, 1999, p. 709). The author concludes that public management professionals engage in administrative conjunction in a voluntary manner replacing authority, while at the same time representing a generalized public interest extending beyond their jurisdictions. This has profound implication for cluster development since many clusters extend beyond county and state lines.

Agranoff and McGuire (2003) made an extensive review of empirical research on network governance in an effort to show a theoretical connection between intergovernmental and network management. The authors argue that public administrators are involved in horizontal linkages with county governments, townships, nongovernmental organizations, etc., in addition to the traditional top/down (vertical) linkages with state and federal government. Furthermore, this network management takes places within specific policy and institutional contexts that shape and affect the network itself. This context is usually defined by policy preferences and choices that in turn provide a gauge to the use and type of intergovernmental networks. This intergovernmental and network management has many similarities with cluster development and upgrading in that linkages exist and take place within specific policy and institutional contexts.

Provan and Milward (2001) developed a framework looking into three levels of network analysis in an effort to understand network effectiveness. The authors analyzed community-based, mostly publicly funded health, human, and welfare services identifying key stakeholder groups as well as effectiveness criteria for each of the levels. The three levels identified by the authors include community, network, and organization/participant. The authors conclude that although it is difficult to evaluate a network in terms of effectiveness because of the different players as well as different objectives and outcomes, it is critical to understand the effectiveness of networks for local, state, and national policymakers trying to provide better services.

These findings relate to cluster theory in two ways. First, the authors identify the dynamics, relationships, and issues between the different types of levels within a network that also exist in local and state governments trying to provide a service to businesses–for example, a cluster. Second, the effectiveness criteria discussed is equally useful if network governance between local and state governments is pursued in order to further upgrade an industrial cluster.

On a similar note, Provan and Kenis (2008) identified three different forms of network governance, proxies to measure their effectiveness, their inherent tensions, and how these forms evolve. The three forms are participant-governed or shared participant governance, lead organization-governed, and network administrative organization (NAO). The former is the most flexible and can be formal or informal, while the latter two are more formal and incorporate institutions and procedures. The authors argue that for a network-level theory to evolve, an understanding that different configurations lead to different network-level effects is critical. Therefore, the authors "marry" the two more important research areas in this topic: network analytical and governance perspectives.

These different forms of network governance and their ability to evolve resonate with Su and Hung's (2009) argument that the cluster origin, institutional context, and history determine the strength of its networks and linkages.

Provan and Kenis (2008) conclude among other things that the original network governance form is more than likely to change or evolve (more so if the original form was a shared-participant), especially if the network is successful. The authors also provide a series of propositions regarding the different network governance forms, their critical contingency components, and evolution, laying the foundation for future research. Finally and from a holistic point of view, the authors argue that a combination of network-level outcomes, the form of the network governance, and the management of tensions by what they called "network-level managers" within each form are "critical for explaining network effectiveness" (p. 247).

Ansell and Gash (2008) define a similar term called "collaborative governance." They define this term as a "mode of governance [that] brings multiple stakeholders together in common forums with public agencies to engage in consensus-oriented decision making" (p. 543). The authors reach this definition and criteria joining both the concepts that governance applies to rules and laws pertaining to the provision of public goods, but also that governance is about collective decision making, including public and private actors. This collective decision-making process benefits cluster development and upgrading because of the multiple actors, private and public, involved.

Collaborative governance according to Ansell and Gash (2008) stresses six important criteria: (1) forum is initiated by public agencies, (2) participants include nonstate actors, (3) participants engage in decision making and are not merely "consulted," (4) forum is formally organized, (5) decisions are made by consensus, and

(6) the focus of the collaboration is on public policy or management. The authors developed a model that includes starting conditions, institutional design, a collaborative process, facilitative leadership, and outcomes. The model focuses on what makes collaborative governance more or less effective by conducting a meta-analysis of 137 cases of collaborative governance across a range of policy sectors. The collaborative process variable is at the core of the model, while the other variables are either critical contributions to or context for the collaborative process. This collaborative nature is intrinsic in clusters and is one of its key characteristics. Thus, this collaborative governance model describes a process that is already taking place in clusters and that is useful to understand what is required for the external agents of the cluster to collaborate.

To conclude this brief overview of network governance theory and public administration, Frederickson and Matkin (2005) operationalized Frederickson's (1999) administrative conjunction theory, analyzing the Kansas City metropolitan area. The objective of this study was to explore intergovernmental cooperation in local governments. Among some of the findings of the study is the fact that executive functions, such as mayors, are more willing to cooperate than are legislative positions. Similarly, public officials with experience in interlocal collaboration are more prone to cooperate in future projects than officials with less experience in interlocal collaboration. Table 3 shows a summary of the key findings regarding network governance and public administration as it relates to cluster development.

Table 3 Summary of Network Governance and Public Administration Findings

Author	Year	Key Findings
Frederickson	1999	- Administrative conjunction based on horizontal formal and informal associations
Agranoff & McGuire	2003	- Intergovernmental and network management taking place within specific policy and institutional contexts
Provan & Milward	2001	- Three levels of network analysis; identify dynamics and relationships; discuss effectiveness criteria
Provan & Kenis	2008	- Types of network governance and their evolution
Ansell & Gash	2008	- Collaborative governance including context and starting conditions
Frederickson & Matkin	2005	- Explores intergovernmental cooperation; more experienced and with executive functions cooperate more

Network Governance and Economic Development

Regarding economic development and network governance theory, Agranoff and McGuire (1998) explored the intergovernmental networking component of economic development in 237 cities. The authors found that a complex series of relationships exist between three factors when promoting business development in urban areas. The first factor is three different strategic types of networks involved in local economic development (policy/strategy making, resource exchange, and project-based); different determinants exist of the variation in the structure and composition of the networks (leadership, managerial, policy, and locational), and the capacities needed to operate in networks are different than those needed to operate in single organizations.

Agranoff and McGuire (1998) show that local economic development in the cities analyzed involved a host of local public and private sectors but also a higher level of government that set the development context. State and federal governments play a pivotal role in the development of networks providing financial support, information,

expertise, and advocate more collaboration with horizontal actors. The authors conclude that networks are becoming the norm in public management and that the management of these networks is becoming the primary operational concern. This conclusion is paramount in that it implies that political culture is important.

In an effort to understand if insertion into global value chains enhances or undermines local cluster upgrading strategies, Humphrey and Schmitz (2000) reviewed four distinct streams of literature including new economic geography, business studies, regional science, and innovation studies. The authors defined governance as the "coordination of economic activities through non-market relationships" (p. 4). Further, Humphrey and Schmitz distinguish between three types of governance: network, quasi-hierarchy, and hierarchy.

Humphrey and Schmitz (2000) identified a model of local/regional industrial policy in which the "rapid diffusion of knowledge within the cluster do not just result from incidental synergies, the 'industrial atmosphere', but are fostered by policy networks of public and private actors" (p. 8). Further, the authors argue that local governance plays a key role in the successful upgrading of clusters. This local governance is influenced by the political culture in that particular region.

Regarding governance theory and urban issues, Feiock (2007) looked at the extent to which voluntary cooperation and coordination among local governments can provide solutions to regional problems. Benefits of cooperation and coordination are discussed, such as collective and selective benefits. Furthermore, the author utilizes rational choice to understand the transactions costs and benefits associated with interlocal agreements.

Feiock (2007) also looks at the contextual factors that have an impact on the feasibility of interlocal agreements to take place, such as transaction characteristics of

goods, characteristics of communities, political institutions, and the structure of policy networks. The author discusses a series of propositions exploring the likelihood of the emergence of cooperative intergovernmental agreements within each of the contextual factors analyzed. Feiock (2007) concludes, "transaction costs are reduced by formal and informal institutional arrangements" (p. 59) and that "voluntary governance is contingent on contextual factors" (p. 60); therefore, a "better understanding of the context of metropolitan governance not only advances our theoretical understanding of institutional collective action, but it also has practical policy implications" (p. 60). Therefore, this research holds the political culture constant.

Similarly, Visser (2004) looked at two voluntary regional councils in Michigan in an effort to understand why some voluntary regional councils are successful and others are not in "new regionalism." The author defines "new regionalism" as "a policy agenda and an action approach to effective governing metropolitan areas" (p. 51). The author concluded that "virulent localism" might undercut these councils leading to their potential demise. Also, Visser (2004) concludes that although voluntary regional councils may not be an effective substitute for regional governance, it is far superior to interlocal competition or isolationism, since it can produce collaboration and enhances the planning skills of their members, instilling collaborative rather than competitive approaches among local governments. This is important since clusters extend beyond counties and states, emphasizing the needs of voluntary regional councils to sustain and develop the cluster. Table 4 shows the summary of key findings regarding network governance and economic development as it relates to cluster development and the role of government.

Table 4 Summary of Network Governance and Economic Development Findings

Author	Year	Key Findings
Agranoff & McGuire	1998	Management of networks is becoming the primary operational concern in public management
Humphreys & Schmitz	2000	Local governance plays a key role in cluster upgrading (implies importance of controlling for political culture)
Feiock	2007	A better understanding of the context leads to advances in institutional collective action (implies importance of controlling for political culture)
Visser	2004	Analyzes voluntary regional councils and how these instill collaborative rather than competitive approaches among local governments

A couple of themes emerged from this literature review. First, engaging in networks to enhance governance and better address complex issues has transaction costs involved that need to be recognized. At this point, these agreements are voluntary, implying that authority and hierarchy may not be necessary. In other words, there is an implicit recognition that working together is sufficient to embrace regional governance approaches rather than being forced by authority or policy.

Second, public management is constantly adapting to this new context, and theory is only now starting to "catch up." This second point is important because it implies that theoretical perspectives are not yet solid enough to dictate and guide administrative practices. However, the contributions of network governance theory to regional economic development are enormous in that they provide a useful framework on which to build regional jurisdictions with the potential to benefit industrial clusters.

Third, the costs and pitfalls of voluntary regional councils or interlocal agreements are now beginning to be understood. This in turn paves the way for the

development of regional economic development jurisdictions with boundaries that mirror those of the industrial cluster. The local and regional economic development field is very dynamic, and therefore, networks utilized to efficiently design and implement economic development policies are constantly adapting to changing circumstances and contexts. Furthermore, research shows that the successful upgrading of clusters relies in part on networks of public and private actors (Esser et al., 1995; Humphrey & Schmitz, 2000; Messner, 1997; Pietrobelli & Rabellotti, 2004; Schmitz, 1995). Thus, the evident overlap between regional governance and cluster upgrading is the need of networks.

In summary, network governance theory is the critical link between public administration and cluster-based economic development. Although the majority of the literature reviewed regarding network governance theory refer to metropolitan areas and the major issues and challenges they face, such as diffusion of jurisdictions and policy burden spillovers, this stream of literature is useful for this study in two ways.

First and foremost, it demonstrates that collaboration and interlocal agreements are possible between different political jurisdictions. As a matter of fact and as Frederickson (1999) argued, these theories are the future of public administration from a practical perspective. The role of public managers in the "hollow state" is not well understood yet, but one thing is clear: public managers are spending more and more of their time not only managing their own agencies but also building critical linkages with other agencies. The ability or inability to build linkages has a profound impact on cluster development and sustainability.

Second and more importantly, network governance theory can serve as the framework to develop regional jurisdictions that align with the cluster's boundaries, thus allowing for the design and implementation of cluster-based policies that can further

enhance or upgrade the cluster. Furthermore, network governance frameworks were reviewed (Ansell & Gash, 2008; Frederickson, 1999; Provan & Milward, 2001; Provan & Kenis, 2008) that could be useful when designing and implementing regional jurisdictions, collaborations, and partnerships across city, county, and state lines.

However, other elements–in addition to networks and linkages both within and outside the cluster–such as the market model, evolutionary economics, civic culture, and social and cultural identity need to be considered when designing policies to facilitate the development and upgrading of a cluster (Pietrobelli & Rabellotti, 2004) as well as to understand the political/institutional context that determines the extent of cluster-based policies (Miller, 2006; Su & Hung, 2009). As discussed throughout the previous section, these additional elements impact the role of government in cluster development. Therefore, understanding the political culture in which the cluster is immersed is warranted.

Political Culture

Elazar (1984) provides a political culture theory built on migration patterns of distinct racial, ethnic, and religious groups in the country. He argued that these immigrant groups not only congregated in settlements but also migrated together and shared political ideals. The results are three political subcultures that view politics, bureaucracy, and government in different ways. Even though all subcultures exist in a particular state, one in particular dominates. The three subcultures are moralistic, individualistic, and traditionalistic.

According to Elazar (1984), a *moralistic* subculture is more concerned with the public interest. This particular subculture uses government as a legitimate instrument to

achieve the public good, mainly through welfare. Public administration is strong and bureaucracies are more developed and enterprising than in other subcultures. Finally, government is a major force in citizens' lives.

In an *individualistic* political culture, political parties serve specific interests and government exists to handle the demands of the people it serves. In contrast to the moralistic subculture, private concerns are more important than the public good. Bureaucracies are somewhat developed but not as much as in the moralistic subculture. Elazar (1984) argues that the main characteristic of this subculture is that the community should minimally intervene in private matters, and government should keep the marketplace working properly.

The main characteristic of a *traditionalistic* subculture is the use of government to maintain the hierarchical social order and defend traditional values. Bureaucracies are not as developed as in the other subcultures, and they are not trusted. Landowners play a dominant role in the political process, political power is concentrated in elites, and citizens are not expected to play a major role in government (Elazar, 1984).

Table 5 shows the political subcultures by states (Elazar, 1984; Mead, 2004) and a score based on a scale developed by Sharkansky (1969) and improved by Koven and Mausolff (2002) when analyzing differences in state budgets. According to this improved scale, a score of 9 is a pure traditionalistic state; a score of 5 is a pure individualistic state; a score of 1 is a pure moralistic state. A total of 16 states have a traditionalistic political culture, highlighting the importance of this research when understanding the impact this culture has on cluster development and sustainability.

Table 5 Political Cultures by State

Moralistic	**Individualistic**	**Traditionalistic**
Colorado (1.80) Maine (2.33) Michigan (2.00) Minnesota (1.00) North Dakota (2.00) Oregon (2.00) Utah (2.00) Vermont (2.33) Wisconsin (2.00)	Alaska (N/A) Indiana (6.33) New Jersey (4.00) Nevada (N/A) New Hampshire (2.33)	Mississippi (9.00) South Carolina (8.75) Tennessee (8.50) Virginia (7.86)
Moralistic/Individualistic	*Individualistic/Moralistic*	*Traditionalistic/Moralistic*
California (3.55) Idaho (2.50) Iowa (2.00) Kansas (3.66) Montana (3.00) New Hampshire (2.33) South Dakota (3.00) Washington (1.66)	Connecticut (3.00) Illinois (4.72) Pennsylvania (4.28) Massachusetts (3.66) Nebraska (3.66) New York (3.62) Ohio (5.16) Rhode Island (3.00) Wyoming (4.00)	Arizona (5.66) North Carolina (8.50)
	Individualistic/Traditionalistic	*Traditionalistic/Individualistic*
	Delaware (7.00) Hawaii (8.25) Maryland (7.00) Missouri (7.66)	Alabama (8.57) Arkansas (9.00) Florida (7.80) Georgia (8.80) Kentucky (7.40) Louisiana (8.00) New Mexico (7.00) Oklahoma (8.25) Texas (7.11) West Virginia (7.33)

Source: Koven & Mausolff (2002); Mead (2004)

According to Lieske (1993), even though Elazar's (1984) political culture typology has been empirically tested in more than 100 studies, Elazar's derivation of the three political subcultures is not "based on any rigorous statistical procedures" (p. 889) and has not been updated to reflect recent cultural changes. Moreover, Lieske (1993) argues that Elazar's typology including entire states and substate regions is somewhat crude and does not allow "a great deal of empirical precision" (p. 889). Therefore Lieske's (1993) political subculture typology is more updated, is derived from replicable

statistical procedures, and is available at the county level. A total of 10 subcultures were identified: Germanic, Hispanic, Border, Anglo-French, Ethnic, Nordic, Blackbelt, Heartland, Mormon, and Rurban.

Lieske (1993) mentions that in the *Anglo-French* subculture, about a third are Catholic, residents are predominantly white, and it is not distinguishable from other subcultures in proportion of college graduates, professionals, and managers. The *Blackbelt* subculture is about a third black and has a high proportion of residents employed in manufacturing and also has the highest levels of income inequality and poverty. A well-educated and highly skilled workforce and stable family life characterize the *Mormon* subculture. The *Rurban* and *Ethnic* subcultures have a highly educated and skilled workforce, but the former is less dependent on manufacturing than the latter.

Both Lieske's (1993) and Elazar's (1984) political cultures have been used to explain the variation in seven measures of public policy at the local level, including local government revenues, local tax burden, educational expenditures, educational tax burden, welfare expenditures, welfare tax burden, and local Aid to Families with Dependent Children (AFDC). The main finding from this political culture research is the fact that differences in political culture impact economic development policy and can be held constant.

In addition, Boeckelman (1991) found that traditionalistic states engage more in maintenance/attraction strategies rather than creation strategies pursued more by moralistic states regarding state development policies. Maintenance/attraction strategies focus on maintaining existing industries or recruiting branches of out-of-state firms through lower tax rates and labor costs as well as granting concessions. On the other hand, creation strategies focus more on creating new industries or transforming old ones

through increasing capital availability, educating the workforce, and promoting technical innovation. Creation strategy policies are more suited for cluster development. Boeckelman (1991) also mentions that traditionalistic states usually only serve business interests and do not focus on providing long-term gains of high-quality jobs, which as described in more depth in Chapter 4, are provided by clusters.

The importance of political culture in addressing pertinent economic issues is supported by two reasons, according to Boeckelman (1991). First, the political culture concept itself is partly rooted in preferences and orientations toward political economy therefore differing in the extent to which "they accept the 'marketplace' and economic rationality as ordering principles for society" (p. 51). Second, political culture reveals itself more in the behavior of political leaders having a stronger impact in complex policy areas such as economic development. Therefore, political culture is useful to understand the additional elements that impact cluster development and the role of government.

Combining the Literatures and Research Expectations

This research study combines cluster theory, network governance theory, and political culture, utilizing the shipbuilding cluster[3] in the Gulf Coast as the unit of analysis to better understand government's potential and limitations through its role and level of involvement in cluster development.

In an effort to explain competitive advantage rather than comparative advantage, which used to be the leading explanatory indicator for economic growth, Porter (1990, 2000) identified a four-factor model that generates geographically concentrated "clusters" that are more competitive and innovative than industries in "isolation." He also discussed

[3] The shipbuilding cluster was selected mainly because it is a mature cluster, involves an intrinsic innovative industry (Low, 2009), and has a long history in the region.

government's role mainly under a context of influencing the factors through policies and facilitating the cluster development and upgrading.

Enright (2003) identified different levels of government involvement while Wickham (2005) pointed out that government's role not only is endogenous to cluster development but also varies depending on the development stage of the cluster itself and can play a more advanced role facilitating the development and upgrading of the cluster (Porter, 2000). Furthermore, Su and Hung (2009) concluded that a cluster's origin, institutional context, and history determine the strength of its networks and linkages. In addition, several authors argue that linkages and relationships are critical for a cluster to upgrade, and these can be enhanced and strengthened through public policies (Esser et al., 1995; Humphrey & Schmitz, 2000; Messner, 1997; Pietrobelli & Rabellotti, 2004; Schmitz, 1995).

According to multiple network governance authors (Ansell & Gash, 2008; Feiock, 2007; Frederickson, 1999; Frederickson & Matkin, 2005; Provan & Kenis, 2008; Provan & Milward, 2001; Visser, 2004), not only does this theory describe and systematically explain linkages and relationships among different public actors as well as between private and public players, but this theory is also shown to have a major role regarding economic development (Agranoff and McGuire, 1998; Humphrey & Schmitz, 2000).

Furthermore and from an organizational theory perspective, cluster and network governance theories have a common denominator: both describe networks at play. Networks are a different form of organizations since they are neither market nor hierarchical in nature (Podolny & Page, 1998; Powell, 1990; Scott, 1981). Bernat (1999) argued that although clusters and networks are conceptually different primarily because industrial clusters rely heavily on proximity while networks do not, they often go

together. Therefore, network governance theory is a good and useful framework within which to understand the linkages and relationships not only within a cluster but also among different public administration institutions.

Building on these literatures, three questions remain: (1) what explains the extent of cluster-based policies; (2) what level of involvement is expected from government; and (3) how can network governance theory be incorporated in this relationship between cluster theory and government's role? In an attempt to address these questions and to fill the gap between cluster theory and government's role, Miller's (2006) model was tested holding the market model, evolutionary economics, civic culture, and social and cultural identity constant since the region where the shipbuilding cluster is located has a traditionalistic political culture. The relationships between the network governance moderator, political/institutional context, and the extent of cluster-based policies were analyzed and tested.

Since political culture is partly rooted in orientations toward political economy (Elazar, 1984), the assumption is made that the structural factors component variables (market model, evolutionary economics, and civic culture) are equally affected by the traditionalistic political culture. The five levels of government involvement in cluster development identified by Enright (2003) were also utilized to provide a better understanding of government's role that goes beyond influencing factors and delves more into the advanced role government plays in helping the cluster upgrade.

However, the traditionalistic political culture presents some challenges for cluster-based economic development as well as public administration from both a political/institutional context as well as from the level of involvement. Elazar (1984) argued that traditionalistic states view the role of government as necessary only to

maintain the status quo, and thus, economic growth and development is the responsibility of the elites and not of government.

This limited role leads to bureaucracies that are not trusted and are not as developed as bureaucracies in other political cultures. Boeckelman (1991) found that traditionalistic states take a more "passive" strategy regarding economic development focusing more on maintaining existent industries and lowering tax rates and/or labor costs rather than a more "active" role creating or transforming old industries, creating a tension for what is necessary in network governance and cluster theory.

In summary, Table 6 shows the research expectations for each theory discussed previously based on the following characteristics of development policies in a traditionalistic political culture (Boeckelman, 1991; Elazar, 1984; Lieske, 1993):

- Role is to maintain social order and the status quo; bureaucracies not as developed or trusted
- Elites are responsible for economic development
- Pursue maintenance/attraction strategies rather than creation strategies

Table 6 Summary of Research Expectations

Theory	Authors	Expectations
Role of Government	- Enright (2003) - Wickham (2005) - Su & Hung (2009)	- Ranging from non-existent to catalytic; perhaps supportive but definitely not directive or interventionist - Cluster origin more than likely spontaneous rather than policy-driven
Miller's Model	- Miller (2006)	- Private sector led with regimes, growth machines, and civic entrepreneurs very engaged - Tax structure not favorable for cluster-based economic development - Elected officials with no regional perspective and long-term vision - Weak institutional arrangements - Professionalism focused on maintaining/recruiting; somewhat favorable for cluster-based ED
Network Governance	- Agranoff & McGuire (1998) - Frederickson (1999) - Provan & Milward (2001) - Provan & Kenis, (2008) - Ansell & Gash, (2008)	- Weak informal/formal linkages and interlocal agreements - Little or no decentralization - High transaction costs - Starting conditions not favorable - Administrative conjunction non-existent or very informal - Shared participant network governance form

As shown in Table 6, political culture rests on the crossroads of understanding government's influence in each of the four factors, the level of government involvement in cluster development, the shape of the political/institutional context that in turn explains the extent of cluster-based policies, and the degree to which network governance can achieve its full potential. The findings from this study will provide valuable information to better understand the complex role public administration can and should play in cluster development, especially in a mature and "old" cluster such as shipbuilding.

CHAPTER III

METHODOLOGY

Based on the literature reviewed, this section discusses some hypotheses related to the role of public administration in cluster-based economic development strategies. The methodology utilized to gather the data, test the hypotheses, and select the industrial cluster is also discussed in this section. Utilizing Miller's (2006) model as a framework, the network governance structure (private versus public sector-led economic development) is the independent variable; the political/institutional predictors is the intervening variable; and the dependent variable is the extent of shipbuilding cluster-based economic development. Because the shipbuilding cluster is in a mature stage, a component of the semi-structured interview instrument will focus on gathering some insight on the cluster itself and not only on government's role.

Industrial Cluster Selection

The shipbuilding cluster in the Gulf Coast was selected as the industrial cluster for four main reasons. First, after conducting a local moran spatial correlation analysis of location quotients,[4] the shipbuilding industry clustered in two different regions of the Gulf Coast. The location quotient is the ratio of the percent employed or establishments in a region divided by the percent employed or establishments in the nation. The resulting ratio, greater or equal to 1.25, shows an industry is "concentrated" in that particular

[4] The 2007 County Business Patterns of the U.S. Census Bureau were used to obtain the number of shipbuilding establishments (NAICS code 336611)

region compared to the nation. According to Porter (2003), location quotient analysis can be used to identify clusters.

Location quotients were then utilized to conduct LISA cluster maps in an effort to identify spatial correlations and thus delimit the geographic scope of the cluster (delimiting the geographic scope of a cluster is one of the main criticisms of cluster theory: see Martin & Sunley, 2003). My research project makes the unique contribution of using location quotients (based on number of establishments) in the spatial correlation analysis rather than number of establishments or people employed. The regions identified are two: South Louisiana and Alabama-Mississippi (see Figure 3).[5]

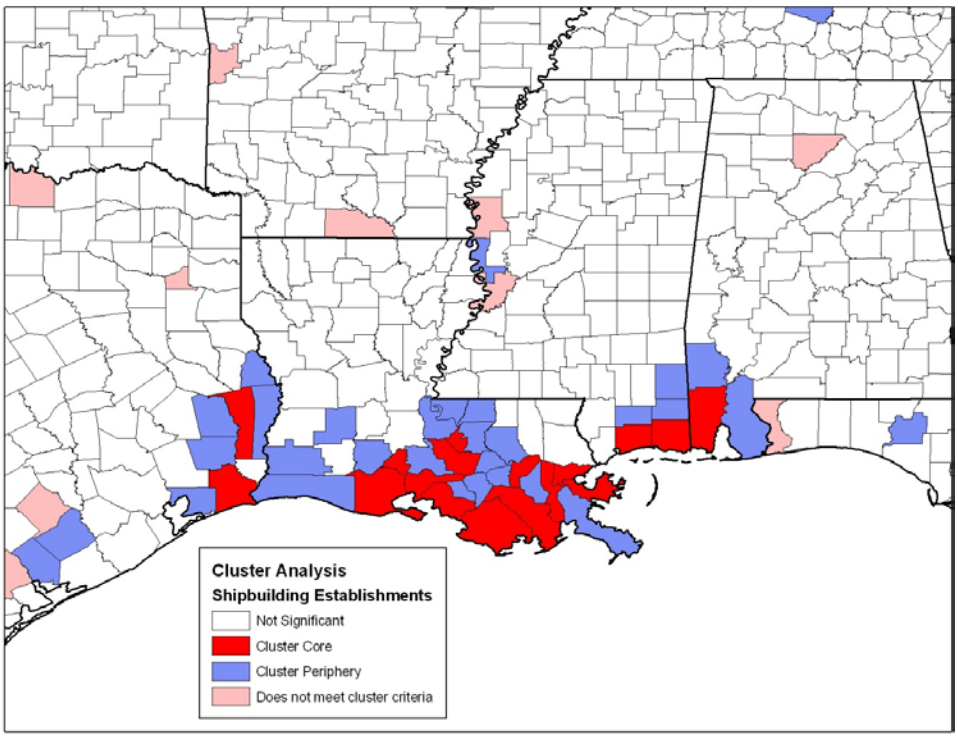

Figure 3 Shipbuilding Clusters

[5] Texas was not included, even though it also has a traditionalistic political culture, because of a lack of funding.

Second, the shipbuilding cluster is considered a traded cluster among three types: traded, local, and resource-dependent (Porter, 2003). Traded clusters compete across regions, can locate anywhere, and show a higher level of productivity and innovation compared to the other two (Ketels, 2006). Thus, understanding government's role in the development of this particular cluster type is important. On the other hand, because only shipbuilding establishments were utilized in the location quotient analysis used to identify the cluster, the cluster is considered to have horizontal relationships since only direct competitors (shipyards) were included in the location quotient analysis and not buyers and suppliers. Remember that according to Enright (2003), vertical clusters include relationships between buyers and suppliers, while horizontal clusters refer to clusters with direct competitors.

Third, the shipbuilding cluster was present in three different states in the Gulf Coast as mentioned above. Having three different states with the same political culture (Louisiana, Mississippi, and Alabama) involved in the development and sustainability of the same cluster should help understand better the role of public administration as well as identify any similarities or differences. Moreover, although the political culture is similar if not the same according to Elazar (1984) for each of the three states involved, perhaps some differences in the degree and type of government involved exist, supporting Enright's (2003) argument.

Finally, the regions selected with shipbuilding clusters for this study are part of what has been designated a "megaregion" by the National Committee for America 2050. This committee comprises regional planners, scholars, and policymakers, and defines a megaregion as a region linked by "interlocking economic systems, shared natural

resources and ecosystems, and common transportation systems" (America 2050, 2009). Their objective is to develop a framework to address the nation's future growth.

Research Design and Validation

A collective case study research design was utilized since the study includes three instrumental case studies, and understanding these particular cases will lead to a better overall understanding of the topic (Stakes, 2003). Semi-structured interviews were conducted in an effort to (1) allow the key informant to share his/her experience, (2) have certain flexibility of taking the interview in the direction desired, and (3) encourage and guide the conversation to mutual discovery (Neuman, 2006).

Descriptive questions were formulated to explore the setting and background, while structural questions were formulated to gather specific data and placed into previously defined categories[6] (Neuman, 2006). The previously defined categories include cluster history, network governance, political/institutional predictors, and the extent of cluster-based economic development policies.

Regarding external consistency, findings were triangulated conducting interviews with different key informants related to the shipbuilding cluster such as city planners, local economic developers, regional economic developers, government officials, and leaders in the shipbuilding industry. An initial list of potential interviewees was compiled from the most visible key players. Additional key informants were selected using a snowball sampling technique. The results are only generalizable to the shipbuilding cluster in the tri-state region (Louisiana, Mississippi, and Alabama) on the Gulf Coast.

[6] For more information on the categories, please refer to Appendix A

Model and Hypotheses

Miller's (2006) framework attempts to understand the political/institutional context to explain the variation in the extent of cluster-based economic development. This study will operationalize the model in such a way to help understand the variation in the extent of policies that helped develop and/or sustain the existent cluster. The cluster's stage of development will also be taken into consideration when analyzing the predictors, factors, and moderators identified by Miller (2006). Figure 4 shows the model.

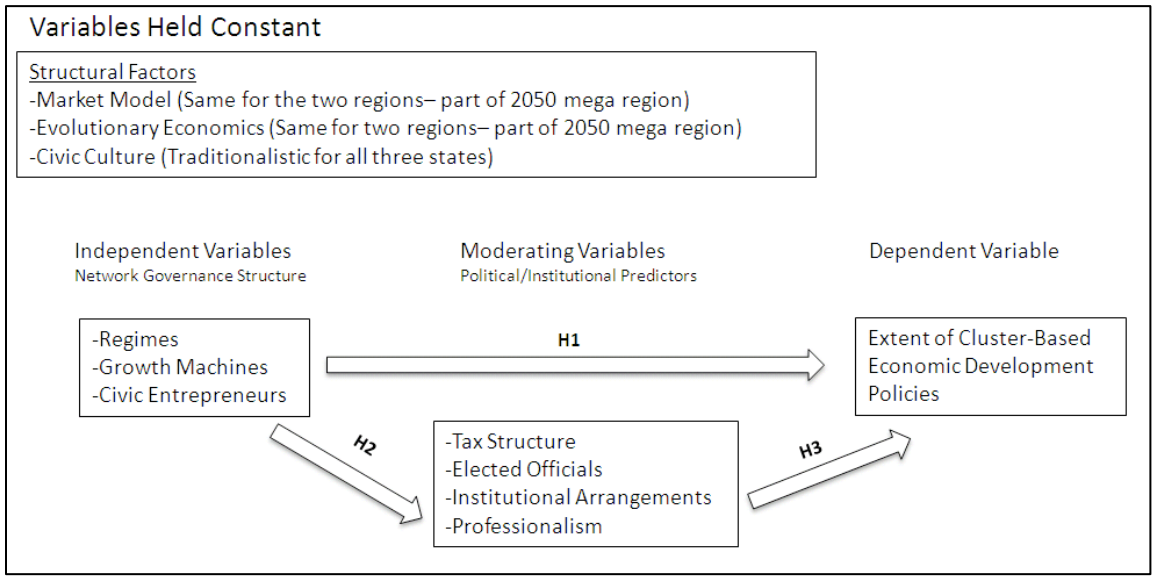

Figure 4 Research Model

H1: The higher the network governance score (more private sector driven), the higher the extent of cluster-based economic development

H2: The higher the network governance score (more private sector driven), the higher the political/institutional predictor score

H3: The higher the political/institutional predictor score, the higher the extent of cluster-based policies

Data Gathering

An application was submitted to the Institutional Review Board at Mississippi State University since this research project dealt with human subjects. Once approval was obtained, data was gathered utilizing a semi-structured interview conducted in person or over the phone. All components were measured at the ordinal level in scales from 1 to 10. The independent, intervening, and dependent constructed variables were measured by the sum of their components at the ordinal level.

In an effort to triangulate the information gathered, key informants from three different sectors were interviewed. Research related to economic development and the shipbuilding industry was conducted, and an initial list of approximately 30 organizations was compiled. After using the snowball sampling technique, the total number of organizations contacted was 72. The total number of interviews conducted was 24. The overall participation rate was 33.3%. These organizations included key leaders from local/state government, regional chambers of commerce, local economic development organizations, and shipbuilding establishments.

Although the sample size may seem small, the overall population is limited as well. The limited size of the population is due to three main reasons. First, the number of communities in the region selected with a high concentration of shipbuilding establishments compared to the nation is not very large. Second, people who are knowledgeable of both the industry and the political context within our research area further limited the overall population. Third, of those contacted, only about a third participated in the interview. Consistent efforts were made to increase the sample size within the limited population.

Operationalization and Data Coding

The network governance structure variable was measured by the following components on a scale from 1 to 10: the strength level of regimes (question 2a–see Appendix A), the engagement level of growth machines (question 2b–see Appendix A), and the activity level of civic entrepreneurs (question 2c–see Appendix A) (Miller, 2006). The scores obtained for each component were added up to obtain a constructed variable called "network governance." Because economic development is usually a joint effort, no pure "private" or "public" driven network governance was expected. The closer the final score was to 30 (the highest score possible), the closer it was to being purely private sector driven. Similarly, the closer it was to 3 (the lowest score possible), the closer it was to being purely public sector driven.

The political/institutional variable was measured by the following components also on a scale from 1 to 10: local tax structure (question 3–see Appendix A), institutional arrangements made easier (question 4–see Appendix A), economic development perspectives of the local elected officials (question 5–see Appendix A), and professionalization of the local economic development staff (question 6–see Appendix A). A constructed variable called "political/institutional predictors" was obtained from adding each of these four components together. The maximum score possible was 40 and the minimum was 4.

Finally, the extent of cluster-based economic development policies was measured by eleven components using a scale from 1 to 10. These components were obtained from Porter (2000) and were asked in questions 7a through 7k (see Appendix A). The score obtained from each component was added to obtain a constructed variable called "the extent of cluster-based policies." The maximum score possible was 110, while the

minimum score possible was 11. Though face-to-face interviews were initially planned for all interviews, some interviews were conducted over the phone because of the participants' busy schedules and the considerable time it took to reach the Gulf Coast (about four and a half hours). Therefore, phone interviews for some participants seemed more accommodating than face-to-face interviews. The disadvantages of phone interviews include the lack of observing face gestures and facial expressions that also convey valuable information. Nonetheless, both face-to-face and phone interviews were conducted, recorded, and later transcribed. Table 7 shows a summary of the components utilized and how the variables were constructed.

Table 7 Constructed Variables and Components

Components	Constructed Variable	Type
▪ Regimes (reg) ▪ Growth Machines (grwmach) ▪ Civic Entrepreneurs (civent)	Network Governance (netgov)	Independent
▪ Tax Structure (taxst) ▪ Inst. Arrangements (instarr) ▪ Elected Officials (eleoff) ▪ Professional Staff (edprof)	Institutional Predictors (instpred)	Intervening
▪ Promotion (prom) ▪ Infrastructure (infra) ▪ Workforce (wrkfrc) ▪ Research (res) ▪ Programs (prog) ▪ Activities (act) ▪ Investment (inv) ▪ Suppliers (supp) ▪ Conferences (conf) ▪ Regulatory Standards (regstd) ▪ Trade Zones (trdzo)	Extent of Cluster-Based Policies (cbpol)	Dependent

Data Analysis

The data gathered was analyzed using two approaches: qualitative and quantitative. Two statistical methods were utilized in the latter approach to test the

hypothesis, fine-tune the political/institutional model, and understand which government policies have enhanced the model using Porter's (2000) diamond.

In order to understand the cluster's history and provide some context, qualitative data gathered through the interviews was analyzed. NVivo 8 software was utilized to code and analyze the responses obtained from the open-ended questions (questions 1, 1a, 1b, 8, and 9–see Appendix A). After each interview was transcribed, emerging themes concerning the cluster's history and impact in the region were identified. Once these themes were identified, each interview response was coded based on those themes. The findings are presented in Chapter 4.

Once the sample was weighted (refer to participant breakdown and weighting section below for information on how the sample was weighted), two different statistical tests were utilized to test the hypothesis, fine-tune the model, and understand how public policy within Porter's diamond model has enhanced the cluster. These tests were conducted using the SPSS (version 18 for Windows) statistical software.

First, Goodman and Kruskal's Gamma crosstab analysis was conducted. This analysis measures the strength of the relationship between variables measured at the ordinal level (Sheskin, 2007). All components and constructed variables were recoded into high/low. High refers to values above the mean and low to values below the mean. This analysis shows if the strength and direction of the relationship accepts or rejects the hypotheses. Only two groups were used because of the limited size of the sample.

In addition to the gamma crosstab analysis, Pearson's r Correlation Coefficient was utilized to better understand the strength and direction of the relationships as well as the degree of correlation between the component variables within the model. This analysis will show which individual component variables have significant relationships

within the model, resulting in an improved political/institutional model. These two statistical analyses were selected mainly because of the sample size.

These two different analyses were conducted in an effort to better uncover correlations and relationships within the model. If a particular variable showed as having a statistically significant relationship in both analyses, it was considered as having a major impact on the dependent variable. Similarly, if only one of the analyses showed a statistically significant relationship, the variable was considered to have only a partial impact on the dependent variable.

Finally, each of the eleven components of the cluster-based policies was grouped into each of Porter's four factors. Once the components were grouped by factors, their means were compared using student's t-test to see if there were any statistically significant differences between the grouped cluster-based policies. Table 8 shows a summary of the statistical analyses utilized.

Table 8 Summary of Analyses Utilized

	Approach	**Technique**
Cluster History & Impact	Qualitative	Theme Emergence
Hypotheses Testing	Quantitative	Gamma Crosstab
Fine-Tune Model	Quantitative	Gamma Crosstab, Pearson's r
Cluster Enhancement	Quantitative	Student's t-test

Participant Breakdown and Weighting

The overall participation rate was 33% completing a total of 24 interviews out of 72 possible. Figure 5 shows a breakdown of the participants by type. As shown, almost 80% of the participants were from the government and nonprofit sectors. Only 20% of the participants were from the industry sector. Although consistent efforts were made to

interview more representatives of the industry, like rescheduling the interview multiple times and offering even the phone interview option, these were not successful

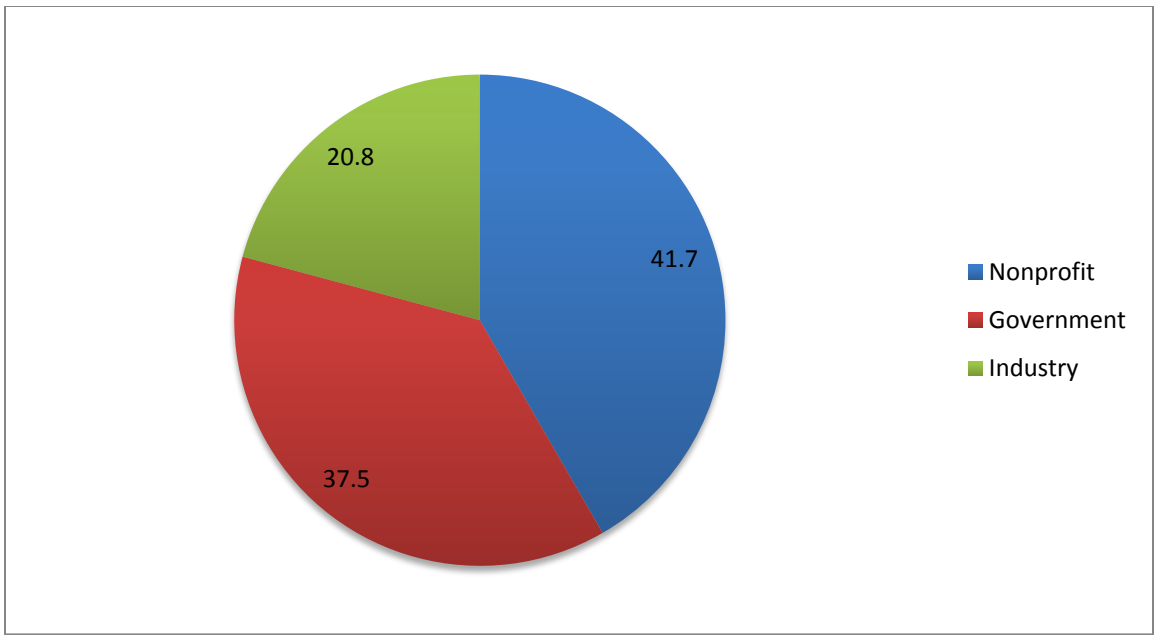

Figure 5 Participant Breakdown by Sector

Since only a third of the overall population was interviewed, an understanding of how representative the sample is of the overall population is warranted. Table 5 below shows a breakdown by state, level, and type for both the overall population as well as the sample obtained. Keep in mind that the sample size for the statistical analysis was of 23 rather than 24, since data obtained from one interview was only useful for the cluster's description, history, and government involvement.

Based on Table 9, both Louisiana and Alabama were underrepresented in the sample. This was the case for one main reason: participants from Mississippi were more likely to participate because of my affiliation with Mississippi State University. On the other hand, several participants from the other two states declined to participate for the

same reason, arguing that the states compete for the same industry establishments. This is interesting since cluster "players" not only compete but also need to cooperate. Nonetheless and even though it was stressed that the region was considered as a whole and that all information would be kept confidential, increasing the sample size from Louisiana and Alabama was unsuccessful.

Table 9 Population and Sample Breakdown by State, Level, and Type

	Population	% Pop	Sample	% Sample	Weight
State	--	--	--	--	
Alabama	17	23.6	4	17.4	1.3576
Mississippi	31	43.1	14	60.9	0.7073
Louisiana	24	33.3	5	21.7	1.5333
Type	--	--	--	--	
Nonprofit	26	36.1	10	43.5	0.8305
Government	21	29.2	9	39.1	0.7453
Industry	25	34.7	4	17.4	1.9965
Level	--	--	--	--	
Local	62	86.1	19	82.6	1.0424
Regional	5	6.9	1	4.3	1.5972
State	5	6.9	3	13.0	0.5324
Total	72		23		

Industry representatives were underrepresented for two reasons. First, only top executives possessed sufficient knowledge regarding their industry and its relationship with government. However, these individuals are extremely busy and therefore it was hard to convince them to allocate an hour of their time to this research. Second, a lack of contacts within the industry itself proved sufficient to undermine their share of the sample. Although efforts were made to contact industry representatives utilizing economic development organizations and/or government officials, their response was

similar, arguing a lack of time and/or interest to participate in the research study. Nonetheless, two of the major shipyards in the region did participate.

Finally, regional organizations were underrepresented in the sample simply because they declined to participate. The reasons for these include the affiliation with Mississippi State University; and therefore, they perceived they would not benefit at all from the findings of this research. Efforts were made unsuccessfully to explain that the region as a whole was the focus of the research.

The sample obtained was weighted only by type instead of all three sectors shown in Table 5 for two main reasons. First, there was no need to weight by state since all three states have the same political culture (traditionalistic). Therefore, there was no theoretical reason to weight by state. Second, the majority of policies and incentives are implemented by the state, thus eliminating the need to weight by level including local and regional. However, the need to weight by type was important for one main reason: providing the study more validity triangulating with the three different types discussed.

CHAPTER IV

CLUSTER HISTORY

This chapter is divided into five sections. Section one provides a description of the cluster including quantitative data such as employment and number of establishments. Section 2 discusses the main themes that emerged from discussing the cluster history. Section 3 looks at the role of government as perceived by the participants. Section 4 discusses the impacts the cluster has had on both urban and rural communities along the Gulf Coast. To conclude, section 5 presents the perceived impacts of Northrop Grumman on the development of the cluster.

Cluster Description

The shipbuilding cluster in the Gulf Coast region is an old cluster.[7] Shipbuilding activities have existed in the Gulf Coast area ranging from the first European settlers to at least 200 years ago. However, according to the Department of Transportation's Maritime Administration, the national shipbuilding industry in the nation is declining.

Based on figures obtained from the DOT Maritime Administration, between 1982 and 2005 there was a decline from 110 major shipyards in the nation to 82, while the workforce decreased from 112,500 to 46,300. The major losses took place in the East Coast region, which suffered a decline of 34% of major shipyards from 41 in 1982 to 27 in 2005 and a dramatic decrease of almost 97% of its workforce from a little over 63,000 in 1982 to 19,000 in 2005. On the other hand, the Gulf Coast region suffered a loss of

[7] For more information please refer to the following section: Cluster History

only 6% regarding major shipyards from 33 in 1982 to 31 in 2005 and a loss of 20.5% regarding its workforce from almost 23,000 in 1982 to a little more than 18,000 in 2005. Thus, the Gulf Coast obtained a larger share of the national shipbuilding "pie."

The major shipyard in the region has a fairly long history as well. The current Northrop Grumman shipyard began as Ingalls Shipbuilding Corporation in 1938 in Pascagoula, Mississippi. By 1961, Ingalls Shipbuilding Corporation was purchased by Litton Industries, and in 1968, Litton Industries expanded the facility to conduct modular construction, earning the name of "shipyard of the future." In 2001, Northrop Grumman acquired Litton industries (Northrop Grumman, 2009). Starting in the 2000s decade, other major shipyards either moved into the area or bought existent shipyards such as Austal in Alabama, Bollinger in Louisiana, and VT Halter in Mississippi. See Figure 6 for a descriptive timeline (not intended to be comprehensive).

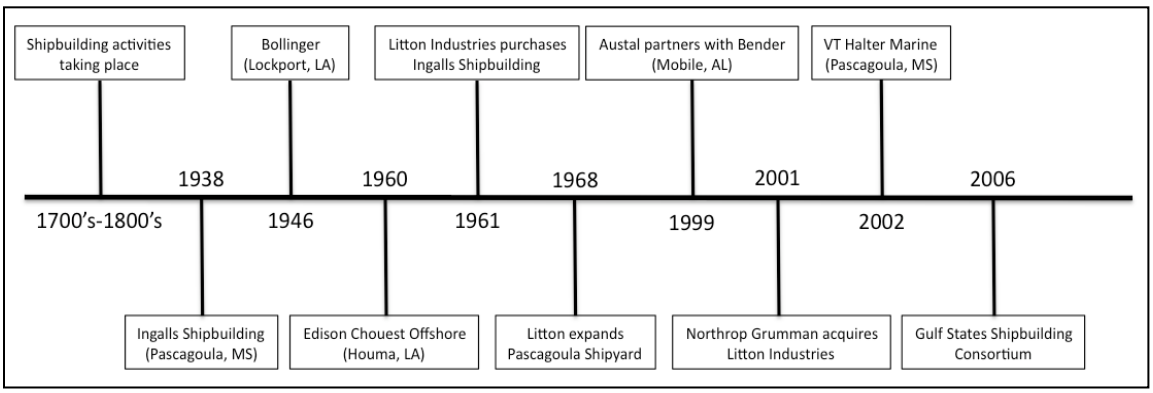

Figure 6 Shipbuilding in the Gulf Coast Timeline

One of the most used indicators to describe clusters is job change. Table 10 shows the percent change in total number of shipbuilding (NAICS 336611) jobs between 2003

and 2008 between the nation and the Gulf Coast region.[8] The U.S. in general had an increase in shipbuilding jobs of 15.7% between 2003 and 2008 from 91,786 to 106,210 jobs compared to an 11.2% increase in the region from 26,977 to a little over 30,000. Within the region, St. John the Baptist Parish in Louisiana had the highest percent increase with 244%, followed by Harrison County in Mississippi with 121% between 2003 and 2008. On the other hand, Plaquemines Parish in Louisiana had a decrease of 41.8% between 2003 and 2008, followed by Iberia Parish, also in Louisiana.

Table 10 2003-2008 Percent Change in Shipbuilding Jobs

Area	FIPS	2003 Jobs	2008 Jobs	Per. Ch.
Mobile, AL	01097	1,936	3,836	+98.1
Iberia, LA	22045	1,025	707	-31.0
Jefferson, LA	22051	6,845	6,056	-11.5
Lafourche, LA	22057	1,582	1,446	-8.6
Orleans, LA	22071	363	371	+2.2
Plaquemines, LA	22075	297	173	-41.8
St. Bernard, LA	22087	16	31	+93.8
St. John the Baptist, LA	22095	18	62	+244.4
St. Mary, LA	22101	1,206	1,293	+7.2
St. Tammany, LA	22103	269	262	-2.6
Terrebonne, LA	22109	1,193	1,875	+57.2
Harrison, MS	28047	576	1,274	+121.2
Jackson, MS	28059	11,651	12,617	+8.3
Region		26,977	30,003	+11.2
United States		91,786	106,210	+15.7

Source: Economic Modeling Specialists, Inc. 3Q 2010 Complete Employment

In addition to analyzing job change, Table 11 shows the percent change in shipbuilding establishments (NAICS 663311) between 2003 and 2008. As shown, the nation overall had a 9.5% increase from 620 shipbuilding establishments in 2003 to 679

[8] This region was identified based on the LISA cluster map results used to select the shipbuilding cluster (refer to Chapter 3–Methodology). The region includes the following counties and parishes: Mobile County in Alabama; Harrison and Jackson counties in Mississippi; Iberia, Jefferson, Lafourche, Orleans, Plaquemines, St. Bernard, St. John the Baptist, St. Mary, St. Tammany, and Terrebonne parishes in Louisiana.

in 2008. The region where the research took place also experienced an increase of 5.9% from 101 shipbuilding establishments in 2003 to 107 in 2008. The total number of shipbuilding establishments within the region accounted for 16.2% of those in the nation compared to 15.7% in 2008. In other words, the region had a slightly lower share in 2008 than it had in 2003.

Within the region analyzed, Iberia Parish in Louisiana had the largest increase with 33.3%, followed by Lafourche Parish in Louisiana and Jackson County in Mississippi with 22.2%. Interesting to note is that Iberia Parish in Louisiana had one of the major declines in jobs during the same period. On the other hand, St. Tammany Parish in Louisiana experienced the largest decline with 50%, followed by Jefferson Parish in Louisiana with a 26.7% decline.

Table 11 2003-2008 Percent Change in Shipbuilding Establishments

Area	FIPS	2003 Est	2008 Est	Per. Ch.
Mobile, AL	01097	24	28	+16.7
Iberia, LA	22045	6	8	+33.3
Jefferson, LA	22051	15	11	-26.7
Lafourche, LA	22057	9	11	+22.2
Orleans, LA	22071	8	9	+12.5
Plaquemines, LA	22075	1	1	+0.0
St. Bernard, LA	22087	4	3	-25.0
St. John the Baptist, LA	22095	1	1	+0.0
St. Mary, LA	22101	11	11	+0.0
St. Tammany, LA	22103	2	1	-50.0
Terrebonne, LA	22109	10	11	+10.0
Harrison, MS	28047	1	1	+0.0
Jackson, MS	28059	9	11	+22.2
Region		101	107	+5.9
United States		620	679	+9.5

Source: Census County Business Patterns

The following two tables show the location quotient of both jobs and establishments in shipbuilding compared to the nation. As discussed in the previous

chapter, location quotients provide information on how concentrated a particular industry is in a region compared to the nation. A location quotient higher than 1.25 indicates an industry is concentrated in that particular region. Tables 8 and 9 show the location quotients calculated using jobs and establishment data.

As shown in Table 12, the shipbuilding industry became more concentrated in 6 out of the 13 counties/parishes in the region between 2003 and 2008. Likewise, the industry became less concentrated but still significantly above the 1.25 threshold in 7 out of the 13 counties in the region. Overall, the region became more concentrated going from an LQ of 36.87 compared to the nation in 2003 to an LQ of 38.99 in 2008. By 2008, all counties/parishes in the region had an LQ above 1.25. Jackson County in Mississippi (home to the Northrop Grumman shipyard) was the county with the highest LQ of 317.82 in 2008, while Orleans Parish in Louisiana had the lowest LQ with 2.71 in 2008.

Table 12 Shipbuilding Jobs Location Quotients

Area	FIPS	2003 LQ Jobs	2008 LQ Jobs
Mobile, AL	01097	16.46	26.87
Iberia, LA	22045	48.17	26.77
Jefferson, LA	22051	45.22	38.61
Lafourche, LA	22057	55.22	39.70
Orleans, LA	22071	2.07	2.71
Plaquemines, LA	22075	27.12	15.51
St. Bernard, LA	22087	1.21	3.49
St. John the Baptist, LA	22095	1.92	4.96
St. Mary, LA	22101	67.50	63.26
St. Tammany, LA	22103	5.09	3.82
Terrebonne, LA	22109	39.49	50.14
Harrison, MS	28047	8.36	17.78
Jackson, MS	28059	339.74	317.82
Region		36.87	38.99
United States		1.00	1.00

Source: Economic Modeling Specialists, Inc. 3Q 2010 Complete Employment

On the other hand, Table 13 shows the location quotients based on the number of establishments compared to the nation. As shown, 9 out of the 13 counties/parishes in the region became more concentrated regarding shipbuilding establishments in 2008 compared to 2003 while 4 counties/parishes became "less" concentrated although their LQ values exceeded the 1.25 threshold significantly. Furthermore, as was the case with shipbuilding jobs, the region overall also became more concentrated in shipbuilding establishments compared to the nation. As observed with jobs LQ, all counties/parishes in the region had an LQ higher than the 1.25 threshold.

Table 13 Shipbuilding Establishments Location Quotients

Area	FIPS	2003 LQ Est	2008 LQ Est
Mobile, AL	01097	30.65	33.93
Iberia, LA	22045	43.36	51.71
Jefferson, LA	22051	13.84	10.17
Lafourche, LA	22057	57.42	63.05
Orleans, LA	22071	8.95	12.30
Plaquemines, LA	22075	15.73	16.83
St. Bernard, LA	22087	39.87	55.33
St. John the Baptist, LA	22095	18.25	15.25
St. Mary, LA	22101	94.16	86.90
St. Tammany, LA	22103	4.64	1.88
Terrebonne, LA	22109	41.27	41.59
Harrison, MS	28047	2.62	2.64
Jackson, MS	28059	46.31	51.57
Region		21.76	22.95
United States		1.00	1.00

Source: Census County Business Patterns

The loss of both shipbuilding establishments and jobs between 2003-2008 for some counties/parishes in the region analyzed may be a result of mergers and acquisitions and/or of shipyard companies moving to other areas within the region, especially after Hurricane Katrina, such as Trinity Yachts, which moved from New Orleans in Louisiana to Gulf Port in Mississippi, or out of the region altogether.

Finally and based on the interviews conducted for this research and discussed more in depth throughout this chapter, Figure 7 shows the major players and institutions identified in the shipbuilding cluster analyzed. Important to note is that this is not a comprehensive listing of the players and institutions. Rather, the players and institutions as well as their linkages were inferred based on the interviews with the participants.

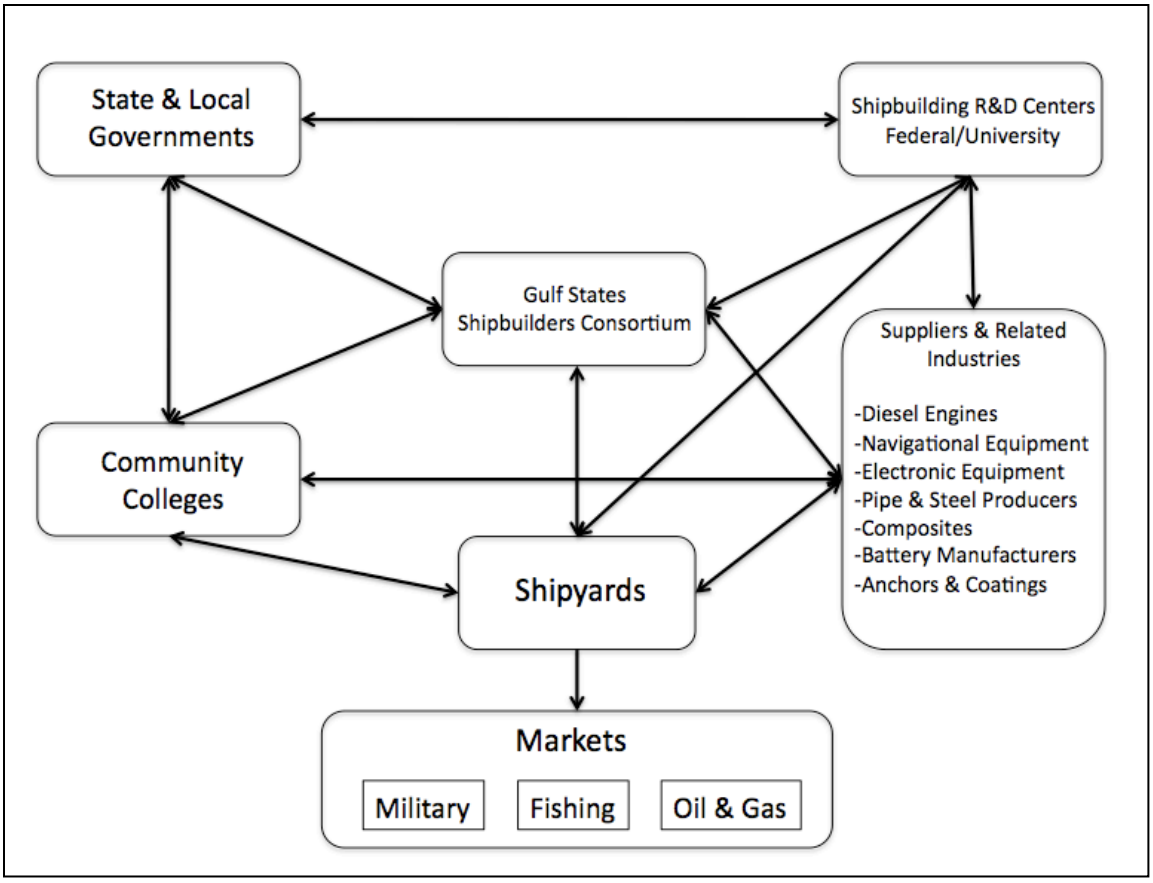

Figure 7 Major Players and Institutions of the Gulf Coast Shipbuilding Cluster

Note that the linkages between state and local governments with the shipbuilders are not direct. Rather, the connections are indirect via community colleges, the Gulf States Shipbuilders Consortium, and shipbuilding R&D centers. Physical assets such as roads, sewer, facilities, and other cluster-related infrastructure are not shown in the figure

but also indirectly link the shipbuilders with state and local governments. The only direct connection between government, specifically the federal government, and the shipbuilding cluster is through the military market niches of the cluster.

The major players and institutions that have direct linkages to the shipbuilders include community colleges, the Gulf States Shipbuilding Consortium, the suppliers and related industries (this category includes economic development organizations as well as federal regulators such as OSHA), and shipbuilding R&D centers. All other players and institutions have indirect linkages to the shipbuilding cluster. However, their roles are critical. Also, the only player that has linkages to all other players and institutions is the Gulf States Shipbuilding Consortium. Organizations such as the consortium are clear evidence that a cluster is mature and in a better position to upgrade (Porter, 2003).

To conclude, without a doubt the shipbuilding cluster in the region analyzed is a mature cluster. Though the region continues to grow in both the number of shipbuilding jobs and the number of shipbuilding establishments, the maturity of the cluster may become a limitation in the midterm regarding future growth of the cluster. Some evidence for this can be seen with individual counties/parishes within the region losing jobs and/or shipbuilding establishments. Nonetheless, the shipbuilding cluster in the Gulf Coast is a major employer in the area and of critical importance to the well-being of the region.

Cluster History

According to Porter (1998), the birth of some clusters may be rooted in their history. After analyzing the data gathered, several interesting themes emerged when asking the participants about the history of the shipbuilding cluster in the region. First, a long history characterizes the shipbuilding cluster in the region. About 50% of the

participants mentioned that the cluster has a long history in the region. This long history ranges from when the first European settlers arrived to at least 200 years ago.

Without a doubt, the shipbuilding cluster is a mature cluster. An important sign that a cluster is maturing is the emergence of associations tailored specifically to the cluster (Porter, 2000). In this particular case, the Gulf States Shipbuilders Consortium is clear evidence of this maturation. This long history is complemented and perhaps a consequence of what the majority of the participants agreed gives this cluster a comparative advantage: its proximity to a large body of water, the Gulf of Mexico, as well as the availability of deep water rivers and channels.

Another important theme that emerged is that the shipbuilding cluster in the region is a resilient cluster. According to one participant, "*To give you an idea, in the 80's there were something like 200 or so major shipyards in the country and over the last two decades there are now something like 80 major yards. That's a big change in the number of yards. But I would like to point out this that in 1982 for instance the Gulf Coast had about 33 yards and in 2005 it had 31 yards so even though it has lost some, lost some employees, I think generally its piece of the pie … has managed holding its own and if anything its gotten a larger piece of the shrinking pie.*"

Some of the reasons why the participants believed the cluster has been "holding" or even increasing its share of the pie is the fact that throughout its development, the cluster has identified and marketed specific niches. In other words, the cluster is constantly evolving. The majority of shipyards in the region do not compete with each other locally. Rather, they have identified their own niche. These niches are military, oilfield services, and fishing activities.

Similarly, this diversification of its niches has allowed the shipbuilding cluster in the region to rely not only on the U.S. economy but also on the global economy. This is a perfect example of "competition" but also cooperation making the industrial cluster more competitive globally. Even though the cluster serves different niches, they all share research institutions, government incentives, and utilize the same workforce pool, which in turn has existed for several generations. See Figure 8 for the relationships between participants and themes identified.

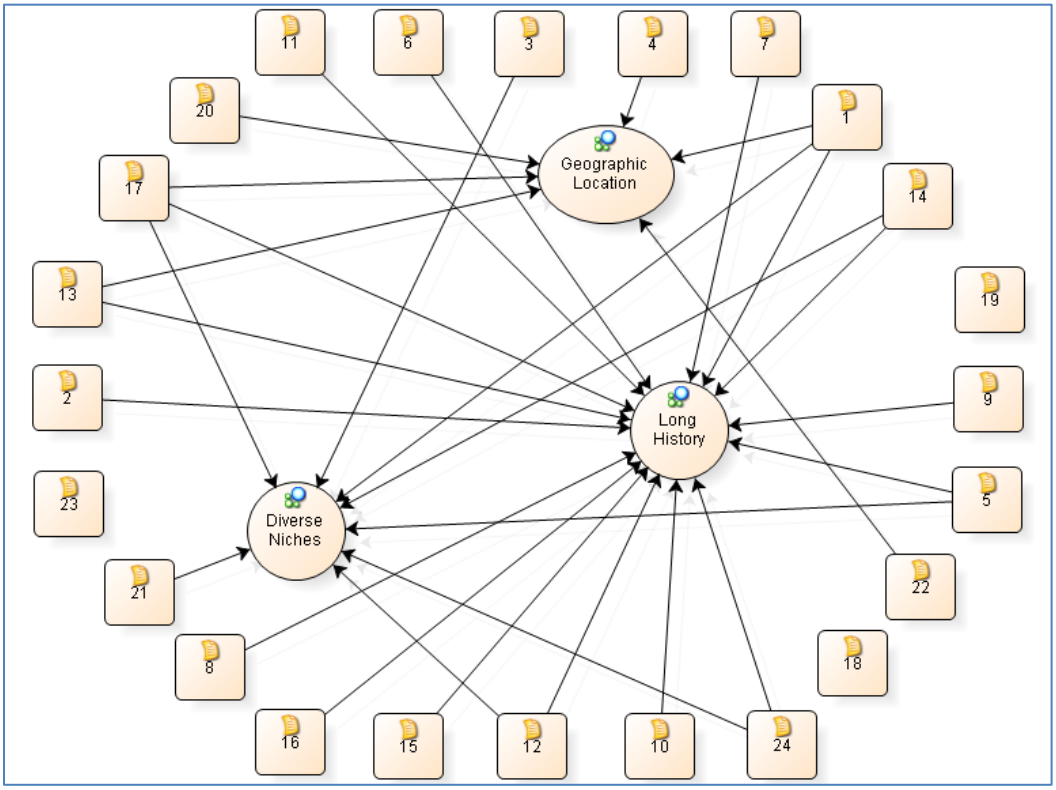

Figure 8 Cluster History Components by Participant

Notes: Each rectangle is a participant with a randomly assigned number; each of the three components of the cluster history is included in the circles

Each of the major themes identified regarding the cluster's history are shown in Figure 8 and are highly correlated as perceived by the participants. Therefore, the cluster

history can be well understood when considering these three components. Also, Figure 8 shows that all but three participants referred to these components (diverse niches, long history, and geographic location) when describing the history of the cluster.

Furthermore, Table 14 shows the breakdown of the cluster's history components by sector. As observed, 39.9% of government respondents, 48.9% of industry, and 20.4% of nonprofits identified a long history component. More than half of industry respondents (51%) identified a diverse niches component, followed by 41.7% of nonprofits and 34.2% of government participants.

Table 14 Cluster History Components by Sector

Sector	Government	Industry	Nonprofit
Diverse Niches	34.2%	51.0%	41.7%
Geographic Location	25.7%	0.0%	37.7%
Long History	39.9%	48.9%	20.4%
N	10	6	14

Notes: Columns add to 100%.

Similarly, 37.7% of nonprofit respondents identified a geographic location component followed by a quarter of government respondents (25.7%). Interestingly, industry respondents did not mention the geographic location as a component when discussing the cluster's history.

In summary, the cluster has a long history in the region, it is constantly evolving and identifying new niches, and its geographic location is one of the main reasons why the cluster emerged. All of these findings support Porter's (1998) argument that the birth of a cluster may be rooted in historical circumstances. Therefore, it can be concluded that this cluster has a long history likely because of its geographic location.

Role of Government

It is clear from this study that there is no doubt among those interviewed that the role of government[9] in the development and sustainability of this cluster has been very important. To better understand government's role, the participants were asked to choose from a series of roles government can play in developing or aiding a cluster (Enright, 2003). These include non-existent (there are no cluster-based economic policies in place), catalytic (government arranges for parties to come together but its involvement is limited), supportive (in addition to getting groups together, government provides cluster-specific investments in infrastructure and education/training and plays a passive role), directive (government implements cluster programs to reshape local economies), and interventionist (in addition to implementing cluster programs, government makes major decisions regarding the cluster, rather than the private sector; provides substantial subsidies, protections, or regulations; and has major ownership and/or control of the cluster).

Government is perceived as overwhelmingly supportive of the shipbuilding cluster as Table 15 shows (as expected from states with traditionalistic political culture). To a lesser extent, government is also perceived as playing a catalytic and/or directive role. However, the role of government has not been static over time as argued by Wickham (2005). Some participants mentioned that during different times throughout its history, the role of government has ranged from catalytic to directive. Similarly, the role of government varies depending on how it interacts with the cluster.

---

[9] An important distinction must be made between federal and state/local government's role for the military niche (see the history of the cluster for other niches). The federal government's role is more from a customer perspective, generating demand for warships. On the other hand, state/local governments played a more traditional role of supporting the industry. As one participant put it, "*I think it's almost one of these things where the biggest customer of course is the federal government so everything the federal government determines as far as shipbuilding has an implication on the Gulf Coast...*"

Table 15 Government's Role

Role	No. Participants	% Participants
Non-Existent	0	0.0%
Catalytic	2	8.3%
Supportive	19	79.1%
Directive	2	8.3%
Interventionist	1	4.1%

Notes: Percentage column may not add up to 100% because of rounding.

For example, some participants perceived local/state government to play a catalytic role funding and supporting local economic development organizations. These organizations in turn would attract and/or retain industry strengthening the cluster. In this example, government was perceived to have played more of a catalytic role at the beginning, shifting to a more supportive role later on.

Another good example of how critical the role of government has been and how it shifts depending on the context was when Litton Industries, which would later become Northrop Grumman, was expanding during the 1960s. The State of Mississippi played a key role issuing industrial development bonds to raise the capital needed for the expansion. As a participant mentioned, "*if you think about it only in that sense had the state of Mississippi not actually change its constitution, up until then political subdivisions (counties, cities) had historically been allowed to put up its full faith in credit to borrow money for industrial development, it had never before been done at the state level, not in Mississippi or any of the other states. So, Mississippi was a pioneer in the process of state-backed industrial development bonds for industrial development.*"

Local/state governments have also played a crucial role in developing key infrastructure that has helped the shipbuilding cluster develop and strengthen. According to a key informant, *"it was a local government initiative to build this seaway back in the 1950's looking forward into the future."* Furthermore, when asked about the role of

government regarding the cluster's development a public official stated, *"I think you have to frame the question like: how do we the public interface with the shipyard? And that's like a family. I would describe that as being a family. They are our family. If they need something from us we try to make it available to them. If we need something from them, they try to make it available to us."*

Government's role has been very supportive regarding workforce training as well. Not only do they support these efforts but they also engage in partnerships to benefit the industry. As one participant from the industry mentioned, "*I think it's a great partnership between shipbuilding, the community college, and the state workforce development, and the WIN [workforce investment network] job center. Those are great partners and of course the WIN job center and the community colleges state and federal funding. They really do a good job for us and we just would have a hard time without them, community colleges in particular."*

Government's role, both at the local and state level, is overwhelmingly perceived as supportive. Table 16 shows the percent of participants by sector (government, nonprofit, industry) and their perceptions regarding the role government has played. As observed, government playing a supportive role is consistent across all three sectors; 100% of industry participants perceived government as supportive followed by 89.5% of government participants and 69.4% of nonprofit participants. Interesting to note is that the nonprofit sector had somewhat of a variety regarding government's role but a supportive role standing out as the most perceived role.

Table 16 Government's Role by Sector

Sector	Government	Industry	Nonprofit
Non-Existent	0.0%	0.0%	0.0%
Catalytic	10.5%	0.0%	2.6%
Supportive	89.5%	100.0%	69.4%
Directive	0.0%	0.0%	19.4%
Interventionist	0.0%	0.0%	8.3%
N	8	4	12

Notes: Columns add to 100%.

Federal government plays a major dual role as well. On one hand, the federal government generates an important share of the demand for warships, directly impacting the military niche. Although some shipyards in the region also build warships for foreign governments, such as VT Halter, the great majority of warships are built for the U.S. federal government. Therefore, spending priorities in navy vessels defined in Washington affect the cluster.

On the other hand, the federal government is a main player regarding policies that may affect the cluster. As a participant put it, "*But I think the greatest challenges are at the federal level. The policies that are made in Washington impact employment, impact the ability for unions to organize, and impact air and water quality. Those are the real threats to shipbuilding."* Or as another participant put it, "*Our greatest threat is Washington, DC. As you think about the regulatory side … DC has got the blessing or the curse. Some of their regulatory pieces are actually helping stimulate our economy but there are other pieces that put us at risk."*

Although local/state government's role was perceived as supportive, this role is dynamic and defined by two main factors. First, there is a specific time period or context during which government gets involved to either serve as a catalyst or to support the industry. The second main factor is a specific need that the industry has in which

government can help. In this particular case, it can be developing key infrastructure or improving the capacity of its community college system to provide timely and efficient workforce training to the industry. Understanding these two factors provides a clearer picture of a dynamic government's role in the development of the shipbuilding cluster in the region. Furthermore, federal government plays a major and dual role. On one side, federal government serves as the main client regarding the military niche. On the other hand, federal government policies impact the industrial cluster, either enhancing its competitiveness or hindering it.

Impact of the Cluster in Rural Communities

Since the major shipyards in the region are located in the urban coastal counties/parishes, we asked the participants to discuss the impacts of this industrial cluster on rural communities to the north of the coast. According to the 2003 Office of Management and Budget core-based statistical definitions, metropolitan counties/parishes are those with an urban core of at least 50,000 residents or 25% or more of its workforce working in a neighboring metropolitan county. Micropolitan counties, on the other hand, are counties/parishes with a core of at least 10,000 up to 49,999 residents. Finally, noncore counties/parishes are those with no core of at least 10,000 residents. Urban counties/parishes include those defined as metropolitan counties, while rural counties/parishes include those defined as micropolitan and noncore by this typology.

The majority of participants mentioned that the impact of the cluster on the area has been positive. Within these impacts, several components were identified. First and foremost is the fact that the shipbuilding cluster provides a significant number of quality jobs with great benefits to both urban and rural residents. As noted by one participant,

"*because the shipyard workers live all over the region, it is not exclusive to rural or urban, they are everywhere."* Also, some key informants mentioned that many residents from rural communities commute long distances to work in the shipyards: "*I found out we got folks from Waynesboro, folks from Laurel, folks from Meridian that actually drive down and work in the shipyards and then go back home."*[10]

Furthermore, the shipbuilding cluster provides quality jobs to certain retirees. This key informant stated, *"We have military installations down here where people served in the armed forces that it gives us the quality workforce and the work ethic that you don't have in a lot of places. These people retire from the military in their early 50's and they want another career, something to do. This high tech high skill well paid jobs in the shipbuilding cluster provides those jobs for people too so they don't have to leave and go somewhere else."*

From a workforce development perspective, the shipbuilding cluster has challenged community colleges to come up with innovative training programs geared toward high school graduates. These apprentice-type programs have raised the bar regarding workforce development efforts. According to one participant, *"it strengthened them [community colleges] because it challenged them to do these apprentice type programs."*

Shipbuilding has also had a positive impact on the quality of life of both urban and rural communities. Jobs related to shipbuilding offer good pay and benefits providing a venue by which workers can raise their quality of life. Furthermore, the rural commuters expect more of their home communities. As this participant mentioned, "*It is*

[10] The city of Meridian is 150 miles north or three and half hours driving time of Pascagoula, MS (home of the Northrop Grumman shipyard) and 130 miles or two hours forty minutes northwest of Mobile, AL (home of Austal shipbuilding) for example.

making us step up to the plate with quality of life issues because people no longer just want to just say they sleep here. They want to be able to spend all their off time here. So that's making us step up to the plate with better parks and things of that nature."

On a similar note, shipbuilding enhances the quality of life by sponsoring events and contributes to local and regional fundraising efforts. As this participant put it, "*Regarding quality of life, I think shipbuilding has given back to the community. They sponsor events, they contribute to fundraising, both regional and local. Depending on who's at the helm of the shipbuilding entities, some more than others, but overall they have been supportive of local fund raising efforts and local social events."*

A breakdown of the positive impacts by sector is shown in Table 17. As observed, the view that the cluster has a positive impact, in the form of providing quality jobs in the region holds across all three sectors with 85% of nonprofit respondents mentioning quality jobs followed by almost 80% of industry participants and almost half of government participants (48%). Therefore, all three sectors perceive the cluster as having a positive impact providing mainly quality jobs as well as enhancing the quality of life.

Table 17 Positive Impacts Breakdown by Sector

Sector	Government	Industry	Nonprofit
Community Colleges	7.8%	5.0%	0.0%
Quality Jobs	48.0%	79.4%	85.4%
Quality of Life	31.7%	15.5%	14.5%
Retired People	12.4%	0.0%	0.0%
N	12	8	9

Notes: Columns add to 100%.

Negative impacts were mentioned as well. Some of these negative impacts include the risk of flooding and shutting down whenever a natural disaster strikes. This in turn causes a displacement of workers that may decide to leave the area and take their

skills with them. Similarly, some key informants mentioned that because of natural disasters and the demand of the industry itself, some communities are struggling to provide housing for shipyard workers. Another negative impact discussed was regarding environmental damage. However, this negative impact is not directly related to shipbuilding. Rather, this negative impact was associated with one of the shipbuilding cluster niches: oilfield and services.

The shipbuilding cluster has a positive impact in both urban as well as rural communities. These positive impacts include quality jobs drawing workers from both urban and rural communities, improving workforce-training efforts of community colleges, and enhancing the quality of life in three ways. First, it exerts a pressure on rural communities to offer better services so commuters can spend quality off time at their home communities. Second, shipbuilding gives back to communities, sponsoring local events and contributing to fundraising, which in turn enhance the quality of life. Third, shipbuilding offers well-paying jobs and good benefits that improve the quality of life of many families.

Impact of Northrop Grumman

The Northrop Grumman shipyard in Pascagoula is the 800-pound gorilla in the region employing approximately 11,000 people. Because the federal government awards the majority of the contracts obtained by the shipyard, it becomes obvious that the federal government has a direct impact on the cluster and its development. Seen from this perspective, it would seem obvious to assume that government has had a major role in the development of the Gulf Coast shipbuilding cluster. Therefore, it is important to understand how the participants of this study perceive the impact of this shipyard.

Northrop Grumman acquired Litton Industries shipyard in Pascagoula, MS, in 2001 (see Figure 5) and it currently has 18,000 employees in its Gulf Coast operations and facilities, including the shipyard in Pascagoula, MS; the composite R&D facility in Gulfport, MS; and the components and subassemblies facility in Tallulah, LA. In 2008, the Gulf Coast operations merged with the Newport News operations in Virginia, forming a single integrated shipbuilding sector and becoming the largest supplier of U.S. Navy surface combatant warships, having built over 41% of the U.S. Navy's fleet of warships (Northrop Grumman, 2009).

Two main themes emerged. First, some perceive Northrop Grumman as the major player in the region and therefore attribute the existence of the cluster to this particular shipyard. They justify this argument by saying that thanks to the Northrop Grumman shipyard and its long history, a stable supply of jobs has been provided that continues to this day. This steady supply of jobs has allowed for shipbuilding "culture" to emerge and strengthen generation after generation. As a participant put it, "*I know Northrop Grumman and its predecessors were here at an early point but really have helped develop a pretty robust shipbuilding culture that involves many different types of shipbuilding.*"

Furthermore and specifically referring to the Mississippi Gulf Coast a participant argued that "*Ingalls got it all kicked off … a lot of businesses setup along the coast to support the Ingalls shipbuilding [and] as that grew and time went on not only synergy came into effect, I don't know a better word to put it, than just cannibalism came into effect as another industry saw the opportunity to move close [to Ingalls], use a workforce that was already available that had some training in shipbuilding to build its company or build its business and so you get a little bit of cluster developing.*"

On the other hand, some participants acknowledged that Northrop Grumman is one of the major players of the region but that the cluster would exist regardless. They argued that shipbuilding has been part of the region before Northrop/Litton/Ingalls because of the geographic comparative advantage (e.g., availability of deep water and large bodies of water) of the region. This unique advantage has allowed also for shipbuilding "culture" to emerge, serving as the bedrock of a shipbuilding cluster along the Gulf Coast. They do recognize, however, that Northrop Grumman has enhanced the existent cluster, making it more competitive.

As shown in Table 18, 62% of nonprofit participants that responded to this question perceived Northrop Grumman as the major player followed by 60.5% of industry respondents and 59.1% of government participants. On the other hand, 40.8% of government respondents perceived the cluster to exist regardless of Northrop Grumman, followed by 39.4% of industry participants and 37.1% of nonprofits. Therefore, a majority of participants across all sectors perceive Northrop Grumman as a major player in the region. Nonetheless, more than a third of participants in each of the three sectors considered the cluster to exist regardless of Northrop Grumman.

Table 18 Perception of Northrop Grumman's Impact by Sector

Sector	Government	Industry	Nonprofit
Cluster Regardless	40.8%	39.4%	37.1%
Major Player	59.1%	60.5%	62.8%
N	6	4	6

Note: Columns may not add to 100% because of rounding.

Conclusions

Several findings arise based on the data analyzed. First, the shipbuilding cluster is an old and mature cluster. Utilizing a location quotient analysis over time shows that the

cluster is a mature cluster. Regarding the cluster type, the shipbuilding cluster is a mix between hub and spoke and state anchored, based on its industries' shared characteristics (Markusen, 1994). According to Markusen (1994), a hub and spoke cluster is one dominated by one or several large firms surrounded by input suppliers and service providers. Smaller firms may evolve taking advantage of the agglomerative externalities to the anchor firm's presence–in this case, Northrop Grumman. To a lesser degree, the shipbuilding cluster could also fit under a state-anchored cluster since the local business structure is dominated by a public entity (e.g. a defense plant)–in this case, Northrop Grumman. However, this state anchored classification is becoming increasingly less evident as the cluster has evolved and focused on different niches.

Second, the cluster's origin is spontaneous rather than policy driven (Su & Hung, 2009) based on the cluster's long history and its proximity to water. The cluster emerged due to "natural" reasons and strengthened over time, especially after World War II. Over time, the cluster has created and sustained a "shipbuilding culture" that provides shipyards with a skilled workforce. This multi-generational workforce has acquired knowledge that in turn has created a path dependency within the cluster impacting how the institutions and organizations have evolved. New technology being employed in shipbuilding such as composites rather than steel hulls presents a challenge to this path dependency. However, looking back at the history, this skilled workforce in conjunction with training and incentives from local and state governments will more than likely adapt to this emerging technology.

Finally, the shipyard cluster has a major impact in the Gulf Coast region analyzed. Impacts range from providing quality jobs to residents of both urban and rural communities to providing challenges to the local community colleges in providing

workforce training. Three main factors are responsible for this. First, the geography of the region has allowed the industry to have a long history. Second, this long history has made the industry evolve and diversify, identifying different niches such as the military, fishing, and oil and field services. Third, the role of local and state governments has been critical and extremely supportive in the development of the cluster. This role has not been static. Rather, it has fluctuated from supportive to directive at different stages throughout the cluster's history. Interestingly, the federal government has played a dual role. On one hand, they are one of the main customers regarding the military niche. On the other hand, broad federal policies benefit and harm the cluster as mentioned by several participants.

CHAPTER V

FINDINGS AND DISCUSSION

This chapter is divided into three sections. All findings discussed in this chapter were based on the weighted[11] dataset. Section 1 will discuss the findings regarding the hypotheses utilizing Goodman and Kruskal's Gamma value analysis. The objective of this section is to better understand the political/institutional context and its relationship with the extent of cluster-based policies and the impact of the traditionalistic political culture. Section 2 will discuss the findings regarding the relationships between the individual components of the model utilizing both gamma analysis and Pearson's r correlation coefficients[12] in order to fine-tune Miller's model and better understand the impact the political/institutional context has on the extent of cluster-based policies. Finally, section 3 will discuss the components utilized to construct the extent of cluster-based policies variable and their relationship with Porter's (2000) diamond model using means-comparison t-tests. The objective of this analysis is to identify, using Porter's diamond, which policies need to be improved to further enhance the cluster and better understand the relationship between public administration and the shipbuilding cluster in the region.

[11] Please refer to the last section of Chapter 3–Participant Breakdown and Weighting–for more information.
[12] For the complete correlation matrix please refer to Appendix B

A statistical summary of the constructed and component variables is shown in Table 19. Important to note is that although 23 interviews were completed,[13] the number of valid observations varied per variable due to missing data. Missing data could not be avoided because according to the Institutional Review Board policies, a human subject has the right to decline to answer specific questions.

Table 19 Statistical Summary of Constructed Variables and Their Components

Name	Type	N	Mean	Std. Dev.	Min.	Max.
Network Governance Moderator[14]	**Constructed**	23	22.00	6.16	11.5	30
Regimes	Component	21	7.71	2.27	1	10
Growth Machines	Component	22	7.63	2.43	2	10
Civic Entrepreneurs	Component	23	7.85	1.96	4	10
Political/Institutional Predictors[15]	**Constructed**	23	27.96	7.85	9.5	40
Tax Structure	Component	21	7.38	2.43	1	10
Institutional Arrangements	Component	14	8.39	1.39	5	10
Elected Officials	Component	22	7.16	2.29	1	10
Professional Ec. Dev. Staff	Component	23	8.78	1.06	6	10
Extent Cluster-Based Policies[16]	**Constructed**	20	55.58	16.69	23	88.5
Promotion	Component	19	5.88	2.50	1	10
Infrastructure	Component	19	6.01	2.44	1	10
Workforce	Component	20	8.43	1.90	1	10
Research	Component	18	4.73	2.41	1	9
Programs	Component	19	3.30	2.89	1	10
Activities	Component	18	3.91	2.96	1	10
Investment	Component	20	5.83	2.65	1	10
Suppliers	Component	19	5.87	2.35	1	10
Conferences	Component	19	4.74	3.03	1	9
Regulatory Standards	Component	14	4.85	3.58	1	10
Trade Zones	Component	18	5.83	2.51	1	9

In order to conduct Goodman and Kruskal's Gamma crosstab analysis, the variables were recoded into high/low. This recoding was done for two reasons. First, Goodman and Kruskal's Gamma crosstab analysis requires the variables to be measured

[13] A total of 24 interviews were conducted. However, only 23 yielded quantitative data for the statistical analysis, while the remaining interview provided valuable information regarding the cluster's history and impact in the region.
[14] Based on Miller (2006).
[15] Based on Miller (2006).
[16] Based on Porter (2000).

at the ordinal level. Although the component variables added up for the constructed variables were measured at the ordinal level, for simplicity and limited N size, they were recoded into two groups: high and low. This leads to our second reason. Since the N size is very limited, not many options were available when recoding the data other than into two groups. Variables with values above their mean were coded high while variables with values below their mean were coded low.

Hypotheses Testing

Hypothesis one stated that the higher the network governance moderator[17] score (more private sector driven), the higher the extent of cluster-based policies.[18] Table 20 shows that 66.7% of those communities with a high degree of private sector involvement in economic development efforts overall had a high extent of cluster-based policies, compared to only 16.7% of those communities with a low degree of private sector involvement in economic development. Similarly, 83.3% of those communities in which the network governance moderator engagement in overall economic development efforts was low had a low extent of cluster-based policies, compared to 33.3% of those communities with a high level of network governance moderator engagement. The gamma value of 0.81 indicates there is a strong positive relationship between network governance moderator and the extent of cluster-based policies. The direction of this relationship is consistent with what was hypothesized and is statistically significant ($p<0.01$). Thus, hypothesis one is accepted.

[17] Network governance moderator may be public or private sector driven. The more engaged regimes, growth machines and civic entrepreneurs are in economic development, the more network governance moderator is private sector driven.

[18] The extent of cluster-based policies were measured by eleven policy examples discussed by Porter (2000) and grouped into four factors. The extent of these policies play a crucial role in cluster development and upgrading.

Table 20 Network Governance Moderator and the Extent of Cluster-Based Policies

	Low (netgov)	High (netgov)
Low (cbpol)	83.3%	33.3%
High (cbpol)	16.7%	66.7%
N	12	9

Gamma = 0.818
Chi-Square = <0.01
Note: Columns add to 100%.

Hypothesis two stated that the higher the network governance moderator score, the political/institutional predictors[19] would be more favorable to cluster-based economic development policies. Table 21 shows that 60% of those communities with a high network governance moderator reflecting high private sector involvement in overall economic development efforts had a high political/institutional predictor score, compared to only 38.5% of those communities with a low network governance moderator score. On the other hand, 61.5% of those communities with a low network governance moderator score were low in political/institutional predictor scores, compared to 40% of those communities with a high network governance score. The gamma value of 0.41 indicates a positive moderate relationship between network governance moderator and political/institutional predictors. The direction of the relationship is consistent with what was hypothesized. However, the relationship was not statistically significant ($p<0.29$), rejecting hypothesis two.

[19] These predictors were identified by Miller (2006) as playing a critical role in the political/institutional context that influences the extent of cluster-based policies. These predictors include tax structures, institutional arrangements, elected officials, and professionalism of economic development staff.

Table 21 Network Governance Moderator and Political/Institutional Predictors

	Low (netgov)	High (netgov)
Low (instpred)	61.5%	40.0%
High (instpred)	38.5%	60.0%
N	13	10

Gamma = 0.412
Chi-Square = <0.29
Note: Columns add to 100%.

Hypothesis three stated that the higher the political/institutional predictor score, the higher the extent of cluster-based policies. Table 22 shows that 40% of those communities with a high extent of cluster-based policies had a high political/institutional predictor score, compared to 40% of those communities with a low political/institutional predictor score. On the other hand, 60% of those communities with a low political/institutional predictor score had a low extent of cluster-based policies, compared to 60% of communities with a high political/institutional score. The gamma value of 0.00 indicates there is no relationship between the political/institutional predictors and the extent of cluster-based policies. Furthermore, this relationship was not statistically significant (p<1.00). Thus, hypothesis three is rejected.

Table 22 Political/Institutional Predictors and the Extent of Cluster-Based Policies

	Low (instpred)	High (instpred)
Low (cbpol)	60.0%	60.0%
High (cbpol)	40.0%	40.0%
N	10	10

Gamma = 0.000
Chi-Square = <1.000
Note: Columns add to 100%.

A summary of the gamma values and statistical significance results of the hypotheses testing is shown in Table 23. Only hypothesis one is accepted while hypothesis two and three are rejected. Hypothesis two was rejected because the

relationship is not significant although the direction is consistent with what was hypothesized; the higher the network governance moderator score the higher the political/institutional predictor score. On the other hand, hypothesis three was rejected because there is no relationship between the two variables.

Table 23 Hypotheses Testing Summary

	Hypothesis 1	Hypothesis 2	Hypothesis 3
Gamma	0.818	0.412	0.000
Sig. Level	0.01	0.29	1.00

The fact that the network governance moderator variable has a significant impact on the extent of cluster-based policies implies that the private sector is more engaged in economic development efforts compared to the public sector. This finding is consistent with what is expected of a traditionalistic political culture in which economic development is not part of what government does. However, the fact that the political/institutional predictors variable has no relationship with the network governance moderator variable and the extent of cluster-based policies indicates the need to look at the individual component variables to better understand why there is no relationship between these variables.

Therefore, the following section will take a look at the relationship between the different components used to build the constructed variables in an effort to better understand which individual components have a major impact on both the political/institutional predictors and the extent of cluster-based policies with the objective to fine-tune the model developed by Miller (2006) and also to shed some light on the reasons why hypothesis two and three were rejected.

Political/Institutional Model Component Variable Testing

In an effort to better understand which individual components have a major impact on the other constructed variables, a series of crosstab analyses and Pearson's r correlation coefficient[20] analysis was conducted. The objective of this analysis is to fine-tune Miller's model and have a better understanding of the specific components of the political/institutional context and their relationship with the extent of cluster-based policies and the political/institutional predictors. Tables 24 through 26 show the relationships between each of the network governance component variables and the extent of cluster-based policies; Tables 28 through 30 focus on the relationship between each of the network governance component variables and the political/institutional predictors; Tables 32 through 35 show the relationships between each of the political/institutional predictors and the extent of cluster-based policies; tables 27, 31, and 36 present a summary of the findings.

Network Governance Moderator Components and the Extent of Cluster-Based Policies

Table 24 shows the analysis between regimes (network governance moderator component) and the extent of cluster-based policies. As shown, 60% of those communities with a high engagement of regimes in overall economic development efforts had a high extent of cluster-based policies, compared to only 22.2% with low engagement of regimes. On the other hand, 77.8% of those communities with a low engagement of regimes had a low extent of cluster-based policies, compared to 40% of those communities with a high regime engagement level. The gamma value of 0.680 indicates a moderately strong positive relationship between the engagement level of

[20] For the complete correlation coefficient matrix, please refer to Appendix B

regimes in overall economic development efforts and the extent of cluster-based policies. This relationship is statistically significant at the 0.1 level ($p<0.06$). Furthermore, regimes and the extent of cluster-based policies are correlated with a Pearson's r coefficient of 0.388. This correlation was also statistically significant ($p<0.09$).

Table 24 Regimes and the Extent of Cluster-Based Policies

	Low (reg)	High (reg)
Low (cbpol)	77.8%	40.0%
High (cbpol)	22.2%	60.0%
N	9	10

Gamma = 0.680
Chi-Square = <0.06
Note: Columns add to 100%.

The results of the analysis between growth machines (network governance moderator component) and the extent of cluster-based policies are shown in Table 25. As observed, 60% of those communities in which the activity of growth machines was high had a high extent of cluster-based policies, compared to only 22.2% of those communities with a low growth machine activity. On the other hand, almost 80% of those communities with a low growth machine activity had a low extent of cluster-based policies, compared to 40% of those communities with active growth machines. The gamma value of 0.680 indicates there is a moderately strong positive relationship between the activity level of growth machines and the extent of cluster-based policies. This relationship is statistically significant at the 0.1 level ($p<0.06$). Important to note is that the percentages and gamma value are identical to those observed in the relationship between regimes and growth machines. Similarly, the correlation between growth machines and the extent of cluster-based policies is high with a Pearson's r coefficient of 0.552 and statistical significance ($p<0.01$).

Table 25 Growth Machine and the Extent of Cluster-Based Policies

	Low (grwmach)	High (grwmach)
Low (cbpol)	77.8%	40.0%
High (cbpol)	22.2%	60.0%
N	9	10

Gamma = 0.680
Chi-Square = <0.06
Note: Columns add to 100%.

The results of the analysis between civic entrepreneurs (network governance moderator component) and the extent of cluster-based policies are shown in Table 26. Approximately 40% of those communities with active civic entrepreneurs had a high extent of cluster-based policies, compared to 36.4% of those where civic entrepreneurs were not as active. On the other hand, 63.6% of those communities where the civic entrepreneurs were not as active had a low extent of cluster-based policies, compared to 60% of those communities where civic entrepreneurs were very active. The gamma value of 0.07 indicates a very weak positive relationship between civic entrepreneurs and the extent of cluster-based policies. However, this relationship is not statistically significant ($p<0.86$). Similarly, Pearson's r correlation coefficient of 0.386 between civic entrepreneurs and the extent of cluster-based policies was not statistically significant.

Table 26 Civic Entrepreneurs and the Extent of Cluster-Based Policies

	Low (civent)	High (civent)
Low (cbpol)	63.6%	60.0%
High (cbpol)	36.4%	40.0%
N	11	10

Gamma = 0.077
Chi-Square = <0.86
Note: Columns add to 100%.

The gamma analysis results between the network governance moderator individual components and the extent of cluster-based policies as well as Pearson's r

correlation coefficients is shown in Table 27. Both regimes and growth machines had statistically significant relationships with the extent of cluster-based policies using gamma analysis and Pearson's r correlation coefficient.

Civic entrepreneurs on the other hand did not a have statistically significant relationship with the extent of cluster-based policies. In other words, regimes and growth machines seem to be the network governance moderator components with a more significant impact in the extent of cluster-based policies. This finding is consistent with the literature in that because of their intrinsic nature and vested interest, regimes and growth machines are more focused on economic development (Logan & Molotch, 1987; Molotch, 1976); therefore, their impact will be higher in the extent of cluster-based policies since industrial cluster development is an economic development strategy. This is also expected in a traditionalistic political culture. On the other hand, civic entrepreneurs are not only concerned about overall economic development efforts but also on other community issues that may or may not be related to economic development (Henson et al., 1997).

Table 27 Results Summary between Network Governance Components and the Extent of Cluster-Based Policies

Extent Cluster-Based Policies	Regimes	Growth Machines	Civic Entrepreneurs
Gamma	0.680*	0.680*	0.077
Pearson's r	0.388*	0.552**	0.386

Note: * significant at the 0.1 level; ** significant at the 0.05 level; *** significant at the 0.01 level; Pearson's r is two-tailed.

Network Governance Moderator Components and the Political/Institutional Predictors

The results of the analysis between regimes (network governance moderator component) and the political/institutional predictors are shown in Table 28. As observed, 66.7% of those communities where the regimes were very active also had political/institutional predictors more favorable to overall economic development efforts, compared to 40% of those communities where regimes were not very active. On the other hand, 60% of those communities where regimes were not very active also had unfavorable political/institutional predictors to economic development efforts in general, compared to 33.3% of those communities where regimes were very active. The gamma value of 0.5 indicates there is a moderately strong positive relationship between regimes and political/institutional predictors. However, this relationship is not statistically significant ($p<0.19$). Further, the correlation coefficient between regimes and political/institutional predictors of 0.541 indicates a moderately strong positive correlation and is statistically significant ($p<0.01$).

Table 28 Regimes and Political/Institutional Predictors

	Low (reg)	High (reg)
Low (instpred)	60.0%	33.3%
High (instpred)	40.0%	66.7%
N	10	12

Gamma = 0.500
Chi-Square = <0.19
Note: Columns add to 100%.

The results of the analysis between growth machines (network governance moderator component) and the political/institutional predictors are shown in Table 29. As observed, 54.5% of those communities where the activity level of growth machines was high also had the political/institutional predictors aligned above the mean toward overall

economic development, compared to only a third (33.3%) of those communities with not as active growth machines. On the other hand, 66.7% of those communities with a low growth machine activity also had a low political/institutional score, compared to 45.5% of those communities with active growth machines. The gamma value of 0.412 indicates there is a moderately strong relationship between growth machines and the political/institutional predictors. The direction of the relationship is consistent in how it would be hypothesized. However, this relationship was not statistically significant ($p<0.33$). Similarly, Pearson's r correlation coefficient of 0.273 is not statistically significant ($p<0.23$).

Table 29 Growth Machines and Political/Institutional Predictors

	Low (grwmach)	High (grwmach)
Low (instpred)	66.7%	45.5%
High (instpred)	33.3%	54.5%
N	9	11

Gamma = 0.412
Chi-Square = <0.33
Note: Columns add to 100%.

The analysis between the activity level of civic entrepreneurs (network governance moderator component) and the political/institutional predictors is shown in Table 30. As observed, 66.7% of those communities with a high activity level of civic entrepreneurs also had political/institutional predictors more aligned to overall economic development, compared to less than a third (27.3%) of communities with low activity of civic entrepreneurs. Similarly, 72.7% of those communities with a low engagement level of civic entrepreneurs also had low political/institutional predictors, compared to 33.3% of communities with very active civic entrepreneurs. The gamma value of 0.684 indicates there is a strong relationship between the engagement level of civic entrepreneurs and the

political/institutional predictors of overall economic development. Furthermore, this relationship was statistically significant ($p<0.03$). Further, Pearson's r correlation coefficient of 0.251 is not statistically significant ($p<0.24$).

Table 30 Civic Entrepreneurs and Political/Institutional Predictors

	Low (civent)	High (civent)
Low (instpred)	72.7%	33.3%
High (instpred)	27.3%	66.7%
N	11	12

Gamma = 0.684
Chi-Square = <0.03
Note: Columns add to 100%.

According to Table 31, the relationship between the network governance moderator components and the political/institutional predictors is not clear. On the one hand, when using a gamma analysis, only civic entrepreneurs have a statistically significant relationship with political/institutional predictors. However, when using Pearson's r correlation coefficient, only regimes have a statistically significant relationship with political/institutional predictors.

Theoretically, however, civic entrepreneurs have a major impact on the political/institutional predictors that may or may not lead to overall economic development efforts because of their intrinsic nature of having a vision, connecting the dots, and mobilizing resources to get things done. In other words, these political/institutional predictors such as elected officials and tax structures have other roles besides economic development. Civic entrepreneurs, more so than regimes and growth machines, are concerned with these other roles as well (Henson et al., 1997). In addition, the traditionalistic political culture limits the role of elected officials in

economic development as well as designing tax structures favorable to cluster-based economic development.

Table 31 Results Summary between Network Governance Components and Political/Institutional Predictors

Political/Institutional Predictors	Regimes	Growth Machines	Civic Entrepreneurs
Gamma	0.500	0.412	0.684**
Pearson's r	0.541***	0.273	0.251

Note: * significant at the 0.1 level; ** significant at the 0.05 level; *** significant at the 0.01 level; Pearson's r is two-tailed.

Political/Institutional Predictors Components and the Extent of Cluster-Based Economic Development Policies

Table 32 shows the analysis between tax structure (political/institutional predictor component) and the extent of cluster-based policies. As shown, 33.3% of those communities with a tax structure more targeted had a high extent of cluster-based policies, compared to 57.1% of those where the tax structure was not as targeted. On the other hand, 42.9% of those communities with a less targeted tax structure in place had a low extent of cluster-based policies, compared to 66.7% of those where the tax structure was more targeted. The gamma value of -0.455 indicates there is a moderately strong negative relationship between tax structure and the extent of cluster-based policies. This negative relationship is not consistent with what would be hypothesized. However, this relationship was not statistically significant ($p<0.3$). Similarly, the correlation coefficient of 0.065 is not statistically significant ($p<0.79$).

Table 32 Tax Structure and the Extent of Cluster-Based Policies

	Low (taxst)	High (taxst)
Low (cbpol)	42.9%	66.7%
High (cbpol)	57.1%	33.3%
N	7	12

Gamma = -0.455
Chi-Square = <0.30
Note: Columns add to 100%.

One explanation for this somewhat expected finding might be that the tax structure in place may be targeted toward other industries and not shipbuilding. Therefore, communities with a more targeted tax structure do not necessarily have a high extent of cluster-based policies since their target industries are either not clustered or not in shipbuilding. Another possible explanation for this may be the fact that state governments define the overall context for development (Agranoff & McGuire, 1998), including tax structures, and these in turn may or may not allow for targeted tax structures at the local level.

The analysis between institutional arrangements (political/institutional predictor component) and the extent of cluster-based policies are shown in Table 33. As observed, 71.4% of those communities that perceived institutional arrangements were easier as a result of belonging to a regional organization had a higher extent of cluster-based policies, compared to only a quarter of communities that perceived institutional arrangements not made as easy. On the other hand, 75% of those communities that perceived institutional arrangements as not easier also had a low extent of cluster-based policies, compared to only 28.6% with easier perceived institutional arrangements. The gamma value of 0.765 indicates there is a strong relationship between institutional arrangements and the extent of cluster-based policies. This relationship is statistically

significant ($p<0.04$). Further, Pearson's r correlation coefficient of 0.599 is statistically significant ($p<0.01$), indicating a moderately positive strong correlation.

Table 33 Institutional Arrangements and the Extent of Cluster-Based Policies

	Low (instarr)	High (instarr)
Low (cbpol)	75.0%	28.6%
High (cbpol)	25.0%	71.4%
N	8	7

Gamma = 0.765
Chi-Square = <0.04
Note: Columns add to 100%.

The previous finding of a statistically significant relationship between institutional arrangements and the extent of cluster-based policies makes sense and is important considering the traditionalistic political culture. In order to have a successful cluster strategy including cluster-based policies, regional approaches are required for the cluster's development and sustainability since they may cross county and state lines. Therefore, the easier and more efficient the institutional arrangements are, the more likely the region will have a higher extent of cluster-based policies.

The analysis between elected officials and the extent of cluster-based policies in the Gulf Coast region are shown in Table 34. As observed, only 33.3% of those communities whose elected officials had a long-term and regional vision for overall economic development also had a high extent of cluster-based policies, compared to 62.5% of communities with elected officials with regional and long-term perspectives. On the other hand, 37.5% of those communities with elected officials not having long-term and regional perspectives regarding overall economic development had a low extent of cluster-based policies, compared to 66.7% of those communities whose elected officials did have regional and long-term perspectives. The gamma value of -0.538

indicates there is a moderately strong negative relationship. This relationship is not consistent with what could be hypothesized. However, this finding was expected because of the traditionalistic political culture in the region. This relationship is not statistically significant ($p<0.18$). Similarly, Pearson's r correlation coefficient of -0.071 is not statistically significant ($p<0.76$).

Table 34 Elected Officials and the Extent of Cluster-Based Policies

	Low (eleoff)	High (eleoff)
Low (cbpol)	37.5%	66.7%
High (cbpol)	62.5%	33.3%
N	8	12

Gamma = -0.538
Chi-Square = <0.18
Note: Columns add to 100%.

Two explanations for this finding are possible. According to Frederickson (2005) elected officials serving legislative functions are less likely to cooperate and collaborate with other political jurisdictions, and therefore, the extent of cluster-based policies, which are intrinsically regional in nature, would not be high. A second explanation could be that perhaps elected officials with a long-term and regional perspective are not the majority necessary for regional policies to be implemented, showing a negative relationship between the variables. Future studies could focus on separating elected officials that have more legislative functions and those that have more executive functions. Similarly, the need to survey all elected officials is warranted to analyze the lack of a majority issue.

The analysis between professional economic development staff and the extent of cluster-based policies is shown in Table 35. Almost half of those communities or 46.2% with a perceived economic development staff as being very professional also had a high extent of cluster-based policies in place, compared to 28.6% perceiving their economic

development staff to be not as professional. Similarly, 71.4% of those communities that perceived their economic development officials as not being very professional also had a low extent of cluster-based policies, compared to 53.8% of those communities that perceived their economic development staff to be very professional. The gamma value of 0.364 indicates there is a moderate positive relationship between professional economic development staff and the extent of cluster-based policies. The direction of the relationship is consistent with what was hypothesized. However, this relationship is not statistically significant ($p<0.42$). Interestingly, Pearson's r correlation coefficient of 0.547 is statistically significant ($p<0.01$), indicating a moderately strong positive correlation between these variables.

Table 35 Professional Economic Development Staff and the Extent of Cluster-Based Policies

	Low (edprof)	**High (edprof)**
Low (cbpol)	71.4%	53.8%
High (cbpol)	28.6%	46.2%
N	7	13

Gamma = 0.364
Chi-Square = <0.42
Note: Columns add to 100%.

A summary of the findings between political/institutional predictors and the extent of cluster-based policies are shown in Table 36. As observed, institutional arrangements and professional economic development staff to a certain degree are the only political/institutional predictors impacting the extent of cluster-based policies. This is not surprising because of the fact that having better and more efficient institutional arrangements is one of the characteristics of regions implementing cluster-based policies as well as professional economic development staffs. Therefore, communities that belong

to regional organizations and have better and more efficient institutional arrangements are more likely to have a greater extent of cluster-based policies. On the other hand, professional economic development staff has a partial impact on the extent of cluster-based policies since they have a moderately strong positive correlation with the extent of cluster-based policies.

Table 36 Results Summary between Political/Institutional Components and the Extent of Cluster-Based Policies

Extent Cluster-Based Policies	Tax Structure	Institutional Arrangements	Elected Officials	Prof. Economic Dev. Staff
Gamma	-0.455	0.765**	-0.538	0.364
Pearson's r	0.065	0.599***	-0.071	0.547***

Note: * significant at the 0.1 level; ** significant at the 0.05 level; *** significant at the 0.01 level; Pearson's r is two-tailed.

In summary, several components within the constructed variables standout as having a major impact on the extent of cluster-based policies based on two statistical analyses: Goodman and Kruskal's Gamma and Pearson's r Correlation Coefficient. A revised political/institutional model as well as the implications of the findings will be discussed in Chapter 6.

Extent of Cluster-Based Policies and Porter's Diamond

According to Porter (2000), among the basic roles government can play in economic development include providing a macroeconomic and political stability, improving general microeconomic capacity, and establishing the overall microeconomic rules and incentives governing competition. However, Porter also argues that in addition to these macroeconomic development roles, government can and should play a more crucial role: "facilitating cluster development and upgrading" (p. 26).

Furthermore and using his diamond model as framework, Porter (2000) groups a series of policies that government can implement to facilitate the process through which a cluster can develop and upgrade. These policies are grouped in each of the four factors discussed by Porter (2000) in his diamond model: (1) context for firm strategy and rivalry, (2) factor (input) conditions, (3) related and supporting industries, and (4) demand conditions. See Table 37.

Since the political culture in the region is traditionalistic, it is expected that factors two and three will be enhanced by policies while factors one and four will not since these require a more active role of government. As observed, the distribution of cluster-based policies per factor is not the same for this particular study. Factor one has two components; factor two has five components; factor three has three components; and factor four has only one component.

Table 37 Cluster-Based Policies Components and Porter's (2000) Factors

No.	Porter's Factor	Components
1	Context for Firm Strategy and Rivalry	Promotion (prom)* Investment (inv)*
2	Factor (Input) Conditions	Infrastructure (infra) Workforce (wrkfrc) Research (res) Programs (prog) Activities (act)
3	Related and Supporting Industries	Suppliers (supp) Conferences (conf) Trade Zones (trdzo)
4	Demand Conditions	Reg. Standards (regstd)

Notes: * these two factors are correlated. See Table 38.

In order to test the validity of grouping the policies into each of the four factors discussed by Porter (2000), Table 38 shows the Pearson correlation coefficients for each of the eleven cluster-based policies used to measure the extent of cluster-based policies.

The lower half of the matrix shows the correlation coefficients, while the upper half shows the N sizes. For example, the correlation coefficient between investment (inv) and promotion (prom) is 0.58 with an N size of 20 and is statistically significant ($p<0.01$). The components of each factor have been highlighted to show each of the groupings.

Table 38 Cluster-Based Policies Correlation Coefficients Matrix

	prom	inv	infra	wrkfrc	res	prog	act	supp	conf	trdzo	regstd
prom	1	20	19	20	18	19	18	19	19	17	15
inv	.58**	1	20	21	19	20	19	20	20	18	15
infra	.74**	.60**	1	20	19	19	18	20	19	17	14
wrkfrc	.48*	-.26	.27	1	19	20	19	20	20	18	15
res	.57*	.55*	.38	.06	1	19	18	19	19	16	14
prog	.41	.35	.29	.18	.25	1	19	19	20	17	15
act	.20	.06	.14	.23	.34	.48*	1	18	19	16	14
supp	.65**	.31	.52*	.55*	.22	.34	.19	1	19	17	14
conf	.29	-.07	.17	.49*	.43	.15	.20	.19	1	18	15
trdzo	.62**	.11	.50*	.41	.17	.49*	.40	.34	.19	1	15
regstd	.33	-.00	-.00	.49	.45	.03	-.18	.56*	.52*	.05	1

Note: * significant at the 0.05 level; ** significant at the 0.01 level; two-tailed

However, as shown in Table 38 Porter's policy groupings into the different factors are not valid (except Factor 1–Context for Firm Strategy and Rivalry) in this particular study. Promotion (prom) and investment (inv) can be grouped in Factor 1 since the correlation between them is moderately strong and statistically significant. On the other hand, the data does not support grouping the remaining nine policies into demand conditions, factor conditions, and related and supporting industries. More than likely this finding is due to the limited N size but nonetheless opens the door for future research focusing on the validity of the policy groupings in factors argued by Porter (2000), especially in traditionalistic states.

Since grouping the policies into the four factors mentioned by Porter (2000) is not valid and supported by the data in this particular study, each individual component of the

extent of cluster-based policies was analyzed instead of the four factors. Table 39 shows the statistical summary for each of the eleven components in descending order based on their means.

Table 39 Cluster-Based Policies Statistical Summary

Name	N	Mean	Std. Dev.	Min.	Max.	Satisfaction
Workforce (wrkfrc)	21	8.436	1.908	1.0	10.0	High
Infrastructure (infra)	20	6.015	2.440	1.0	10.0	Moderate
Promotion (prom)	20	5.886	2.503	1.0	10.0	Moderate
Suppliers (supp)	20	5.873	2.358	1.0	10.0	Moderate
Trade zones (trdzo)	18	5.837	2.515	1.0	9.0	Moderate
Investment (inv)	21	5.832	2.654	1.0	10.0	Moderate
Reg. Std. (regstd)	15	4.858	3.586	1.0	10.0	Moderate
Conferences (conf)	20	4.745	3.037	1.0	9.0	Moderate
Research (res)	19	4.739	2.410	1.0	9.0	Moderate
Activities (act)	19	3.916	2.967	1.0	10.0	Low
Programs (prog)	20	3.302	2.897	1.0	10.0	Low

Based on the data shown in Table 39, the eleven policies were grouped into three satisfaction level groups[21]: high, moderate, and low. Workforce development (e.g., "Transitions Program" in Pascagoula, School of Naval Arquitecture and Marine Engineering in New Orleans, Maritime Training Center in Mobile) had the highest level of satisfaction among participants followed by a moderate level of satisfaction among participants for infrastructure development (e.g., Austal Northern Expansion Project), cluster promotion (prom), recruiting cluster suppliers (supp), cluster-oriented trade zones (trdzo), investment around the cluster (inv), streamlining regulatory standards (regstd), conferences and workshops regarding the cluster (conf), and research in local and

[21] The groups were based on student's t-test with equal variance. The difference in means was statistically significant between workforce and infrastructure; there was no statistically significant difference between infrastructure through research; both activities and programs had statistically significant differences with infrastructure, thus falling in a different group

regional institutions related to the cluster (res). Finally, both government activities (act) and programs (prog) around the cluster ranked with a low level of satisfaction.

These findings are consistent with the literature for two main reasons. First, it is clear that since both workforce and infrastructure development (the highest ranking within the moderate group) were viewed as the policies with the highest satisfaction among participants, government has played a supportive role regarding the shipbuilding cluster. According to Enright (2003), a supportive role consists of one in which in addition to getting groups together, government provides cluster-specific *investments in infrastructure and education/training* playing a *passive role*. Similarly, this finding is consistent and reinforces what was discussed in Chapter 4 (Tables 15 & 16) in that the majority of participants perceived the role of government as being supportive.

Second, this passive role is also consistent with what Elazar (1984) described to be the role of traditionalistic states concerning economic development. According to Elazar (1984), states with a traditionalistic subculture is characterized as using government *only* to maintain the hierarchical social order and defend traditional values. Thus, economic development is more likely to be a responsibility of elites and not of government. From this perspective, it is clear why the governments in these three states have not played a more active role (i.e., creating government departments to assist the cluster) in the shipbuilding cluster since economic development is not perceived to be one of its "core" activity areas.

According to the results of this study, Porter's factors and the policies that enhance them do not hold in a traditionalistic political culture. The policies do not group into clearly defined factors (except for promotion and investment). It becomes more useful then to analyze the policies individually to identify areas where policies are

lacking but that nonetheless are required to upgrade the cluster. In other words, future research should focus on clearly identifying which policies fall within which factor considering the political culture that has a tremendous influence on how much government gets involved.

In conclusion, the policies with the highest satisfaction precisely require an "active" passive role of government that falls within the acceptable traditionalistic expectations. On the other hand, those policies perceived as lacking and in need to be enhanced to help the cluster upgrade would require a level of government involvement that may extend beyond what is considered acceptable for traditionalistic states or more so for the status quo. Further, improving these policies requires a public administration structure that inherently does not exist in traditionalistic states. However, network governance theory provides alternative considerations for how these factors can be enhanced in a traditionalistic state using formal and informal linkages. The implications of this as well as potential solutions will be discussed more in depth in the next chapter.

CHAPTER VI

CONCLUSIONS

Implications

Revised Political/Institutional Framework

Since one of the main objectives of this research was to test and refine Miller's (2006) political/institutional model, Figure 9 shows a revised political/institutional model based on the findings regarding the relationships between component variables within the model discussed in the previous chapter.

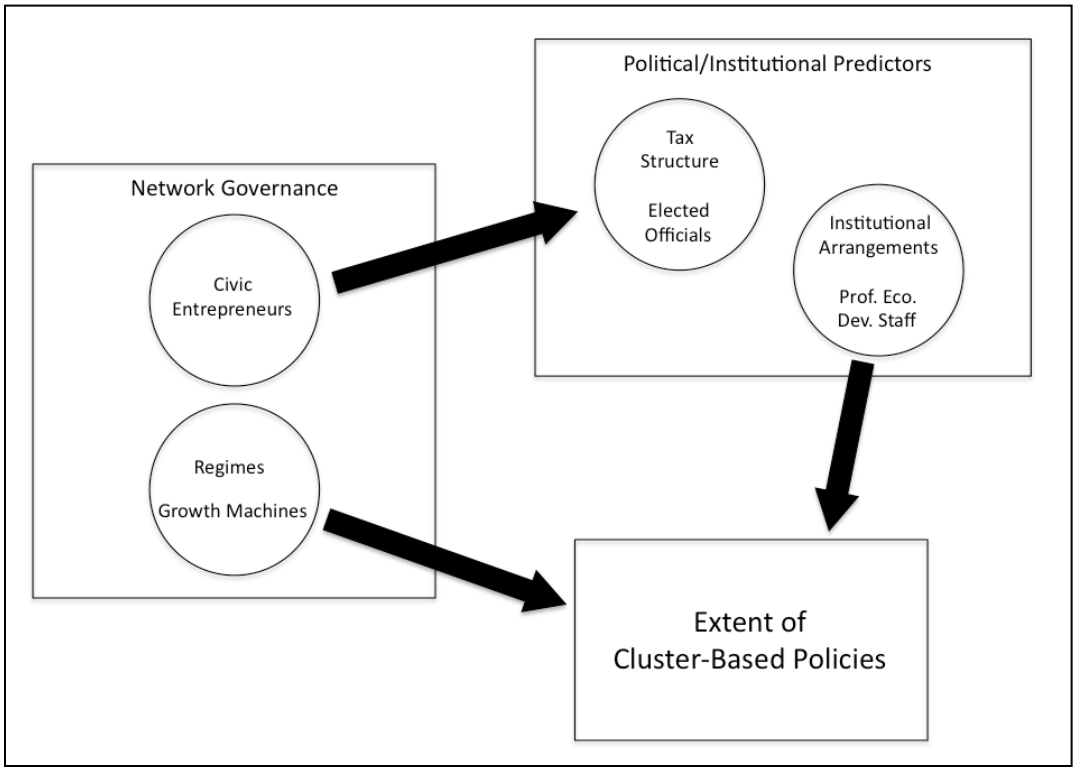

Figure 9 Revised Political/Institutional Model

The arrows indicate the direction of a positive relationship between variables. For example, as discussed in depth in the previous chapter, regimes and growth machines have a more positive impact on the extent of cluster-based policies when compared to civic entrepreneurs. However, civic entrepreneurs have a more direct impact on the overall political/institutional predictors, specifically elected officials for the reasons discussed in the previous chapter. Regarding the political/institutional predictors and the extent of cluster-based policies, institutional arrangements and professional economic development staff have a more direct impact on the extent of cluster-based policies contrary to the tax structure and elected officials, which have no relationship whatsoever with the extent of cluster-based policies for the reasons discussed previously.

Hence, it could be argued that civic entrepreneurs are *not* relevant when explaining the extent of cluster-based policies. Similarly, the tax structure and elected officials seem to *not* be relevant to the extent of cluster-based policies. In other words, cluster-based policies exist regardless of their involvement, at least for this particular case. Nonetheless, there is an important connection between elected officials and civic entrepreneurs.

As will be discussed in more depth in the next section, both tax structures and elected officials can and should play a role in the extent of cluster-based policies, especially if the cluster is to upgrade and sustain itself. It is hypothesized that the reason they are not relevant in Miller's model is for two reasons: (1) the political culture inherent in the region is a major obstacle, and therefore (2) the public administration structure is not well suited for upgrading industrial clusters. Nonetheless, these issues can be addressed using network governance theory and the solution championed and implemented by civic entrepreneurs.

Network Governance Theory and Industrial Cluster Development

As discussed throughout this research, successful industrial cluster economic development strategies measured by the extent of their cluster-based policies require engaged and strong regimes and growth machines. Engaged and strong regimes and growth machines usually result in local economic development organizations (Beaver & Cohen, 2004). These organizations in turn require professional economic development staff and access to critical institutional arrangements, obtained through membership in regional organizations.

The fact that tax structures and elected officials did not have any impact on the extent of cluster-based policies indicates that public administration structures need to change in order to make these two elements significant within the model and increase their impact on the extent of cluster-based policies. Thus, the critical link between cluster-based economic development and public administration relies on network governance theory. In other words, if a political jurisdiction based on network/governance theory with taxing authority and elected officials were to be created mirroring the industrial cluster boundaries as argued by Enright (2003), the horizontal linkages within public administration would grow stronger, thus situating tax structures and elected officials at the forefront of the upgrading and/or development of industrial clusters.

However, some disturbing questions emerge: How will traditionalistic states adapt contemporary public management and administration trends such as horizontal linkages, collaboration, and cooperation when these networks are characterized by not having a hierarchy, precisely one of the social elements that traditionalistic governments are

supposed to conserve and maintain? Lastly, will this ability/inability to adapt have an impact on the sustainability of industrial clusters?

Furthermore, the potential issues faced by traditionalistic states are exasperated by the fact that according to Elazar (1984), the bureaucracies of these states are not as developed as those with an individualistic political culture. The issue arises when Agranoff & McGuire (1998) argue that precisely that state bureaucracies play a pivotal role in the development of networks providing financial support, information, expertise, and advocate more collaboration with horizontal actors such as county and/or municipal governments, which in turn support and sustain industrial clusters.

Enhancing and Upgrading the Shipbuilding Cluster

As discussed in the previous chapter, workforce and infrastructure development were the policies with the highest satisfaction among the participants. The remaining nine policies were perceived as being in place but in need of improvement in order for the cluster to further develop and upgrade.

Based on the research conducted, three main recommendations arise. First and according to Porter (2000), the following examples of government policies for industrial clusters are lacking or were simply not perceived to be at the level they need to be by the participants: (1) create relevant government departments around the cluster; (2) eliminate barriers to local competition; and (3) sponsor independent testing, product certification, and rating services for the cluster's products.

Second, Pietrobelli and Rabellotti (2004) argue that a proper cluster development policy needs to consider both a territorial/geographic factor as well as a linkage factor. Therefore, policy instruments targeting the development of local competitive factors such

as infrastructure or local know-how also need to target the promotion of linkages among the cluster such as programs to establish business associations and/or upgrade contractors. The former seems to be supported by the findings of this study while the latter leaves room for improvement.

Lastly, using Schmitz's (1995) term of *collective efficiency* consisting of local external economies and joint action, it is evident and based on this study that the former has been achieved but the latter requires some improvement, especially the multilateral linkages. According to the participants in this study, local external economies such as a market for specialized skilled labor, improved market access, easy access to specialized knowledge, and a rapid dissemination of information are currently in place within the shipbuilding cluster. Joint action, especially multilateral linkages, leave room for improvement as well.

However, none of the above recommendations are possible to implement unless some fundamental changes occur from a public administration perspective. Elazar (1984) pointed out that states with traditionalistic subcultures stipulate government roles that do not include economic development, much less specific economic development strategies such as cluster development. In other words, traditionalistic states and their bureaucracies simply do not meddle or get involved too much in business and industrial activities. This in turn poses a serious limitation, both ideologically and structurally, for traditionalistic states that are benefitting from the shipbuilding cluster to help it enhance and upgrade.

Of major importance is the fact that the role of government (state and local) in aiding this particular cluster to upgrade and enhance has become even more prevalent and urgent because of three major recent challenges facing the shipbuilding cluster on the

Gulf Coast. Two challenges will have a more immediate significant impact on the shipbuilding cluster while the impact of the third challenge may be felt in the long run.

First, the federal government is decreasing its spending on national defense in general, including warships. This will have a major impact on the Gulf Coast as discussed in Chapter 4 since the U.S. Navy is one of the shipbuilding cluster niches. As a matter of fact, Northrop Grumman recently announced its decision to close its Avondale shipyard in 2013, affecting approximately 12,000 workers, 5,000 directly plus another 7,000 indirectly (Albright, 2010).

Second, the recent Deep Water Horizon oil spill in the Gulf of Mexico will have a direct impact on the fishing industry, which in turn is another one of the niches of the shipbuilding cluster. Though it is not clear at this point what the scale of the impact will be, major negative implications for the shipyard cluster are undeniable. This oil spill, however, also has the potential of fueling a more long-term negative impact on the shipbuilding cluster and that is of environmental concerns, leading us to our third more long-term challenge.

Third, since the Obama administration is beginning to shift its focus on supporting renewable energy and moving away from fossil fuels (in part exasperated by the Gulf Coast oil spill mentioned above), this will have a direct impact on the oil and gas industry on the Gulf Coast, which in turn is one of the shipbuilding niches. If this shift toward renewable energy takes place, the negative impact on the shipbuilding cluster will be major.

On the bright side, regional governance structures are starting to emerge that involve a repositioning of governance and political structures that closely resemble an ideal political jurisdiction envisioned by Enright (2003) that can further support the

industrial cluster in the region. For example, a participant from local government mentioned that because of an alliance that started between local economic developers across three states, there is an alliance emerging regarding local governments. According to this participant, "*we have now started meeting to talk about common issues and problems related to living on the coast that we want to address on a regional basis as opposed to trying to address some of these things just locally."*

More importantly, the participant acknowledged that this "regional governance" was a spin-off of the regional economic development alliance. This in part responds the question asked by Provan and Kenis (2008) regarding the reasons why network governance forms emerge. Further, this participant mentioned that a recent press conference was held between the governors of Alabama, Mississippi, and Louisiana in Mobile County announcing the regional economic development alliance was coming together at the state level as well. Without a doubt, this form of network governance is a shared-participant network governance form and has the potential to evolve into a more formal network governance structure (Provan & Kenis, 2008).

The obvious next step of the regional governance alliance, currently in its infancy, will be to create stronger linkages, or in Provan and Kenis' (2008) words, the network governance needs to "evolve," between different public managers and jurisdictions eventually establishing a political jurisdiction with elected officials and taxing authority. The collaborative governance framework developed by Ansell and Gash (2008) that considers starting conditions, facilitative leadership, institutional design, the collaborative process, and outcomes can be used to guide this evolution. Future research can study this particular emerging regional governance effort to further understand the impact in both traditional public administration structures and on the shipbuilding cluster itself.

To conclude, the ability of government to support and help the cluster upgrade is more important than ever. The current traditionalistic states will have to adapt their current governance structures to be more accommodating to support and enhance industrial clusters. State government needs to provide a "playing field" to spur networks and horizontal linkages further, making public administration more suitable to upgrade and develop clusters. Network/governance theory provides a critical and useful theoretical base on which to carry out this valuable transformation of traditionalistic public administration.

Limitations and Future Research

Like other research studies, this study has some major limitations. First, the fact of focusing on a specific industrial cluster limited our overall population and therefore our sample size. Future studies should focus on studying cluster-based policies in general within a specific political culture and not focus on a specific industrial cluster. For example, a quantitative analysis can show that there are several clusters in a specific region, significantly broadening the overall population and hence the sample.

Future research can also target specific participants for each of the sections of the interview instrument. For example, the network governance moderator and the political/institutional predictors' questions should only be asked to elected officials and politicians as well as economic developers. On the other hand, the extent of cluster-based policies should only be asked to industry representatives as well as economic developers. Many industry representatives declined to participate arguing they were not familiar with the "politics" of the region. This way, missing data can be minimized by targeting groups that more than likely will feel comfortable responding.

Another limitation of this study is the fact that the findings are only generalizable to the shipbuilding cluster in the Gulf Coast. Future studies should focus on comparing either shipbuilding clusters across the nation (i.e. the Northeast, Northwest, mid Atlantic, and the Gulf Coast) or clusters in general in states or regions with different political cultures. Different political cultures can yield interesting information about which factors the policies can be grouped in or even more factors that are involved. Furthermore, only large- and medium-sized shipyards were contacted, leaving out numerous smaller shipyards as well as supporting and related industries such as suppliers and community colleges. This was done because the objective of this study was to understand the political/institutional context and not the underlying linkages and relationships within the cluster.

Future studies can also focus on comparing mature clusters versus emerging clusters and the degree to which the political/institutional context model can help explain the extent of cluster-based policies. Moreover, an urban versus rural cluster study utilizing the revised model as a framework would yield interesting information on the capacity and ability of rural areas to support and sustain industrial clusters.

However, the major potential for future research relies on studying the effects and influence that an industrial cluster, such as the shipbuilding cluster on the Gulf Coast, has on the political jurisdictions and public administration organization. Utilizing network governance theory as a framework, it would be interesting to study the emerging cooperation and collaboration efforts across county and state lines such as the one taking place between county councils and commissions in both Mississippi and Alabama with the support of both state governments. This is the greatest contribution a cluster-based economic development strategy can give to public administration.

REFERENCES

Agranoff, R. (2003). Inside the matrix: Integrating the paradigms of intergovernmental and network management. *International Journal of Public Administration, 26*(12), 1401-1422.

Agranoff, R., & McGuire, M. (1998 January). Multinetwork management: Collaboration and the hollow state in local economic policy. *Journal of Public Administration Research & Theory, 8*(1), 67-92.

Agranoff, R., and McGuire, M. (2005). Managing collaborative performance. Changing the boundaries of the state? *Public Performance & Management Review, 29*(1), 18-45.

Albright, M. (2010, July 14). Northrop Grumman will close Avondale shipyard in 2013. *The Times-Picayune*. Retrieved August 20th, 2010 from http://www.nola.com/business/index.ssf/2010/07/northrop_grumman_will_close_av.html

America 2050 (2009). Megaregions. Retrieved from http://www.america2050.org/megaregions.html

Ansell, C., & Gash, A. (2008 October). Collaborative governance in theory and practice. *Journal of Public Administration Research and Theory, 18*(4), 543-571.

Austrian, Z. (2000 February). Cluster case studies: The marriage of quantitative and qualitative information for action. *Economic Development Quarterly, 14*(1), 97-110.

Beaver, W., & Cohen, E. (2004 November). Power in a rural county. *Sociological Spectrum 24*(6), 629-650.

Bernat, G.A. Jr. (1999). Industry clusters and rural labor markets. *Southern Rural Sociology, 15*, 170-187.

Boeckelman, K. (1991 Spring). Political culture and state development policy. *Publius, 21*(2), 49-62.

Colgan, C.S. & Baker, C. (2003 November). A framework for assessing cluster development. *Economic Development Quarterly, 17*(4), 352-366.

Cortright, J. (2006 March). Making sense of clusters: Regional competitiveness and economic development. Discussion paper prepared for The Brookings Institution Metropolitan Policy Program.

Elazar, D.J. (1984) *American federalism: A view from the states* (3rd ed). New York: Harper & Row.

Enright, M.J. (2003). Regional clusters: What we know and what we should know. In Brocker, J., Dohse, D., and Soltwedel, R. (Eds.), *Innovation clusters and interregional competition* (pp. 99-129). Kiel, Germany: Springer.

Esser, K., Hillebrand, J., and Messner, D., and Meyer-Stamer, J. (1995). *Systemic Competitiveness: New governance patterns for industrial development*. London: Frank Cass.

Feiock, R. (2007). Rational choice and regional governance. *Journal of Urban Affairs, 29*(1), 47-63.

Formica, P. (2003). Corporate governance of cluster development agencies: The case for market orientation. In Brocker, J., Dohse, D., and Soltwedel, R. (Eds.), *Innovation clusters and interregional competition* (pp. 241-271). Kiel, Germany: Springer.

Frederickson, H. G. (1999). The repositioning of public administration. *PS: Political Science and Politics, 32*(4), 701-711.

Frederickson, H. G., & Matkins, D. (2005). *Public administration and shared power: Understanding governance, networks, and partnership*. Unpublished manuscript, Working Group on Interlocal Services Cooperation, Wayne State University, Detroit, MI.

Gibbs, R. M. & Bernat, G. A. Jr. (2001 April) Rural industry clusters raise local earnings. *Rural Development Perspectives, 12*(3), 18-25.

Henton, D., Melville, J., & Walsh K. (1997). *Grassroots leaders for a new economy: How civic entrepreneurs are building prosperous communities*. San Francisco, CA: Jossey-Bass Inc.

Humphrey, J., & Schmitz, H. (2000). Governance and upgrading: Linking industrial cluster and global value chain research. *IDS Working Paper, 120*, Institute of Development Studies. Brighton: University of Sussex.

Jackson, J.E. (1988). Michigan. In Fosler, R. S. (Ed.), *The new economic role of the American states* (pp. 105-111). New York: Oxford University Press.

Jessop, B. (1998). The rise of governance and the risks of failure: The case of economic development. *International Social Science Journal, 155*, 29-45.

Ketels, C.H.M. (2006 June). Michael Porter's competitiveness framework–Recent learnings and new research priorities. *Journal of Industry, Competition and Trade, 6*(2), 115-136.

Klepper, S. (1996 June). Entry, exit, growth, and innovation over the product life cycle. *The American Economic Review, 86*(3), 562-583.

Koven, S. G., & Mausolff, C. (2002 March). The influence of political culture on state budgets–Another look at Elazar's formulation. *American Review of Public Administration, 32*(1), 66-77.

Lieske, J. (1993 Nov). Regional subcultures of the United States. *The Journal of Politics, 55*(4), 888-913.

Logan, J., & Molotch, H. (1987). *Urban fortunes: The political economy of place*. Berkeley, CA: University of California Press.

Low, S.A. (2009). Defining and measuring entrepreneurship for regional research: A new approach. *Ph.D. dissertation, University of Illinois at Urbana-Champaign*, United States–Illinois. Retrieved August 31, 2010, from Dissertations & Theses: Full Text. doi; AAT 3392201.

Martin, R., & Sunley, P. (2003). Deconstructing clusters: Chaotic concept or policy panacea? *Journal of Economic Geography, 3*(1), 5-35.

Mayer, H. (2005 Fall). Cluster monitor: A guide for analyzing industry clusters in regional economies. *Economic Development Journal, 4*, 40-53.

Markusen, A.R. (1994). Sticky places in slippery space: The political economy of postwar fast-growth regions. *Center for Urban Policy Research*, Working Paper No. 79.

Mead, L. M. (2004). State political culture and welfare reform. *Policy Studies Journal, 32*(2), 271–296.

Messner, D. (1997). *The network society: economic development and international competitiveness as problems of social governance*. London and Portland: Frank Cass.

Miller, C. R. (2006). The tholian web: The political/institutional context of regional cluster-based economic development. *Ph.D. dissertation, Virginia Polytechnic Institute and State University*, United States -- Virginia. Retrieved June 30, 2009, from Dissertations & Theses: Full Text. doi;. AAT 3233229).

Miller, C. R. & Stich, B. (2009). Collective action regimes in inland marine port clusters: The case of the Tennessee-Tombigbee. Presented at the *Waterway 2009 Mississippi Water Conference* in Tunica, MS, August 5-7. 174-185. Retrieved from http://www.wrri.msstate.edu/pdf/2009_wrri_proceedings.pdf

Milward, H. B. & Provan, K. G. (2000 April). Governing the hollow state. *Journal of Public Administration Research and Theory, 10*(2), 359-379.

Molotch, H. (1976). The city as a growth machine: Toward a political economy of place. *The American Journal of Sociology, 82*(2), 309-332.

Neuman, W. L. (2006). *Social research methods: Qualitative and quantitative approaches*. Boston MA: Pearson.

Northrop Grumman (2009). Gulf Coast fact sheet. Northrop Grumman Shipbuilding. Retrieved from http://www.sb.northropgrumman.com/about/assets/Gulf_Coast_Facts.pdf

Pietrobelli, C., & Rabellotti, R. (2004). Upgrading in clusters and value chains in Latin America: The role of policies. *Inter-American Development Bank*, Washington D.C.

Podolny, J. M. & Page, K. L. (1998). Network forms of organization. *Annual Reviews Sociology, 24*, 57-76.

Porter, M. E. (1990). *The competitive advantage of nations*. New York: The Free Press.

Porter, M. E. (2000 February). Location, competition, and economic development: Local clusters in a global economy. *Economic Development Quarterly*, *14*(1) 15-34.

Porter, M. E. (2003 August/October). The economic performance of regions. *Regional Studies, 37*(6/7), 549-578.

Powell, W. W. (1990). Neither market nor hierarchy: Network forms of organization. *Research in Organizational Behavior, 12*, 295-336.

Provan, K. G., & Kenis, P. (2008 April). Modes of network governance: Structure, management, and effectiveness. *Journal of Public Administration Research and Theory, 18*(2), 229-252.

Provan, K. G., & Milward, H. B. (2001 July/August). Do networks really work? A framework for evaluating public-sector organizational networks. *Public Administration Review, 61*(4), 414-423.

Rosenfeld, S. A., Liston, C. D., Kingslow, M. E., & Fromm, E. R. (2000 August). Clusters in rural areas: Auto supply chains in Tennessee and houseboat manufacturers in Kentucky. *Contractor Paper 00-11* distributed by TVA Rural Studies.

Schmitz, H. (1995). Collective efficiency: Growth path for small-scale industry. *The Journal of Development Studies, 31*(4), 529-566.

Scott, W. R. (1981). *Organizations. Rational, natural, and open systems*. Englewood Cliffs, NJ: Prentice Hall.

Sharkansky, I. (1969 Autumn). The utility of Elazar's political culture: A research note. *Polity, 2*(1), 66-83.

Sheskin, D. (2007). *Handbook of parametric and nonparametric statistical procedures*. Boca Raton: Chapman & Hall.

Stakes, R. E. (2003). Case Studies. In Denzin, N. K., & Lincoln Y. S. (Eds.), *Strategies of qualitative inquiry* (pp. 134-164). Oakland, CA: Sage.

Stoker, G. (1998). Governance as theory: Five propositions. *International Social Science Journal, 155*, 17-28.

Stone, C. (1989). *Regime politics: Governing Atlanta*. Lawrence, KS: University of Kansas Press.

Su, Y.S., & Hung, L.C. (2009). Spontaneous vs. policy-driven: The origin and evolution of the biotechnology cluster. *Technological Forecasting & Social Change, 76*, 608-619.

Van der Linde, C. (2003). The demography of clusters–Findings from the cluster meta-study. In Brocker, J., Dohse, D., and Soltwedel, R. (Eds.), *Innovation clusters and interregional competition* (pp. 130-149). Kiel, Germany: Springer.

Visser, J. (2004). Voluntary regional councils and the new regionalism. Effective governance in the smaller metropolis. *Journal of Planning Education and Research*, *24*, 51-63.

Waits, M.J. (2000 February). The added value of the industry cluster approach to economic analysis, strategy development, and service delivery. *Economic Development Quarterly, 14*(1), 35-50.

Wickham, M. (2005). Regional economic development: Exploring the 'role of government' in Porter's industrial cluster theory. Paper presented at the CRIC Cluster Conference: Beyond Cluster-Current Practices & Future Strategies in Ballarat, June 30-July 1, 2005.

APPENDIX A

INTERVIEW INSTRUMENT

Cluster History

1. - From your perspective, could you provide a brief history of the shipbuilding cluster in this region?

1a. - To what degree do you think the local/state government has aided or changed the historical trajectory of the shipbuilding cluster in your region? Do you think the Gulf Coast region would have a shipbuilding "mega-cluster" even if Northrop Grumman had not been located here in the 1930's?

1b. Based on this brief history, overall what would you say government's (city/county/state) role[22] has been regarding the development of the cluster? What about currently?

1) Non-existent
2) Catalytic
3) Supportive
4) Directive
5) Interventionist

Network Governance

2. - Regarding economic development efforts in the community and using a scale from 1 to 10 (1 being the weakest/lowest and 10 being the strongest/higher)[23]:

2a. – Would you say the regimes existent in the city/county are weak/strong? (Regimes are informal yet stable groups that have access to institutional resources and have a significant impact on local economic development policy and implementation) [reg]

2b. – What about the engagement level of local growth machines? Is it low/high? (Growth machines are individuals or institutions that directly benefit from economic development. For example landowners, bankers, lawyers, etc.) [grwmach]

2c. – What about the activity level of civic entrepreneurs in the city/county? Is it low/high? (Civic entrepreneurs are primarily individuals from private-sector businesses but also include public and civic organizations that help forge powerful productive linkages bringing their vision and commitment) [civent]

[22] Categories were obtained from Enright (2003). Each category will be explained in detail to each of the respondents

[23] Specific examples of each of these groups will be discussed during the interview. These groups were obtained from Miller (2006)

Political/Institutional Predictors

3. – Using a scale from 1 to 10, 1 being least favorable (more general tax structure such as machine & tools tax) to 10 being the most favorable[24] (more targeted incentives), how would you categorize the city/county/state tax structure regarding economic development? [taxst]

4. – Is this particular community a member of a regional economic development organization (yes/no)[25]? If yes and using a scale from 1 to 10 (1 not making institutional arrangements easier at all to 10 making institutional arrangements easier), do you think this membership makes institutional arrangements easier? [instarr]

5. – Using a scale from 1 to 10, 1 being not having long-term and regional perspectives to 10 being all about long-term and regionalism, do you think the majority or more influential city/county/state elected officials have a long-term and regional perspective regarding economic development[26]? [eleoff]

6. – Using a scale from 1 to 10, 10 being very professional (from a knowledgeable perspective), how professional is the city/county/state staff involved in economic development? (For example are economic developers certified professional economic developers from the Economic Development Institute, Community Development Institute, Business Retention and Expansion International, etc.? [edprof]

Extent of Cluster-Based Economic Development Policies

7. – On a scale from 1 to 10 (1 meaning policy is non-existent and 10 meaning you are highly satisfied with what is currently in place) could you please provide a score for the following city/county/state cluster-based economic development policies[27]?

> 7a. – Advertisements in national/international trade and/or site-selection magazines) and/or promotion activities in national/international trade shows geared to the shipbuilding cluster [prom] CFSR

---

[24] A more targeted tax structure is perceived to be more favorable to economic development than a general tax structure. Thus, a targeted tax structure should have a more direct impact in the extent of economic development

[25] Specific examples will be mentioned during the interview such as the Gulf States Shipbuilding Consortium and/or regional economic development associations

[26] Generally, when speaking about economic development, having a long-term and regional perspective go hand in hand. The idea is to capture if public officials "get" the big picture, that includes regionalism and long-term perspectives

[27] The following policy examples were obtained from Porter (2000). Although some seem to ask about two different issues, they generally go hand in hand regarding that specific policy area and cluster diamond factor. For example, the first question refers to promotion of the cluster in general under the context for firm strategy and rivalry

7b. – Specialized transportation, communication, and other infrastructure related to the shipbuilding cluster [infra] FC

7c. – Shipbuilding specific workforce training programs [wrkfrc] FC

7d. – Shipbuilding cluster research efforts at local and/or regional universities [res] FC

7e. – Government programs for information gathering and compilation on the shipbuilding industry [prog] FC

7f. – Government activities around the shipbuilding cluster (i.e. hire shipbuilding specialists, etc.) [act] FC

7g. – Efforts focused to attract investment around shipbuilding [inv] CFSR

7h. – Cluster-specific efforts to attract shipbuilding suppliers [supp] RSI

7i. – Sponsored forums, conferences, and/or workshops of interest to shipbuilding [conf] RSI

7j. – Work to streamline regulatory standards for shipbuilding [regstd] DC

7k. – Establish shipbuilding oriented free trade zones, industrial parks, etc. [trdzo] RSI

Other

8. – What impact (negative or positive) do you think the shipbuilding cluster in the region has had on the adjacent more rural communities? For example, any impact in the quality of life, economic, social, or environmental?[28]

9. – Any other thing you would like to add regarding the shipbuilding cluster and government policies?

10. – Is there anybody you would recommend talking to who is familiar with the shipbuilding cluster in the region.

[28] These multiple open-ended questions are intended to serve as a guide when discussing the overall impacts of the cluster. Responses will be properly coded

APPENDIX B

CORRELATION MATRIX

Table 40 Correlation Matrix

edprof	prom	infra	wrkfrc	res	prog	act	inv	supp	conf	regstd	trdzo
0.685**	0.195	0.268	0.523**	0.289	0.221	0.064	-0.057	0.234	0.349	0.391	-0.181
0.917**	0.423	0.382	0.754**	0.213	0.295	0.143	-0.063	0.594**	0.585**	0.541	0.306
0.828**	0.219	0.377	0.631**	0.135	0.185	0.083	-0.163	0.391	0.412	0.338	0.040
0.400	0.136	0.239	0.386	-0.068	-0.315	-0.486*	0.046	0.250	0.207	0.341	-0.387
0.602**	0.415	0.120	0.741**	-0.131	0.289	0.131	-0.086	0.828**	0.186	0.628*	0.023
0.502**	0.091	0.159	0.456*	-0.082	-0.353	-0.527*	-.121	0.175	0.172	0.329	-0.260
1	0.381	0.363	0.641**	0.254	0.235	0.062	0.022	0.472*	0.552**	0.395	0.065
0.381	1	0.748**	0.485*	0.575**	0.411	0.206	0.584**	0.653**	0.297	0.332	0.621**
0.363	0.748**	1	0.277	0.388	0.293	0.145	0.606**	0.521**	0.179	-0.008	0.508*
0.641**	0.485*	0.277	1	0.060	0.180	0.230	-0.263	0.559**	0.493*	0.494	0.417
0.254	0.575**	0.388	0.060	1	0.258	0.341	0.557**	0.223	0.439	0.455	0.170
0.235	0.411	0.293	0.180	0.258	1	0.488*	0.356	0.343	0.154	0.031	0.495*
0.062	0.206	0.145	0.230	0.341	0.488*	1	0.061	0.190	0.208	-0.183	0.408
0.022	0.584**	0.606**	-0.263	0.557**	0.356	0.061	1	0.318	-0.075	-0.009	0.112
0.472*	0.653**	0.521**	0.559**	0.223	0.343	0.190	0.318	1	0.190	0.564*	0.342
0.552*	0.297	0.179	0.492*	0.439	0.154	0.208	-0.075	0.190	1	0.525*	0.199
0.395	0.332	-0.008	0.494	0.455	0.031	-0.183	-0.009	0.564*	0.525*	1	0.057
0.065	0.621**	0.508*	0.417	0.170	0.495*	0.408	0.112	0.342	0.199	0.057	1

Table 40 Continued

	reg	grwmach	civent	taxst	instanr	eleoff
reg	1	0.626**	0.737**	0.439*	0.488	0.481*
grwmach	0.626**	1	0.868**	0.335	0.657**	0.467*
civent	0.737**	0.868**	1	0.354	0.545*	0.461*
taxst	0.439*	0.335	0.354	1	0.473	0.770**
instanr	0.488	0.657**	0.545*	0.473	1	0.428
eleoff	0.481*	0.467*	0.461*	0.770**	0.428	1
edprof	0.685**	0.917**	0.828**	0.400	0.602**	0.502**
prom	0.195	0.423	0.219	0.136	0.415	0.091
infra	0.268	0.382	0.377	0.239	0.120	0.159
wrkfrc	0.523**	0.754**	0.631**	0.386	0.741**	0.456*
res	0.289	0.213	0.135	-0.068	-0.131	-0.082
prog	0.221	0.295	0.185	-0.315	0.289	-0.353
act	0.064	0.143	0.083	-0.486*	0.131	-0.527*
inv	-0.057	-0.063	-0.163	0.046	-0.086	-0.121
supp	0.234	0.594**	0.391	0.250	0.828**	0.175
conf	0.349	0.585**	0.412	0.207	0.186	0.172
regstd	0.391	0.541*	0.338	0.341	0.628*	0.329
trdzo	-0.181	0.306	0.040	-0.387	0.023	-0.260

Notes: * statistically sig. at the 0.05 level; ** statistically sig. at the 0.01 level